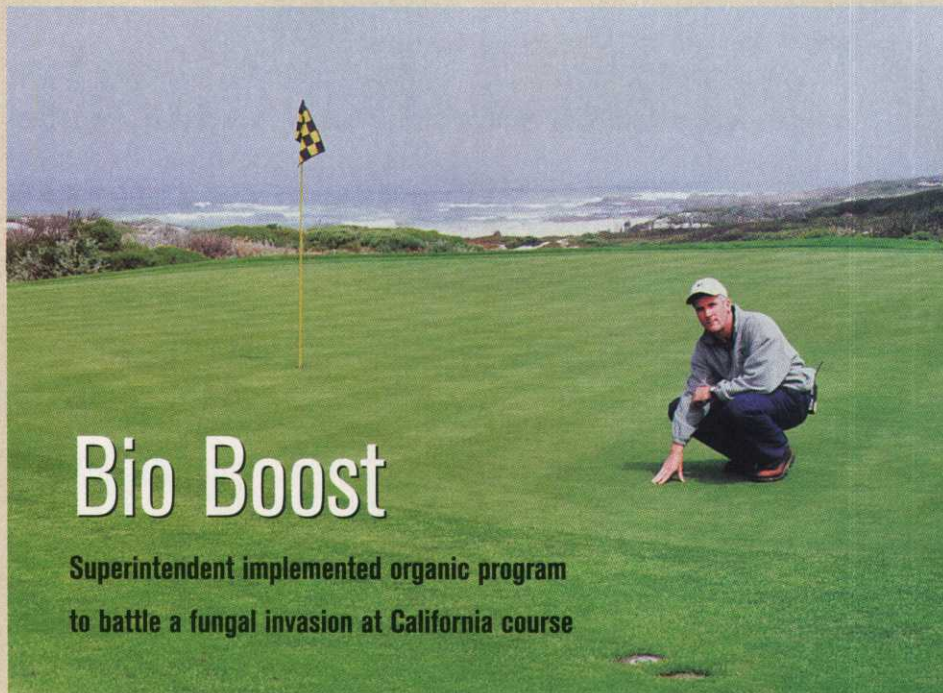


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THE LINKS AT SPANISH BAY, PEBBLE BEACH, CALIF.



Bio Boost

Superintendent implemented organic program to battle a fungal invasion at California course

The Links at Spanish Bay, in Pebble Beach, Calif., provides some of the most beautiful golf holes in the world. Unfortunately, the course's location also leaves it vulnerable to diseases like fusarium, anthracnose, pythium and yellow patch.

Problem

The Links at Spanish Bay — a high-profile course in an environmentally sensitive area — needed to control fungal turfgrass diseases like fusarium nivale and anthracnose safely and effectively.

Solution

Use a biological fungicide and organic fertilizers as part of a "best practices" fertility program.

The problem

Climatic conditions, including moderately cool temperatures combined with coastal moisture and heavy fog in the summer, contribute to the high incidence of disease. The salt air coming off the Pacific Ocean also causes problems.

The maintenance staff at the high-profile course needed a way to control fungal turfgrass diseases safely and effectively because the course is in an environmentally sensitive area. California's strict environmental laws force the Links at Spanish Bay to adhere to mitigation plans established with government agencies. So to work within California statutes, the course needed to find a biological fungicide to complement its chemical applications.

The solution

As they prepared for the

Tom Huesgen has reduced chemical usage on the Links at Spanish Bay, thanks to his best practices program.

1998 season (the club is open year round, but the course's heaviest use is between April and October), then-superintendent Forrester Arthur and assistant superintendent Tom Huesgen (who became superintendent in November 1998 when Arthur went to the Preserve GC) began searching for a biological fungicide to add to their disease-management strategy.

The two were using the following chemical fungicides on a rotational basis: Heritage, Banner Maxx, Rubigan, Daconil 2787, Bayleton 50, Subdue and Fore.

Arthur and Huesgen heard about a liquid biological fungicide called Com-

panion from another area superintendent. It contains *Bacillus subtilis* GB03 microbes, which attach to the turf's root hairs, multiply and crowd out disease-causing pathogens. The microbes also produce enzymes, plant growth regulators and antibiotics that weaken the cell walls of pathogens.

Companion, which was granted an experimental use permit by the EPA and is expected to have full registration in 2001, also contains a food source for the *Bacillus*. After researching the product and speaking with representatives from Growth Products (the company that produces Companion), Arthur and Huesgen tested the product on the course's greens.

The results

When Arthur and Huesgen applied Companion to the course, chemical fungicide applications dropped significantly within three months because the biological worked so well. There were also longer intervals between disease symptoms and breakouts, giving the superintendent more time to treat the disease before a full-scale invasion claimed the turf.

"At times, Companion alone checked *Fusarium nivale* (*Gerlachia nivalis*)," Arthur says. "We never sprayed chemical fungicides on a preventative basis because Companion worked so well. This eliminated excess fungicide use and allowed

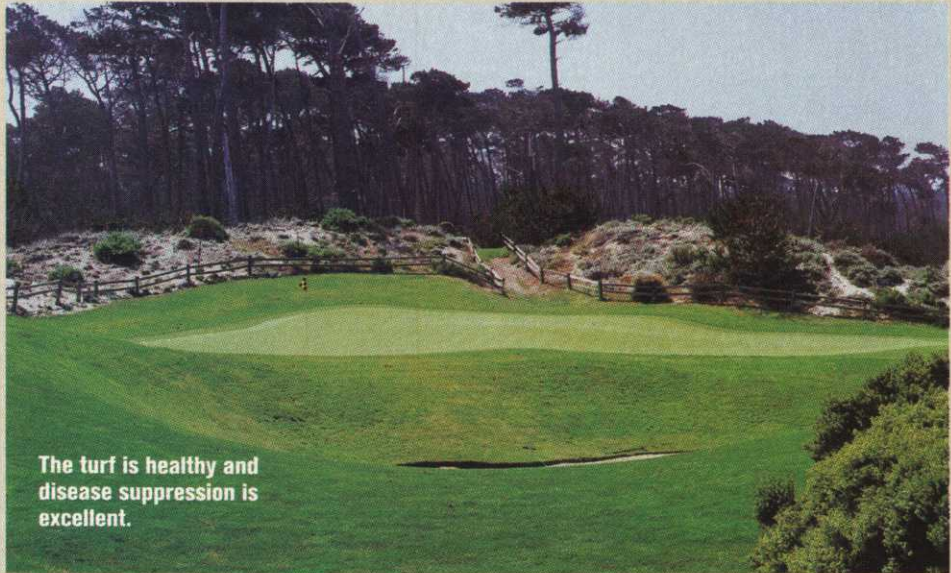
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me to become a better integrated pest management program manager.”

In fact, the Links at Spanish Bay reduced its chemical fungicide use by more than 50 percent for the 1998 season. In 1999, chemical fungicide use on the course declined again by nearly 30 percent from May to October.

“I now use far fewer applications of my chemical fungicide rotation compared to the norm for the region,” Huesgen says. “We have received positive results, great disease suppression and extremely healthy turf.

“We also have root mass and a length of 2 to 3



inches on our Poa annua greens,” he notes. “A good biological, in conjunction with a good fertility program, is an effective tool in

resistance management. This is a combination that allows for less frequent chemical fungicide usage and an increase in microbe

populations, so we are reducing the chance of disease resistance while still taking care of the environment.” ■

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■ RIVIERA CC, PACIFIC PALISADES, CALIF.

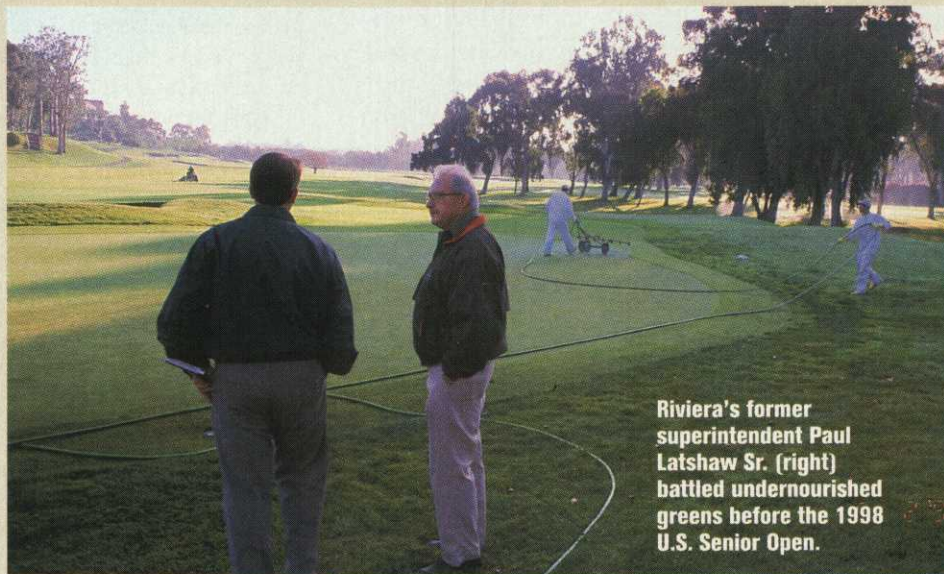
High-Traffic Headaches

A superintendent employed biological products to increase turf strength on greens so they could endure an increase in players

BY FRANK H. ANDORKA JR.,
ASSOCIATE EDITOR

Paul Ramina surveyed the greens at Riviera CC when he became superintendent there in July 1998 and recognized quickly that challenges lay ahead.

George C. Thomas designed the championship course, located in Pacific Palisades, Calif., in 1927, and insisted on including his signature small greens in the project. Over the years, rounds slowly increased as Riviera's stature grew. An aggressive membership drive in the 1980s expanded the number of players at the



Riviera's former superintendent Paul Latshaw Sr. (right) battled undernourished greens before the 1998 U.S. Senior Open.

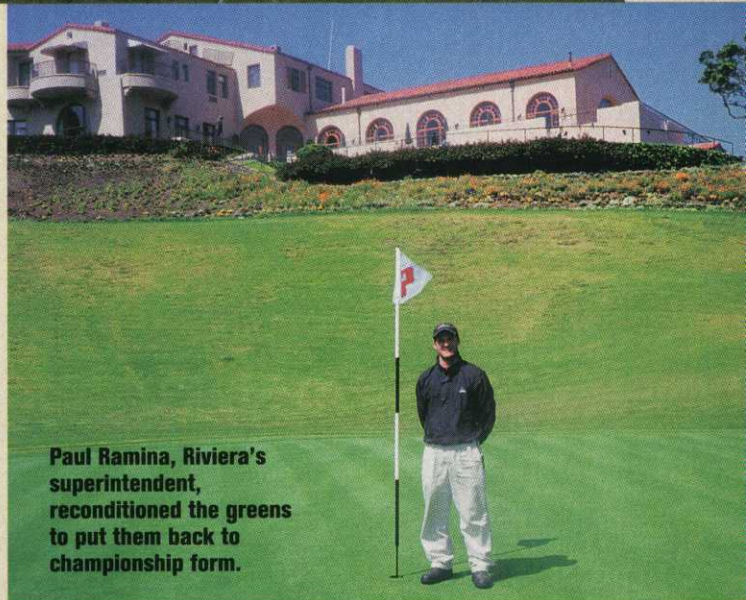
course, and rounds nearly doubled from 40,000 in the late '70s rounds to 70,000 last year. As a result, the greens took a beating.

But Riviera couldn't enlarge the putting surfaces to accommodate more traffic without destroying the course's character. By the time Ramina arrived, the greens needed help.

The problem

Riviera's greens suffered from poor nutrient retention in the soil, resulting in thin, weak turf. Ramina decided to recondition the soil to increase turf strength, and he wanted a one-stop shop where he could purchase products to help him do that. "When you're in competition to host major tournaments the way this course is, you must have greens that meet high expectations," he says.

"Soil balance is vital to



Paul Ramina, Riviera's superintendent, reconditioned the greens to put them back to championship form.

keeping turf healthy, but you have to figure out how to balance it on a micronutrient level," Ramina says. "It's not enough just to throw out a number of products and hope that some of them help. You have to tailor your program to fit the needs of your course."

At the Links at Challedon

in Mount Airy, Md., where Ramina was employed before he came to Riviera, he worked with Floratine, a Collierville, Tenn.-based turf products company. Floratine provides biological products including soil amendments, fertilizers and soil oxygenators. Ramina was im-

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Problem

Nearly 70,000 annual rounds of golf ravaged Riviera CC's small greens, stressing out the turf and creating compaction.

Solution

A combination of products, along with an aggressive aeration schedule, improved the greens dramatically.

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pressed with the company and its products, and he was convinced that Floratine should be involved in the Riviera green restoration.

So he called Bill Byrnes, Floratine's president, and asked him to assess Riviera's greens to see if his products could help. Byrnes says targeted treatment of damaged turf requires more than just an over-the-phone description of the problem.

"Prescription without diagnosis is malpractice, and that applies to turf companies as well as to doctors," Byrnes says. "Despite what we're all striving for, there's no silver bullet. You have to get down on the ground to find out precisely what the grass needs before you start suggesting chemical solutions."

Ramina took soil and plant-tissue samples and had them analyzed by an independent laboratory. The results weren't good.

"A residual thatch layer prevented nutrients from getting through to the soil, and the greens weren't feeding as well as they needed," Byrnes says. "Good grass was hard to grow under those conditions."

The test results showed that the turf lacked sufficient potassium, phosphorus and nitrogen and calcium.

The solution

Byrne's first recommendation was to use a foliar biostimulant called Astron, which provides grass with immediate nutritional needs. It also contains slow-release nutrients that penetrate plant

leaves to feed them over a longer period of time.

"We're looking for long-term solutions, not just quick fixes," Byrnes says. "You want to feed the turf immediately, but you also want to provide for it over time."

Ramina also used Floratine's Knife product, a fortified iron supplement for quick, long-lasting greening of all grasses; and CalpHlex, a calcium supplement for nutrient balancing, salt reduction and pH management.

Ramina saw improvement within 24 hours of the first foliar application and soil conditions improved almost immediately.

Riviera's maintenance crew also began an aggressive aeration program that broke up the thatch layer. Ramina also noticed the turf recovered from injury more quickly.

But the true test of the program was how the pros reacted to the greens.

"The players had nothing but good things to say about the greens at the Nissan Open in February — a complete reversal since the 1995 PGA Championship, when everyone complained about the greens," Ramina says.

Ramina and Byrnes continue to work together to keep the greens in top condition.

"We know that not everyone has the budget that Paul (Ramina) has, so we're willing to work with all superintendents to find a plan that will fit within their budgets," Byrnes says. ■

Tips:

Maintaining Ponds

How often do you see ponds on golf courses that appear to contain more algae than water and emit the unpleasant aroma of a sewage treatment plant? The cause of algae is most likely from an overabundance of nutrients in the water. Elevated nutrient levels often result from chemicals, fertilizers, salts, oils, sediment and other compounds that travel in storm water and runoff and empty into ponds.

While such sickly ponds aren't the picturesque settings outlined in original architectural drawings, they can be rejuvenated with a little investigating, some initial labor and a touch of Mother Nature.

Here's what you can do:

- Reduce the amount of nutrients getting into the storm water and runoff by buffering fertilizer use in areas that may run off into the pond.

- Take some tips from Mother Nature. Did you ever notice how most natural ponds have plants like cattails, iris, reeds and rushes along their shorelines? These plants not only look appealing, but they have functional values.

The storm water and runoff entering a pond has to travel through the plants' barriers before mixing into the pond. The plants slow the water, thus reducing shoreline erosion commonly seen with a grass-edged retention pond. Less erosion results in less sediment and debris clouding up the water.

The plants also reduce nutrient levels. The plants use excess nutrients as a food source, eliminating a good portion of nutrients that would otherwise cause algae blooms.

- Work with nature, not against it. Chemicals, while providing a quick fix to the problem, may not be the long-term answer.

The addition of bacteria and enzymes to a pond to maintain water quality and clarity is an ecologically sound alternative to chemicals. The bacteria and enzymes feed on decomposing matter such as leaves, seeds, fish and animal waste and consume large amounts of nutrients.

- It's important to provide oxygenated water throughout depths of the pond for beneficial bacteria and enzymes to survive. Waterfalls, streams and fountains do provide good oxygenation, but they only effectively aerate the top four feet of a water body. Ponds six feet and deeper require supplemental aeration systems to maintain good water quality.

Aeration disks are a popular method of providing aeration to deeper portions of a pond. A disk is placed on the bottom of a pond, and a small air compressor housed along the shoreline pumps air through weighted poly tubing to the disk. The disk then disperses tiny bubbles of air into the water. The bubbles of air cause the water in the deeper portions to rise to the surface and exchange oxygenated water from the surface to the deeper portions of the pond.

Aeration systems help provide adequate oxygen levels in deeper water so the beneficial bacteria and enzymes can reduce the debris and improve water quality.

Editor's note: This article was written by Dave Kelly, technical manager for Batavia, Ill.-based Aquascape Designs. For more information, call 800-306-6227