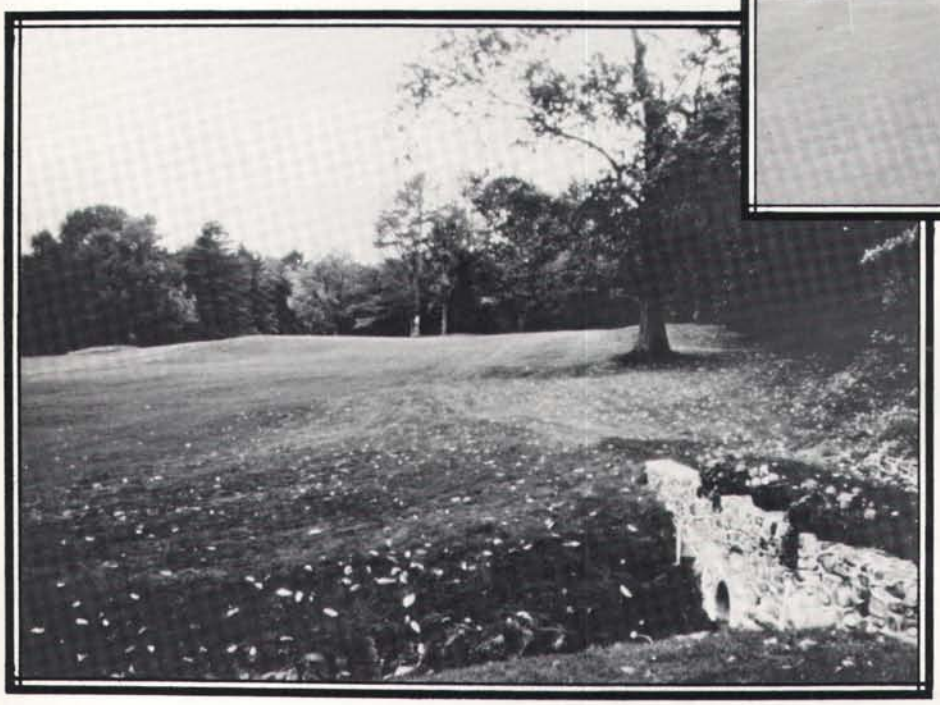
# New Hampshire Superintendent Solves Summerkill Mystery



**Shaded areas (top) were favored summer after summer by the mysterious nematodes.**

**Most of the year the bentgrass greens (left) appeared normal to golfers playing the course nestled into the mountains.**

Bentgrass can fool the best superintendents. You can never drop your guard to this cool-season midget.

Roland White, superintendent at Bald Peak Colony Club in Melvin Village, NH, noticed that every summer patches of his bentgrass greens, collars and fairways mysteriously yellowed, turned brown and then died. It happened in the same areas every year no matter what he did to prevent it.

"Between the second week of July and the third week of August, the bent was gone," White said. "Once you got through this period, you'd see some recovery. In fact, the problem was entirely masked in the spring." Hidden behind a forest of giant white pines, Bald Peak Colony Club rests on the northern shores of Lake Winnipesaukee, a lake seen in the movie, "On Golden Pond." The White Mountains form the horizon for the club.

It's the part of New Hampshire where Bostonians and New Yorkers flee to ski, fish and climb mountains in addition to playing golf. The mountains and the wilderness lure them by the busload in both winter and summer. Nearby, White National Forest is teeming with deer, moose, fox, racoon, squirrel, rabbit, mink and black bear. There's also an abundance of grouse, woodcock, pheasant and duck in the area. Many varieties of game fish inhabit the cool, fresh water lakes carved out of the mountains by the last glacier.

In Melvin Village, the average summer temperature is 70 degrees, an ideal climate for growing lush green bentgrass for golf. It's a part of the country with no history of severe problems with insects or disease. The summer kill was baffling. All soil tests came out normal. For years the troubled areas received several types of fungicides and insecticides with no change in the condition of the turf.

"It looked like *Poa* going out. A wilt condition of some sort. The worst areas were the greens and tees that were under trees. The greenhouse effect produced by the trees reduces the air movement and causes the humidity to rise. I could draw a chalk line around these areas before they went out, yet nothing I did saved them."

Night after night White studied the soil and the floundering bentgrass under his microscope searching for a clue. He compared what he saw through the lens with photographs of disease and insect damage in turf magazines and books.

What he found didn't make sense—nematodes. Everything he read said nematodes didn't damage turf in the Northeast. Yet, there they were, clustered around the root system of the grass.

While White could see the parasites, he couldn't tell which type of nematodes they were. He sent samples to the laboratory at Cornell University in Ithaca, NY. The results showed four different types of nematodes in the samples he sent; ring, lance, stunt and needle longidorous nematodes.

White started to read all he could about nematodes. He found they destroy healthy grass by attaching themselves to the root tissues and sucking out juices and nutrients. The weakened grass plants grow less, turn yellow and suffer drought stress before other plants.

The laboratory results included a recommendation of an application of nematicide (Nemacur Turf and Ornamental Nematicide produced by Mobay). White contacted Dr. Greg Pagano, Mobay's northeast regional specialist for advice on how to safely and effectively apply the product.

To insure there would be no runoff of the nematicide, White aerated all of the greens and collected the cores before making the application. He then made two passes across the problem areas at half the label rate. To water the pesticide into the root-zone without puddling, he irrigated for ten minutes, waited a few hours and irrigated for another 15 minutes. Finally, he top-dressed each green with one-third cubic yard of sand to keep the coring holes open for further watering.

The course was opened for play the following day after the turf was dry. The problem spots started to become noticeably greener. Core samples showed the roots in theses areas were growing deeper than White had seen in a number of years. The bentgrass greens, collars and fairways returned to their naturally smooth and low growing character.

"I think we'll be able to stretch our fungicide program out by several days, cut our watering rates and our fertilization rates," said White. "We'll be keeping a close eye on everything over the next few years to actually measure the change."

Why the sudden rise in nematode populations and damage in the Northeast? White has his own theory. "First, I think nematode samples have been taken on an irregular basis in the Northeast and damage can be easily confused with drought stress.

"Secondly, I think it has something to do with the chlordane insecticides and the mercury fungicides starting to clear out of the soil. Older courses, like 60-year-old Bald Peak, were treated with these long lasting chemicals for years. I think that held back problems. Now we're seeing grub, cutworm and other insect problems that weren't an issue in the past. I think nematodes can be placed in that category."

White's opinion is valued in New England. His course is part of a study being conducted by Dr. Stanley Swier of the University of New Hampshire and Drs. Pat Vittum and Robert Wick of the University of Massachusetts. They also want to know why nematode damage is suddenly showing up and how often must nematicide be applied to keep populations below damaging levels?

The doctors' trust is well placed in White. He's a tireless student of turf management. He attends all the major turf seminars, he reads most of the journals and books when they come out. How many superintendents have a microscope which they use regularly to check plant samples?

White is the second generation of superintendents in his family. Both his father and uncle managed the turf at Lake Placid, NY, all their working lives. White grew up on the course at Lake Placid.

At Bald Peak, White's wife and six children all pitch in with the duties. One of his sons plans to follow in White's footsteps at Bald Peak. What keeps generation after generation of Whites on the golf course? "It's a great way to bring up a family. Life is more relaxed. Ninety percent of the people in the city never have a chance to feed the birds or squirrels. It never gets boring watching the seasons change here. The light shadows on the mountains vary every hour. At night we share what we saw during the day with each other. I think most people would love to spend their day the way we do at Bald Peak." ►