



*Powdery Mildew gets its name from the early stage growth of a gray-white powdery fungus on the leaf surface. In cases of high incidence, entire turf areas may appear dull white. Prevent fungus growth with 1-2 oz. every 14-28 days.*

*Rust shows up first as light yellow flecks on the grass leaves. If left untreated, leaf surface will eventually rupture and yellow-orange or reddish-brown pustules develop. Preventive treatment calls for 1-2 oz. every 14-28 days.*



*Spring Dead Spot\* appears as circular, straw-colored patches on Bermudagrass leaves just as they begin to green-up in spring. The rest of the plant is affected with black to brown dry rot. University research indicates preventive control can be obtained with 4 oz. applied in the fall.*

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## ASGCA ELECTS JONES AS NEW PRESIDENT



New ASGCA officers shown during the group's annual meeting in Pinehurst, NC are (l. to r.): secretary Tom Clark, outgoing president Pete Dye, new president Robert Trent Jones, Jr., vice president Dan Maples, and treasurer Arthur Hills.

Robert Trent Jones, Jr., of Palo Alto, CA, was elected president of the American Society of Golf Course Architects (ASGCA) at its 43rd annual meeting held recently in Pinehurst, NC.

His father, Robert Trent Jones, Sr., the only living founding member of the ASGCA and past president of the organization, was in attendance along with his brother, Rees Jones, who is also a golf course architect and past president of the society.

Other elected officers include Dan Maples, Pinehurst, vice president; Tom

Clark, Wheaton, MD, secretary; and Arthur Hills, Toledo, OH, treasurer.

Newly elected members of the ASGCA Board of Governors include Jeff Brauer, Arlington, TX; Keith Evens, Montclair, NJ; Tom Fazio, Jupiter, FL; Bob Graves, Walnut Creek, CA; Denis Griffiths, Norcross, GA; Gary Kern, St. Louis, MO; and Ed Seay, Ponte Vedra Beach, FL.

Jones, who currently is building the first course in the USSR near Moscow, has designed more than 150 courses in 20 different countries.

## LILLY AND DOW PLAN GLOBAL VENTURE

Eli Lilly and Company and the Dow Chemical Company have signed a letter of understanding to form a major global agricultural chemical business by joining their respective plant science operations.

The new company will be called Dow Elanco, Inc., and will be located in the Indianapolis, IN area. The two firms state that "it will be one of the largest research-based agricultural companies in the world and the largest in North America."

The venture will merge sales of such products as Dow's insecticide, Dursban, and its herbicide, Garlon, with Elanco's herbicides, Spike, Treflan, and Surflan, and its fungicide, Rubigan.

The agreement provides for a combining of assets dedicated to agricultural chemicals. Dow, by virtue of its larger agricultural chemical business, will have the majority position. John L. Hagaman, currently the president and general manager for Dow Agricultural Products, will serve as chief executive officer for the new company.

To ensure the success of this new global firm, the agricultural chemical sales, marketing, research, and certain support personnel will be part of the joint venture. Temporary offices will be leased in the Indianapolis area until a permanent office and research complex is built.

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View of Plano Municipal Golf Course from practice green. Only the greens and tees are overseeded during the winter.



## PLANO MUNICIPAL GOLF COURSE APPLIES CONSERVATIVE

## APPROACH TO GROWTH

In sports, we call it a slump. Economics professors call it a recession. Whatever you call it, Texas has had more than its share of tough times in the past few years, due largely to the slow recovery of the U.S. oil industry.

This lingering cloud of despair has taken the growth out of many municipal parks and public golf courses in the state—but not in Plano, a booming bedroom community 15 miles north of Dallas. Once a sleepy farm town, it is constantly attracting new businesses and residents. Recently J.C. Penney moved its headquarters from New York City to Plano, creating thousands of new jobs for its 125,000 residents.

One thing that attracts businesses and homeowners to Plano is its home town atmosphere, largely the result of the city's park system. While other Texas communities have been cutting back, Plano has doubled the size of its park system since 1980 and has added a municipal golf course. Today the city has 1,300 acres of park land in use, with another 1,300 acres held for future development.

"Plano is a prosperous young city which has made quality parks and open space two priorities," explains Kevin Murray, superintendent of park operations. "Very few communities in Texas have set aside so many acres of land per resident for parks and recreation."

Murray manages the golf course and supervises all the park division's administrative work. A counterpart oversees all park-related field activities, including 43 park sites, athletic fields, medians, and public buildings. Murray started with the park division 12 years ago, working summers maintaining the parks and playing fields. He joined the department full-time in

1982 after receiving a degree in park administration from Texas Tech in Lubbock.

Operating from a flexible master plan established during the early 1970s, Murray has found great support from the voters, who have approved \$6.6 million during the past two years for land acquisition and park development. Similar funding helped the city take over an 18-hole, daily fee golf course in 1985 from a private developer and to undertake a major upgrading program. Plano Municipal Golf Course is now one of the department's most popular recreational features.

The course was one of two built 15 years ago by a partnership including professional golfer Don January on land leased from the city of Plano. The other course, the private Los Rios Country Club, is adjacent to Plano Municipal Golf Course. Los Rios is managed today by Club Corporation of America (CCA).

When Plano took over the course by buying all improvements made to the land, they also hired Golf Course Superintendent Butch Hartline. The Hartline family has been involved in the Texas golf industry for two generations. Hartline's father, a golf professional, used to play golf frequently with January. Butch trained as a superintendent under his uncle, Richard Hartline, at Eastern Hills Country Club and The Shores Country Club in Garland. When the job came open at Plano in 1984, January gave young Hartline the superintendent's job.

"I started out in the business when I was 14 years old, raking traps and mowing roughs for my uncle," Hartline recalls. "For four years, I was the night waterman at Eastern Hills. During that time I got real familiar with irrigation systems and how they should work on different grasses, soils

and conditions. When you're the controller, you have to remember conditions at every head to help the maintenance crew out on things like diseases, weeds and drainage."

When Hartline joined the course, it was struggling to get by on a single-row quick-coupler system and faced serious drainage problems. "Rowlett Creek runs through the middle of the course," Hartline explains. "Every spring it would overflow its banks, flooding greens and fairways, leaving behind an inch or two of silt." The silt would seal up the clay soil underneath. The old irrigation system and the silt combined to cause algae and other problems through much of the year.

The goal was to have the course pay its own operating expenses out of greens fees. By making conservative improvements over a number of years, the number of rounds would increase to generate additional operating funds. That is exactly what has happened.

"We don't use a dime of taxpayer's money for operations," Hartline stresses. "All our revenue comes from greens fees." We don't have to compete with others for a share of the greens fees. It really motivates everyone to improve the course without wasting money." Basically, Hartline reports to Murray in the parks department, while the head pro works for the recreation department.

In 1988, the course was totally self-supporting, with more than 63,000 rounds played. "We averaged more than 300 rounds per day the last two years," Hartline boasts. "Now we can seriously look toward buying more equipment, and adding traps and more trees to the course. The changes we've made are paving the way for the future."

*continued on page 24*



Crew member uses squeegee to push silt into new storm drains following a recent flood.

### Plano Municipal Golf Course

*continued from page 23*

Murray added, "We were able to improve the course's appearance in a couple of months through regular watering, fertilizing and mowing." However, there were bigger problems which took more time and money to correct." To solve these problems on the course, \$1.2 million was budgeted in 1987 and an architect was hired to modify the course layout.

The first change was to correct the severe drainage and flooding problem. The creek made a double-S turn in the middle of the course. The banks of the creek sloped gradually up to the fairways and shoulders of the greens. "A few years ago one green was completely under water and four others were partially flooded, on top of big sections of fairways," Hartline recalled. "It took us nearly a week to wash the silt off and to open up the surface again by aerifying,

spiking or verticutting. Some low spots took us weeks to get back into play." Hartline also blamed the bad drainage for contributing to an algae problem on the course.

A channel was constructed to divert excess water around the S curves. This preserved the winding appearance of the creek. A network of reinforced concrete pipe was installed, with 27 large catch basins. The banks of the creek around the holes were raised and low spots were brought up to grade.

Rowlett Creek still overflowed its banks this spring after an entire week of rain, but Hartline and his crew had the holes back in play after a few hours of cleanup. As soon as the creek receded, the crew used a York rake to remove the debris deposited by the water. The crew then used squeegees to push the silt into the storm drains while the irrigation ran. "As soon as we hosed off the cart paths we were back in business," Hartline said.

The cleanup process would not have been as effective without the course's improved irrigation system. It was the second improvement made to the course after the city took over.

The former single-row system consisted of manual quick couplers and old pipe. They were connected to a conventional pump station with a 100-hp main pump and a 25-hp jockey pump. "Whenever the

*continued on page 26*

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## Plano Municipal Golf Course

continued from page 24

pumps were turned on, we held our breath and crossed our fingers," Murray joked. "We averaged two main line blowouts every week, and they were usually in front of a green. I don't know how many times we had to repair a blowout at the end of a work day so the course could be irrigated at night."

The decision was made to review the irrigation system from its source. The course receives its water from a treatment plant located 1/4 mile away. Treated water from the plant is released into a creek, which leads to a reservoir for the city of Dallas. The golf course used to pump from the creek into its own reservoir, but it had no agreement with the Dallas water department.

Dallas wanted to charge Plano \$25,000 a year for the water used by the golf course. But an agreement was finally reached to provide the course all the water it needed at no cost if Plano paid for a pump located at the treatment plant. This pump and a pipeline to the lake on the golf course cost \$40,000. "It was a deal we couldn't pass up," says Murray.

The next stage of the irrigation system to be evaluated was the pump station. The two pumps always ran at full output. Recording devices placed on both sides of a pressure-reducing valve showed tremendous pressure spikes whenever the system was activated. Murray thought his only option was to install another conventional pump system—until an engineer from Best Equipment in Addison, TX, explained how variable frequency drive (VFD) pumping systems work.

The purpose of a VFD system is to regulate pump motor speed to provide only the amount of output pressure required by the irrigation system at any moment. Pressure sensors, a computer, and software work together to automatically change the speed of the pump motors to match the demand

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any head on the course without going to a controller to turn it on, or to attach a hose to any head throughout the course. But we had to get away from manual control."

John Heidman, owner of Irritech Corp. in



Hartline operates one of four Greens Kings the course owns. Two of the greens mowers are permanently fitted with verticut blades.

Brockway recommended replacing the old two-pump system with a VFD three-pump system consisting of two 60-hp pumps and one 15-hp jockey pump. Since both Murray and Hartline were trying to keep operational expenses down, they elected to go with a VFD pump station.

After examining the condition of the mains and laterals of the old irrigation system, Murray and Hartline decided to completely abandon them and search for an economical automatic system. "We liked some of the features of quick couplers," said Hartline, "like being able to activate

Dallas, had heard similar remarks before from municipal golf course superintendents. The irrigation contractor and designer put together a double-row system design with nearly 600 heads for Plano Municipal that increased fairway coverage by 75 percent.

He provided individual head control by specifying Rain Bird 91DR valve-in-head rotors. These heads can be turned on individually with a key in the field. In the same way, one or more heads can be omitted from an automatic program.

"The thing I like about the heads is the coverage they get in windy conditions," says Hartline. "It's windy here all the time, so we try to get the water down fast to reduce evaporation. These heads have been used for a long time in Florida, but we were one of the first courses in Texas to use them."

To control twice as many heads as Hartline had before, Heidman suggested a central controller with 33 satellite controllers. Since economy was a major consideration, a Rain Bird MC-3S central controller and satellites were selected. The central instructs the satellites to start their programs.

Three separate clocks in the central controller allow the satellites to be grouped according to special needs. In the case of Plano Municipal, Hartline keeps greens and tees on one clock and fairways on a second. Each clock can control up to 25 satellites.

Station timing is controlled at the satellites, but the central can instruct the satel-



Murray (left) and Hartline (right) check new pump station.

lites to run a syringe cycle from one to ten minutes long—or to shut down in case of rain. On/off switches permit satellites to operate independently from the central if desired. They can be set for up to 23 start times per day on a 14-day schedule.

"The new system has given us the flexibility to change programs easily for weather, overseeding, spring transition, and things like verticutting and aerifying," says Hartline. "We don't have to work around an irrigation schedule anymore. We make it work around us."

Last year, Hartline was able to complete his wish list for the irrigation system. During the Golf Course Superintendents Association of America convention in Houston, he saw a hose adaptor for the sprinkler heads. Now, by unsnapping the internal sprinkler assembly, he can insert a hose adaptor to any of his heads. A 3/4-inch or one-inch hose can then be attached to the adaptor. By using the key to turn the head on, he can hose down or hand water nearly any portion of the course.

With the basics covered, Hartline has been concentrating on equipment and further improvements to the course. The soil greens were getting so hard that it was difficult to change the cup. In addition to annual bluegrass encroachment in the winter, some of the Tifdwarf greens were having a problem with algae.

"When we took core samples from the

greens at the end of spring, we'd find algae and sometimes a dark layer," he recalls. "We need sulfur to keep our pH below 8 here, so I decided we should try to open up the soil deeper than our aerifier was going. We either had to rebuild our greens or try to loosen them up and amend them by deep aerification."

Since he only had the budget to rebuild one of the greens, Hartline located a contractor with a Verti-Drain aerifier that could pull cores almost a foot deep to aerify seven others. Before aerifying, the crew top-dressed the greens with sand. The cores brought to the surface were mixed into the sand and dragged into the holes.

"You could see the greens fluff up nearly an inch as they were aerified," Hartline remembers. The action of the machine provides an upward kicking or shattering action deep in the soil profile.

"As soon as we were done, I took a cup cutter and it went down all the way without a struggle," he adds. "We started getting deeper roots almost immediately, and the greens drained much better."

Hartline still plans to rebuild more greens as part of a plan to convert all greens to Tifgreen (328). But he is wary of the higher maintenance requirement of sand-based greens. He points out that they require more fertilizer, more frequent spiking, and some hand watering. All greens are top-dressed three or four times a year.

Hartline maintains an aggressive verticutting program for the greens. Starting in late February, the crew begins light verticutting to encourage the Tifdwarf and to discourage the overseeded perennial ryegrass. The greens are verticut lightly twice more before April, when they are heavily verticut.

"We keep verticut reels on two Greenskings all year long," explains Hartline. Two other Greenskings are used for mowing. He likes to cut the bermuda at 3/16 inch except in the fall. When he overseeds he takes it down to 1/4 inch. During the winter, the overseeded ryegrass (Futura 2000) is cut at 7/32 inch.

He has been able to renovate all tees the past three years through a program of heavy sand topdressing. Today they are sand-based, with Tifway-2 cut at 1/2 inch. They are mowed at 1/2 inch year round with a Jacobsen TF-60 triplex mower. The same mower is used for verticutting by converting to verticut reels.

Hartline's first step to improve the fairways was to get a mower that would allow him to contour the Tifway bermuda and to switch fertilizers to produce moderate, uniform growth. In fact, the first piece of equipment the city bought when it took the course over was a Jacobsen F-10 seven-gang mowing tractor for the fairways. The cutting units are set for 1/2 inch in the

*continued on page 28*



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## Plano Municipal Golf Course

continued from page 27

spring and fall and 11/16 inch during the summer.

Once a month during the summer the crew applies 18-0-12 that is 75 percent slow-release. In the winter the fertilizer is switched to 14-2-10. Based upon soil tests, the program is supplemented with a 0-0-20 with magnesium.

During the summer, Hartline has the crew aerify the fairways three to four times with an Aerway unit that not only goes down six inches or more and shatters the soil as its twisted tines come back out. A trailing roller smooths the surface.

Having the new irrigation system takes some of the worry out of deep aerification. The soil needs to be on the dry side to allow the tines to shatter it. Once aerified, however, moisture levels must be restored quickly to help the turf recover. Since water penetrates more deeply into the aerified root zone, the irrigation cycle needs to be adjusted accordingly.

Hartline has chosen not to overseed the fairways. "We have a year-round crew of nine and a summer crew of 13," he says. "If we overseeded the fairways, we'd have to add staff and increase our maintenance budget considerably. Right now we need to spend our budget on rebuilding greens, adding bunkers and landscaping the course."

Hartline is hoping to step up his fairway mowing equipment another notch. "I'd like to switch over to hydraulic cutting units with baskets and a mower that can be converted for verticutting. The new lightweight five-gang units make a lot of sense." Another item on his wish list for fairways is a turf vacuum.

Dormant spraying the fairways with Roundup has helped the course solve many of its annual weed problems. As-needed applications of MSMA and Sencor have reduced Dallisgrass, crabgrass and johnsongrass problems. Surflan has been effective for reducing annual bluegrass in the fall and crabgrass in the spring, but only on the fairways and shoulders of tees and greens. The greens and tees are treated in the winter with Rubigan and Pre-San to control annual bluegrass and crabgrass.

During the spring, Hartline adds the average temperature to the humidity as a gauge for diseases. If the total is 150 or greater, he looks for symptoms of *Pythium* blight. If any is detected, he treats with Koban or Subdue. He is also on the alert for *Helminthosporium* in the spring and fall. Daconil 2787, Chipco 26019 and Fore are alternated for *Helminthosporium*. Rubigan provides control of dollar spot in addition to discouraging annual bluegrass.

The response by Plano residents to Murray's and Hartline's improvements is very

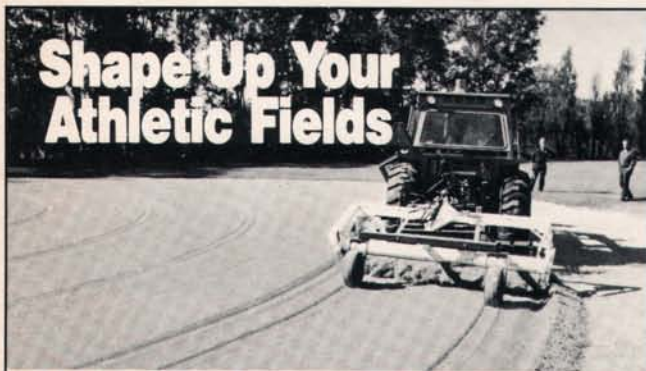
positive based upon the increased amount of play the course is receiving. Plans include adding 12 sand traps to the course this year, the first bunkers it has every had. A number of trees will be added to accent the fairways.

Keeping up with the city's growth is Murray's primary concern. A plan is in the works to build either another nine holes to the present course or a second 18-hole course nearby. He plans to balance expansion with money-saving maintenance measures.

Murray is closely following Texas A&M University research on a native Buffalograss. According to Dr. Milt Engelke at the university, Buffalograss resembles the color of bermudagrass but has such a low mature height that mowing can be reduced significantly. This particular Buffalograss also appears to release a natural biological herbicide which nearly eliminates competition from weeds. The grass could allow the park department to maintain more acreage without a proportionate increase in maintenance costs.

The approach toward growth taken by Plano Parks & Recreation Department is preserving the home town atmosphere that has made the city an attraction to home buyers and businesses. The way things are going, it won't be long before the 1,300 acres of parkland held in reserve will be placed in use. ●

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# CHALKBOARD

## TIPS FROM THE PROS

### GOLF COURSE ARCHITECTS ADAPT TO ENVIRONMENTAL CHALLENGES

By Pete Dye



This marsh was left untouched during design and construction of Spanish Bay Golf Links in Pebble Beach, CA.

We're all familiar with golf's most common playing challenges, but designing a golf course today presents a whole new set of challenges. Environmental concerns have heightened the awareness of every project planned for open areas, and these have drawn the attention of more legislators and regulatory panels than anything else I can recall.

What is demanded from course designers, and rightly so, is compliance in such key areas as wetland preservation, use of freshwater supplies, and pesticide impact of groundwater. Receiving these assurances is a process that can defer a project for years, and hold up the necessary permits until the issue can be studied in its entirety.

To speed up the approval process, members of the American Society of Golf Course Architects (ASGCA) are working hard to identify the problem areas and propose alternatives. The ASGCA Foundation, for instance, recently commissioned a study by Dr. Martin Petrovic of Cornell University on the effects of nitrates on groundwater. That report will be available in the next month.

Although studies have shown that properly maintained golf facilities not only don't destroy the surrounding environment but actually embellish it, we have to gather even more concrete data to support our case. The current evaluation of the Baltimore, MD, public courses, for instance, will be an important building block in that process.

No issue has raised the level of consciousness higher than the subject of wetland and marshland boundaries. Thus, integrating wetlands into the framework of a Master Plan without jeopardizing the natural habitat—or the playability of the course—has become a major challenge to golf course architects.

In the last four years, as wetlands have risen higher and higher on the list of environmental priorities, regulatory agencies have been more demanding in their reviews. This has slowed the procurement of permits as a project moves slowly through a series of public hearings.

Wetlands, which include swamps, marshes, bogs, and fens, are a valuable commodity in their ability to be a source of plant and animal life. They provide breeding and nesting grounds—or rest stops—for migratory waterfowl. The fact is, wetlands

have been reduced to less than 99 million acres from the 215 million that existed in 17th Century America, so it is imperative that we protect a valuable natural resource.

Whether the issue be wetlands, silica dunes or other protected types of habitat, golf course architects have designed golf courses which are becoming models of environmental responsibility. Three of my colleagues proved their mettle by successfully blending outstanding golf courses into environmentally sensitive sites.

Bull Valley in Woodstock, IL, which is slated for completion this summer, is a typically flat area endowed with hills and valleys that feature elevation changes of up to 30 feet. In treating the wetlands, Dick Nugent of Long Grove, IL, and Bruce Borland (who has started his own practice in Palatine, IL) provided a routing plan that made sure wetlands were located away from primary target areas on the course.

The purpose was to prevent golfers, who have the misfortune of missing their intended target, from slowing up play or endangering wildlife species. They created a buffer zone for wetlands by surrounding them with open water. By doing so, they also made sure that tall wetland plants do not obstruct the sight lines of the course.

Nugent and Borland are just two Illinois course architects working with environmental issues. Others include Ken Killian of Palatine, Bill Spear of St. Charles, and Bob Lohmann of Crystal Lake, who designed Settler's Hill in Kane County, one of the growing number of courses to be built on a landfill.

Spanish Bay in Monterey, CA, is an excellent example of a design that incorporated recycled acreage. The oceanside Scottish

links course, which opened in 1987, was designed by Robert Trent Jones, Jr., in cooperation with Tom Watson and Frank Tatum. Spanish Bay is acclaimed for its careful reconstruction of more than 50 acres of old silica sand dunes destroyed in the 1930s by mining.

Metedeconk National Golf Club in Jackson Township, NJ, has the distinction of being the first new private course to be built in New Jersey since 1969. It is the state's first environmentally conscious layout since such restrictions were imposed on land usage. Robert Trent Jones, Sr., and his design associate, Roger Rulewich, made the wetlands an integral part of the course without affecting its playability.

Golf course architects are eager to discuss all the alternatives and solutions to increasing environmental challenges. For this reason, "The Environmental Challenge" was chosen as one of the central topics for discussion at the ASGCA annual meeting last month. Included on the program were professional development seminars on "Golf Course Groundwater Contamination" by Stuart Cohen, a consultant with Biospherics, Inc., and "Turfgrass Management" by Bill Bengeyfield, director of the United States Golf Association Green Section.

It behooves us to learn even more about how a golf course impacts the environment if we are to meet the tremendous demand for new courses in the next decade. Architects must continue to be adept at exercising environmental responsibility, since it is so paramount to the continuing life of a project.

*Editor's Note: Pete Dye is president of the American Society of Golf Course Architects.*

# ROOKIES

## PRODUCT UPDATE

### FAIRWAY AERATOR



The Toro Company has introduced a fairway aerator that combines speed, depth, and durability in one machine for quality aeration of golf course fairways or other large turf areas.

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the unit allow for effective coring depth.

The aerator is towed behind most 35- to 45-hp tractors and is entirely gear driven. In addition, all gears are in sealed oil cases for added durability.

Coring head stands are standard on the fairway aerator, allowing for easy lock-up of the coring head for transport, when servicing, or when changing tines. Spring-loaded roller turf guards help keep turf in place and keep surface disruption to a minimum. Large flotation tires minimize compaction.

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