

Valhalla Golf Club: Managing Bentgrass In

The temperature hovered around 100 degrees one late July afternoon in Eastwood, KY, a suburb of Louisville. It hadn't rained a drop in a record-setting 32 days.

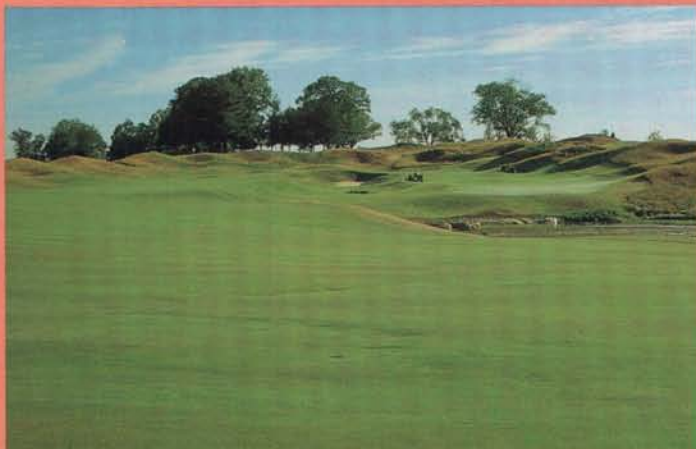
Superintendent Jon Scott and six members of his crew at Valhalla Golf Club were stalking the course with soil probes checking moisture levels anywhere the bentgrass tees, greens and fairways were slightly off color. If the soil core was dry, the spot was hosed down every two hours with a combination of water and wetting agent.

Scott, his assistant Ted Willard and the

experience equal in beauty, strategic quality, and condition to the great courses of the world." They named the course Valhalla (Norse for heaven for heroes) and commissioned Jack Nicklaus to design the course based upon his experience as a professional golfer who has played courses around the world.

"I've always been intrigued by what went into the courses I played," states Nicklaus, "and I've generally tried to look at them from an architect's point of view. When I played a hole that didn't seem right, I'd try to redesign it in my head. A golf course should be

The goal of Dwight Gahm was to create a golfing experience equal in beauty, strategic quality, and condition to the great courses of the world.



Dragging dew off the collar of the 18th green.

crew had been putting in more than 70 hours per week for over a month. A sense of hopelessness was setting in. "As you watch the turf grow weaker," Scott recalls, "a part of yourself also gets weaker, and it becomes very hard to get up and come to work in the morning. Yet, you do, trying to control the things you can — and ignoring those you can't."

Their persistence paid off, however, and in retrospect Scott looks back on his first year at Valhalla with a sense of accomplishment. "We will be feeling the effects of the drought for months to come, but the course escaped most of the severe damage other courses in the Ohio Valley suffered this summer."

The private "golf-only" club had only been open two seasons after years of planning by the Gahm family, owners of Kitchen Compact, a cabinet manufacturer in Louisville. They had spared no expense, in the words of Dwight Gahm, "To create a golfing

enjoyable and offer variety to every golfer, no matter what his level of skill or strength. My aim primarily is to test a golfer's accuracy by providing the richest possible mix of shot values — varied tests of precision."

Scott had been hired by the Gahms last September to make sure their dream would be protected. The Gahms were aware that maintaining bentgrass in the transition zone was a challenge. That is why they asked Ed Etchells at Golf Turf Inc., the agronomic arm of Jack Nicklaus Golf Services, to recommend a superintendent for the course. Allan McCurrach, the regional agronomist for Golf Turf, had worked with Scott at another Nicklaus Signature course, "The Bear" at Grand Traverse Resort in Michigan. Both Valhalla and the Bear were built by the same crew from Wadsworth Golf Course Construction.

Scott understood what Nicklaus expected for courses that carried his name. He also knew that he couldn't let the Gahms down,

The Ohio Valley

regardless of weather.

Although Scott had spent four years managing the "grow-in" at Grand Traverse, he had extensive experience with both cool- and warm-season turfgrasses. Assignments at golf courses in Florida, South Carolina, Virginia and Michigan over 16 years had taught him how heat and humidity could destroy turf.

"This past summer made me feel like I was working in the desert," he remarks. "Temperatures hung in the 90s and the humidity dropped down to 20 percent for weeks. But then, we had three inches of

a great source of knowledge when you have a problem. The answers are out there if you just ask."

Scott quickly discovered that managing turf was more complicated than administering budgets or managing people. Country Club Aventura north of Miami was building a second 18 and needed an assistant superintendent with construction experience. It was a break for Scott. "Bob Ulrey, the director of maintenance, was a great agronomist and patient teacher. He, and Superintendent Freddy Michaels, helped me with turf management while I helped them

management systems in the world, the U.S. Air Force, as golf course superintendent at Andrews Air Force Base outside of Washington, DC. "My first summer there I faced the worst drought the area had seen in years," Scott adds. He came very close to losing the course when water supplies started running out. "We had to stop watering the ryegrass fairways in August. We had just cut off the tees and had only a week's supply of water for the greens when the rains finally came."

After two years of dealing with the Air Force's complex procurement system and



Hosing down dry spots on the bentgrass fairways.



15th green surrounded by native forest and creek.

rain and the humidity jumped up to 90 percent. We still aren't sure what the long-term effects are going to be. I'll never forget this summer."

Scott learned golf course maintenance the hard way, by working his way up the ladder after graduating from Michigan State University with a degree in park administration. "When I graduated in 1972, there just weren't many park jobs open," he recalls. Fortunately, he had done a summer internship with the Dade County, FL, Parks Department. They were building Key Biscayne Golf Club and had an opening for a superintendent.

"I didn't know beans about golf, but by working closely with the architects (R. B. Von Hage and Bruce Devlin), County Superintendent Maurie Ceascoigne, the irrigation contractor and the maintenance crew, I received a crash course. It was then I realized that experienced superintendents, extension turf specialists and suppliers are

supervise the crew. I can't imagine anyone getting a better education in warm-season turfgrasses than they gave me," Scott reflects.

After Aventura was completed, Scott moved up the coast to Montclair Country Club in Dumfries, VA, to help rebuild nine holes that had been wiped out in a hurricane. "It was a whole new ballgame in the transition zone," states Scott. "The greens were bentgrass and the irrigation systems were electric instead of hydraulic. Systemic fungicides for *Pythium* hadn't been developed yet either. It was back to school again." Shortly after he moved to Montclair, it became Club Corporation of America's first eastern venture. "CCA taught me the business of golf course management. Jim Faubion, CCA's top agronomist was a major force in my maturation as a golf course superintendent."

After three years with Club Corporation, Scott moved over to one of the biggest

five years of managing turf in the transition zone, Scott returned to deep South, this time at Sea Pines in Hilton Head, SC. While there, Scott heard about Golf Turf Inc. and got to know Ed Etchells who was overseeing construction and maintenance of Kiawah Island Golf Resort in Charleston, a course designed by Nicklaus. Little did he realize then that Etchells would later play a major role in his career.

All of Scott's experiences have taught him one basic thing, you can build the best golf course in the world, but if you don't make an equal commitment to maintenance after construction, a lot of that money is wasted. "The Gahms are firm believers in the game of golf and fine golf courses," says Scott. "When the drought hit, they gave Ted and me everything we needed to maintain optimum playing conditions."

Those conditions at Valhalla include highly groomed bentgrass fairways, greens and

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tees placed strategically in between a winding tributary of the Ohio River and native forest. Nicklaus incorporated mounded roughs, elevated and undulating greens, island fairways and waterfalls into the 7,114 yard course (from the Pro tees). The front nine traverses a flood plain and the back nine meanders through a rolling, wooded ridge.

The mounds are distributed throughout the stadium-style course to serve the gallery of a future PGA Tour event. "We haven't received a slope rating yet," says Scott, "but were told the course is the toughest in Louisville."

Three different levels of rough frame the contoured fairways of the front nine. A mixture of Kentucky bluegrass, perennial ryegrass and fine fescue, the roughs range from 1¼ inch to 16 inches tall. The effect of the tall rough is to simulate a Scottish look, frame the hole and create a color contrast between the short rough and the bent fairways. "The tall rough is mowed with a Bushhog once in the spring and again in the fall," says Scott. "It definitely helps save

The Gahms and Nicklaus made a decision to plant bentgrass on greens, tees, and fairways, something not previously successful in the Louisville area. Penncross was selected for the greens and tees. At the time there was a severe shortage of certified Penncross so the fairways were sown with Pennway. A policy of not allowing carts on the fairways was established and a caddy program was initiated. Lightweight mowing with triplex greensmowers with grass-catchers rounded out the program for reducing stress on the bent.

When Scott arrived last fall, the course had already gone through one drought and the young bentgrass was struggling. Fortunately a mild fall and winter gave Scott time to get the turf back on track.

He did this largely by launching a grow-in type nutritional program on the greens and tees using regular applications of IBDU supplemented with alternating foliar sprays of Plant Marvel's 28-8-18 and 13-0-44 and Peters' 9-45-15. Scott had used the 9-45-15 with monoammonium phosphate at Grand Traverse to stimulate root growth in greens suffering from black layer. Dr. Paul Reike at Michigan State had told Scott that

"I think that during the drought and severe temperatures the fertilization plan has been a major factor in maintaining quality turf."



Jon Scott and Allan MacCurrach check bent nursery.



manhours, fertilizer and pesticide applications."

The fairways and greens are surrounded by an intermediate rough cut at 1¼ inch inside a 20-yard-wide strip of two-inch-tall rough. The golfer who hits the fairway is rewarded with dense bentgrass mowed at 7/16 inch and a clear shot at the green. Members hitting from the pro tee on the spectacular seventh hole must not only drive over the river, they also have a 300-yard-long rock quarry to contend with.

The back nine winds through woods on a rolling mountain ridge. Instead of tall rough, the fairways are lined with mature shagbark hickory, sycamore, oaks, maples and cedar. Valhalla's finishing hole is a dramatic ending for a challenging round of golf. Golfers tee off from a hillside nearly 50 feet above the fairway which is bordered on one side by a series of mounds and by a stair-step waterfall on the right. The final target is a three-tiered green above the waterfall.

phosphorus is frequently deficient in sand greens and needs to be replaced. A recommendation by Tom Lubin, professor of chemistry at Cypress College in Cypress, CA, to apply .25 pounds of phosphorus per application on a 14-day schedule produced new roots within days at both courses.

Between September 15 and December 15 the Valhalla crew applied almost five pounds of nitrogen, four pounds of phosphorus and four pounds of potassium. "By balancing the N, P and K," says Scott, "the greens gained density without producing a great deal of thatch, and still hardened off for the winter."

The fairways received almost as much with three pounds of nitrogen, two pounds of phosphorus and five pounds of potassium furnished primarily by Par-Ex blends using IBDU and potassium nitrate. By the end of the growing season the turf had recovered almost completely.

"I think that during the drought and the

severe temperatures this summer the fertilization plan has been a major factor in maintaining quality turf," boasts Scott. "The IBDU has been breaking down slowly due to the hardness of the irrigation water and lack of rain, allowing us to keep color without producing excessive growth. Urea would have broken down much faster with the excessive microbiological activity caused by high temperatures. High potassium fertilization has also made the bent more drought and temperature tolerant while giving it good resistance to disease."

The fertilization program is flexible based upon factors such as color, clipping yield, root growth and temperature. Scott skipped one of three fertilizer applications this summer. The greens and tees also receive at least six ounces of iron (Ferromec) per month during the growing season for color and hardness.

The crew spent the winter thinning trees and clearing underbrush to improve air circulation around some of the holes. "There is no doubt in my mind," says Scott, "that the biggest single problem with bentgrass greens is air circulation, and it becomes very critical in the South where heat and humidity



Dry creek bed at end of July.

gang up on poorly ventilated turf."

When the trees leafed out in the spring, another problem became apparent. Some of the mature trees were dying. "You expect to lose some trees from construction injury the first four to five years, but we have lost more than the average new course," said Scott. "Many trees won't make it without natural rainfall and we have had little of that since March." The Valhalla crew has been watering as many trees as possible with a 300 gallon trailer tank and a root injector.

The bentgrass also required special treatment this past summer. "Irrigation systems in this part of the country are designed to supplement rainfall, not replace it," Scott points out. "Some older courses were losing a lot of turf, especially *Poa annua*, because their irrigation systems couldn't put enough water down quickly to cool the turf. Since Valhalla is new and we have an excellent irrigation system, we've been able to guard the bent from too much heat stress.

Bentgrass has really held up well for us, but we don't have the rounds that muni and daily fee courses get."

Valhalla's fairway program includes close attention water needs. The three things Scott watches are soil moisture, root depth and leaf wetness. "I've tried deep, infrequent irrigation in the past with the idea that leaf wetness is kept to a minimum," Scott says. "But here, when we put down more than 1/4-inch every three days the clay couldn't take all the water and the turf would remain wet far too long after irrigation. This left an ideal opening for brown patch and *Pythium*.

"So we switched to light, daily irrigation

with 0.8 inch of water. We eliminated runoff and the turf always dried by mid-morning. If it got hot we syringed the fairways about 1:30 in the afternoon just enough to cool the turf down." Scott can do this quickly because his pumps deliver up to 1,800 gpm and the Rain Bird Maxi III system lets him syringe all 18 fairways in less than one hour. The system also enables all the bentgrass to be irrigated between 3 a.m. and 8 a.m., greatly reducing leaf wetness time, a prime factor in disease prevention.

If the drought caused any particular increase in costs for Valhalla, it was labor. "I didn't want to take any chances." Scott

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states. "Blaming the weather for turf damage after the fact just wasn't acceptable." To have more control Scott wanted enough people to baby the turf through the rough period. That meant more crew members and lots of overtime. The Gahms gave Scott the go-ahead.

"After pushing the bentgrass to get it established, it had built up a layer of thatch," remarked Scott. The thatch, heavy clay and elevation changes in the fairways led to the development of dry spots.

Scott didn't want to overirrigate the fairways to correct the problem since he was trying to keep leaf wetness to a minimum. He chose instead to treat the dry spots by drenching them with water and wetting agent. From 1 p.m. to 6 p.m. a crew hosed down dry spots every two hours until core samples showed the soil was wet. On the end of the hoses he attached Niald drenchers. Water flowing through the drenchers dissolves tablets of wetting agent in a proportioner thus reducing the surface tension of the water and encouraging infiltra-

resistance," Scott points out. Starting in mid-May, the Valhalla crew applied a mixture of Subdue, Aliette and Banol (each at a 1/3 rate) every two to three weeks.

The fungicide program begins in April with helminthosporium control and ends in November with a snow mold treatment. In between Scott tries to stay on a 14-21 day schedule for most diseases. "I usually combine a systemic with a contact for brown patch and helminthosporium such as Daconil and Chipco 26019 or Cleary's 3336," says Scott. "When the humidity jumped after the big rain brown patch became very aggressive and contacts were necessary to control it." For dollar spot and Fusarium blight he uses Rubigan and Bayleton. He is treating algae in thin areas of greens with maneb (Lescofore).

Scott is using two new tools to predict disease outbreaks. The first is the computer-based Pestcaster from Neogen. This system uses weather data and precise information about *Pythium* to compute the probability of an outbreak. He is also using test kits for *Pythium* and brown patch from Agridiagnostics. These kits measure the level of

help with nutsedge if we are going to grow bentgrass and ryegrass in the South."

Scott tried growth regulators with some success to discourage *Poa annua* at Grand Traverse. He plans regular late fall spot treatments with Prograss for *Poa*.

Insecticides are used on a curative basis with the exception of Oftanol for grub control. "We will use two applications of Oftanol this year owing to the unusually high masked chafer population in this area," says Scott. "We were using Diazinon as our main worm eradicator until it was cancelled. It is beyond my comprehension why the homeowner and lawn maintenance companies can continue to use this product and the the golf course superintendent cannot." The cancellation forced Scott to switch to Dursban for curative control.

The drought of 88 was not Scott's first, nor will it be his last. He survived it before in Miami in 1973, Washington, DC, in 1977 and Traverse City in 1986. But now he knows what other Louisville superintendents meant when they said, "Welcome to the Ohio Valley."

"The stress is tremendous, and not just



Walk-behind boom sprayer applies fungicide mix to greens.



Valhalla has three different heights of rough.

tion. "It's such a low rate of wetting agent you can re-treat spots without danger."

Near the end of the drought the reservoir contained only enough water for two more weeks of irrigation and they could no longer pump water out of the stream running through the course. Drawing city water caused a pressure drop in the surrounding area limiting withdrawals to between midnight and 6 a.m. By using the evapotranspiration budgeting feature on the Maxi, Scott had already leaned back the system to 350,000 gallons per day. Even at this rate, had the rains not come when they did, it would have cost more than \$8,000 per month to buy the water.

Valhalla also follows a preventative fungicide program for diseases. "Pat Sanders (turfgrass pathologist at Pennsylvania State University) recommended tank mixing three fungicides instead of switching from one fungicide to another to suppress *Pythium*

fungal pathogens in samples of turf. If the levels are low, a treatment can be skipped. When they jump, the superintendent can treat quickly.

Scott believes the drought actually reduced his insect and early weed problems. The bensulide he applied for crabgrass to the greens, tees and fairways lasted nearly three months, as did the Oftanol he used for grub control. However, August brought out the pests in force and this called for repeat applications.

He split the bensulide (Pre-San) application in the spring for the greens and tees, two treatments with five ounces, and a five ounce repeat in August. The fairways received a ten ounce rate in the spring and another five ounces in August. He treated the roughs with Team.

Nutsedge has him worried as the course ages, Scott admits. "Cool-season grasses are injured by nutsedge controls. We need

because of the drought," he concludes. "The demands of dealing with sophisticated irrigation systems, highly structured pesticide applications requiring almost apothecary accuracy, increasingly complex personnel problems, and the goal of near-perfect turf quality are consuming more and more energy from the superintendent."

Scott believes more responsibility and higher salaries need to be given to assistant superintendents to help lighten the load. He also has a high regard for the agronomic support from Golf Turf Inc. "They work with me, not against me," he adds. "You can't do it alone. You have to use every available resource to stay current. And, of course you have to have the support of the club management and a budget that allows you to keep equipment and chemicals up-to-date. With the right tools and support, we can handle droughts or any other problem in the golf industry. That's our job." 🏌️