

Nematode Control: Wise Insurance

By JOHN WESELOH
Sales Manager
Dow Chemical Co.

The number 10 fairway at the Ocala, Florida Municipal Golf Course is lush with deep-rooted, abundant bermudagrass this year. But this is in contrast to the turf throughout the course when Jim Yancey came to Ocala less than four years ago. Nematodes, which feed on the roots of grass can either restrict the root system or can completely eliminate it, were taking their toll of the turf. They caused thinning of the grass and produced joy for the weeds. What was the answer? More water and fertilizer?

They didn't solve the problem, but a new nematicide did. Previously found to be successful in such farm crops as soybeans, Fumazone 86 was available and its application at Ocala for the past two summers "has made the Ocala golf course," Yancy said.

"The improvement of the course is unreal," Yancey said after two annual applications, "The 10th fairway had no grass previously, and now there is a good stand of grass. A

couple other fairways are in the same improved condition."

Nematodes are easy for Yancey and other golf course managers to control because they need not purchase special application equipment nor train regular personnel to apply the material. The Ocala club contracts with Southern Mill Creek Products of Tampa to do the job. Other companies have good facilities, too. In late May or early June, Southern Mill Creek will come to Ocala again and treat the entire course, including tees, fairways, greens and roughs. The job will take two days and Yancey will close nine holes each day while the job is progressing.

The Ocala course is one of about 650 in Florida and Dr. G. C. Horn, a prominent golf course and turf management agronomist of Gainesville, Fla., believes Yancey is on the right track with his nematode control program. Horn ended a 23-year career as professor of turf management at the University of Florida to be a full-time consultant, and his chief interest is golf courses.

"The first symptom of nematode damage is that the turf loses its vigor," Horn said. "You fertilize it



Injection fumigation of golf course turf was found to be more effective for nematode control than the older drench method. The nematicide is injected into the turf at a depth of three to five inches using a Coulter and shank unit. Because special equipment is needed, most golf courses are treated by custom applicators.

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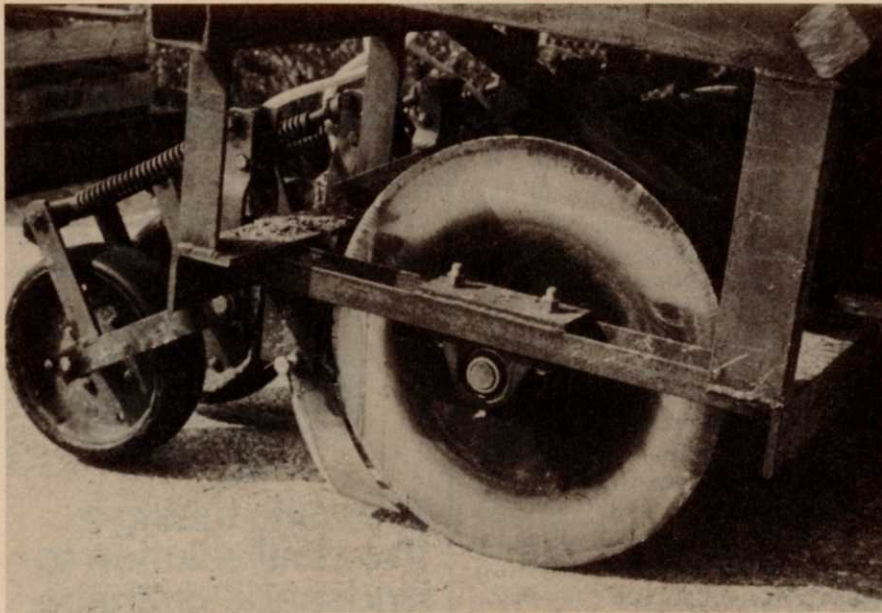


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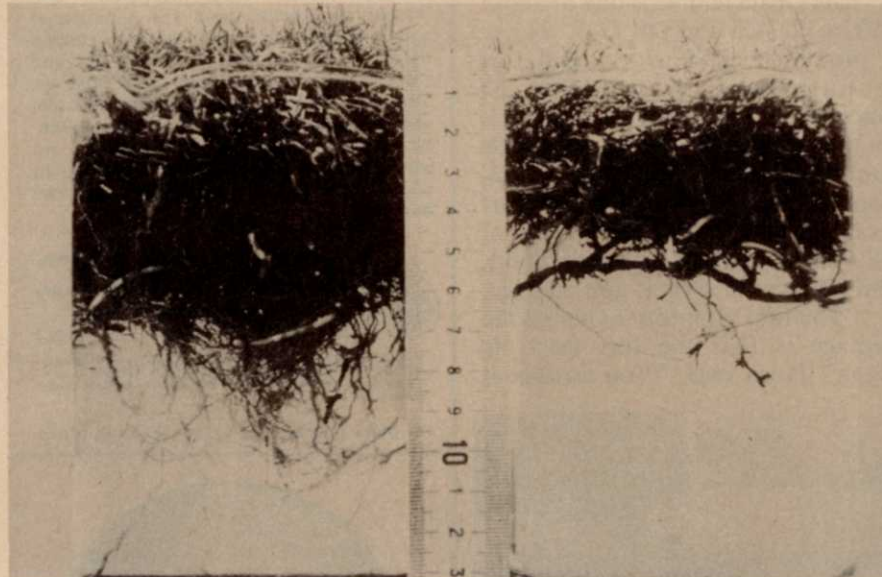
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Equipment has been developed to treat golf course greens and fairways with nematicide. Injection is made on 10 to 12 inch centers with pack wheels behind to seal the slits.



Nematodes can keep the turf from developing a healthy root system. Fumigation controls the nematodes and allows a deep rooted system to develop. The left plug is the root system of grass treated with Fumazone fumigant; the right plug is untreated.

and it doesn't respond. The grass yellows from a deficiency of iron even when the soil may have plenty of iron in it, the grass has no roots to absorb the iron."

Another problem is that weed seeds abound in the soil and when the turf gets thin, the seeds germinate and weeds become a problem. One weed associated with nematode damage is the "milk weed" or spotted spurge. This weed will come onto a green when nematodes injure the turf, but it doesn't get a chance to grow if the turf is thick and vigorous.

Pioneer in nematode control on golf courses in Florida is Dr. V. G. Perry, Professor of nematology at the University of Florida. He began publicizing the problem about 1953 and developed some tests to determine the existence of nematodes in turf. After good responses from chemical injections with hand injectors, Perry and Horn turned to developing an injection machine. The early experimental models were inefficient and did a poor job. Some of the early chemicals burned the turf; however, improvements have been made in the last few years, and the mechanical and chemical problems largely eliminated.

Treatment of greens came first and even today golfers cringe a bit when they see application specialists roll over a green, slicing the immaculately conditioned Bermuda grass with sharp injector knives. Small garden tractors with dual back wheels and hydraulic lifts are used. Copper tubing in welded on the backs of the cutting blades and the nematicide passes through tubes by gravity flow or pressure into three-to-five-inch slits in the turf. The greens bounce back quickly from effects of the scalpel.



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More recently, treatment of fairways and roughs become practical with the design and construction of new, larger injection machines. These tractor injectors travel up to six miles an hour, enabling fairways and roughs to be treated twice as fast as greens. Though the knives do some damage to turf, recovery is usually rapid.

"Sometimes you can see some little streaks for as long as four weeks or more. If the turf is in poor condition, the streaks may be apparent for a couple of months," Horn said.

So effective is the nematicide treatment, said Horn, that an observer can see where the injectors entered the soil and where they were extracted. "If the applicator skips a three-foot swath, for example, you can pick out those three feet. Six months or a year later, you can still find the misses."

Golfing is big business in Florida, and Dr. Horn said about 40 courses a year are being added to the existing 650 courses. He estimates that 60 to 70 per cent of the greens and about 25 to 30 per cent of the fairways are being treated annually with a nematicide. Horn estimates that about 10 per cent more courses

will be treated with Fumazone nematicide this year, with perhaps another 15 to 20 per cent the following year.

"There are very few public, municipal or private golf courses in Florida that haven't at least treated some of the greens," the consultant said. "Treatment had not been this extensive on fairways, however, if nematodes exist in numbers sufficient to cause damage, the turf does very poorly and should be treated."

Cost of treating greens in Florida is about \$7 or \$8 a thousand

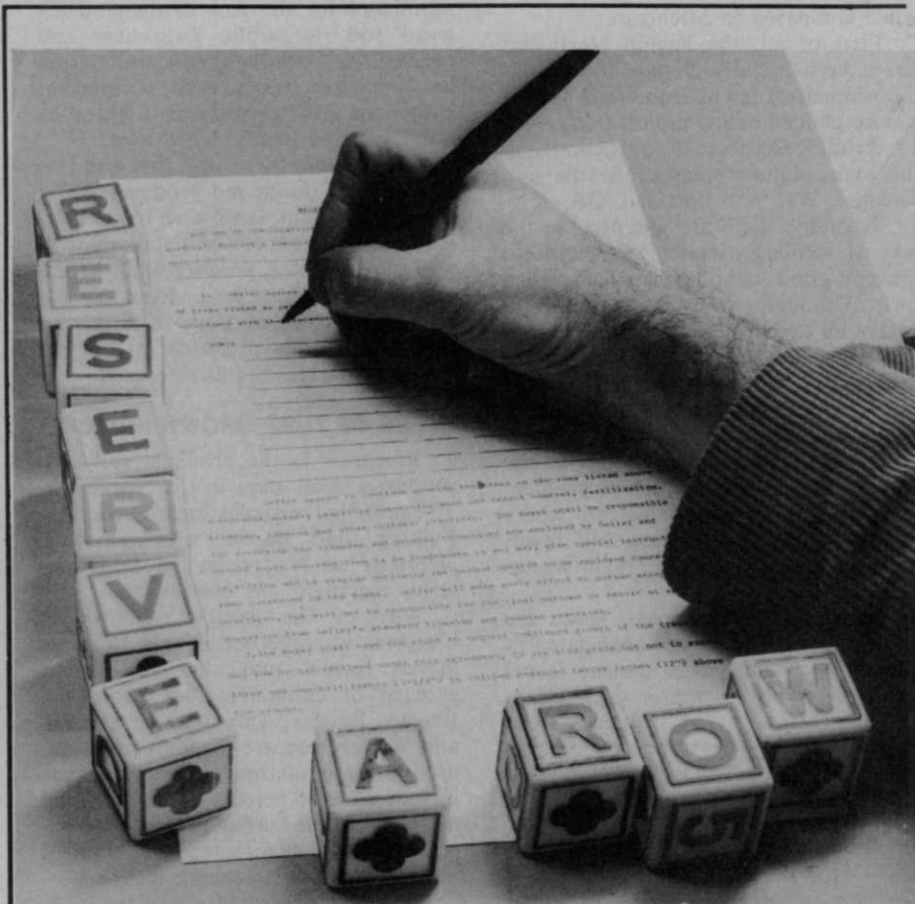
square feet. Horn said a superintendent can get by fairly well with treatment of putting surfaces alone. "But, again, it gets back to the fact that if you treat the green and not the immediate surrounding area, you're going to have a good looking green and poor slopes."

Use of a nematicide throughout a golf course in Florida ranges from \$3,000 to \$9,000. Yancey said the treatment cost at Ocala is about \$3,500 a year.

Horn recommends treatment where known nematode problems
(continued on page 52)



Jim Yancey proudly points out the well-manicured turf on green number 4 at his golf course in Ocala, Fla. Yancey, club pro and greenskeeper, is the older brother of professional golfer Bert Yancey.



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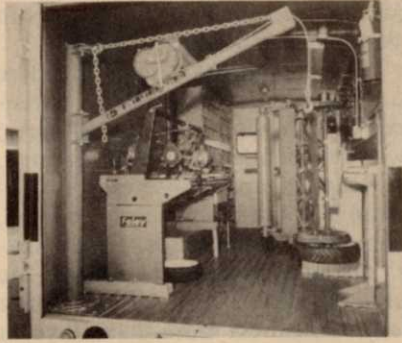


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Nematode (from page 31)

exist with 25 pounds of DBCP per acre on fairways and 36 pounds on greens.

How about repeat treatments? A superintendent manager who is growing grass for a golf course has to grow good grass. If he is having nematode problems and he fumigates, he is going to grow better grass. Once he starts growing better grass, he can't take a chance of having it go bad, so he treats as needed.

"I think a club can pay for the cost of the injection and material with savings from water, fertilizer and other chemicals need in trying to solve the problem. We can definitely see this in stress periods during hot summer months. You can usually walk to the spot where the fumigation occurred because that is where the grass is greener," Horn explained.

Yancey believes he can save up to 50 per cent in fertilizer. Through January, Yancey said he had not fertilized the Ocala course since early last summer. Normally he has to apply it three times a year in northern Florida, while it was necessary every month in southern Florida.

While this discussion covers primarily Florida, Horn serves widely as a consultant, mainly in the South where the nematode problem is apparently more severe. However, Horn believes nematodes exist in more northern golf courses than is generally realized. Research into the problem in the North has been



The initial response to the injection will be browning at the sight of application. The turf usually closes in completely in 4 to 8 weeks.

Nematodes(from page 52)

limited, primarily because of the belief that lower temperatures and a shorter growing season limit the opportunity of the nematode colony to build up. Perry has conducted some research that indicated significant nematode problems do occur on greens and fairways in the Midwest.

Vigorous turf provides the best weed control anywhere, and a

healthy turf is within reach of everyone, Horn concluded. Nematode eradication is part of the insurance package.

Trees(from page 20)

such as ammonium sulfate, sulfur, aluminum sulfate or culturic acid.

Iron sprays will green up the

foliage with which it makes contact. However, leaves that develop after the treatment are generally yellow. Sprays containing chelates are generally unsightly and therefore not too desirable. Treatments used to change the pH of the soil are slow with the exception of the sulfuric acid treatment which is rather critical and must be applied with caution. The best results have been obtained by the use of soil treatments, particularly with the use of iron chelates. However, these remedies have not been without their disappointments. Presently, the suggested treatment is the use of iron chelates or iron sequestrants adapted for use on alkaline soils. These products should be applied in early spring before or just after growth starts and at concentrations recommended by the manufacturers.

The use of iron-containing capsules inserted into the trunk of chlorotic trees has also shown promise. A number of holes are bored into the trunk of the chlorotic tree, with the aid of a high speed drill. The holes should be deep enough so that

(continued on page 56)

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