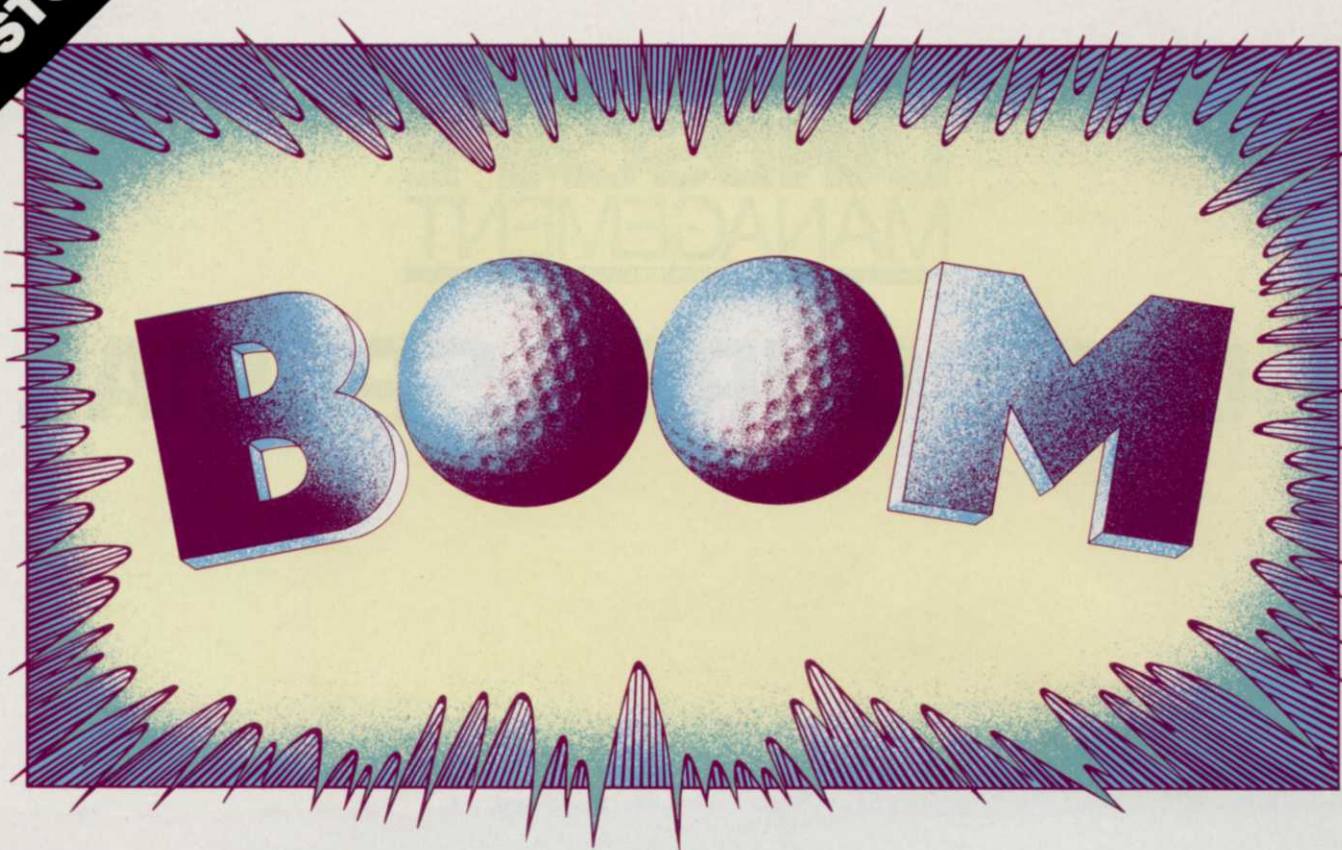


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GOLF COURSE SPECIAL





Golf course construction has reached new heights. Competition increases among golf courses to attract golfers. And that means more pressure on superintendents. It may not be the shot heard 'round the world, but it's being heard in the U.S.

by Jerry Roche, editor

Golf booms. A record number of golf courses are in the planning stages, under construction or recently-completed, according to statistics from the National Golf Foundation. The NGF has determined that 102 new facilities were expected to open last year, 275 were under construction and 224 were being planned. More than 100 of those have opened or will open in Florida, America's favorite retirement state.

Many reasons exist for why golf booms. One of the most obvious is that post-war baby boomers are reaching ages where they are settling down to less strenuous athletic endeavors, and

golf fills the bill. The NGF says that 20.2 million Americans golf today. The organization also theorizes that in 13 years, it could be 30 million to 40 million.

Robert Adams, Ph.D., of the University of New Hampshire, recently predicted "a coming crisis in golf course availability." Adams, speaking at an NGF event, said that the crisis would be the result of:

- the current inadequacy in golf course supply;
- the recent downturn in public course construction; and
- the projected significant increases in demand for golf.

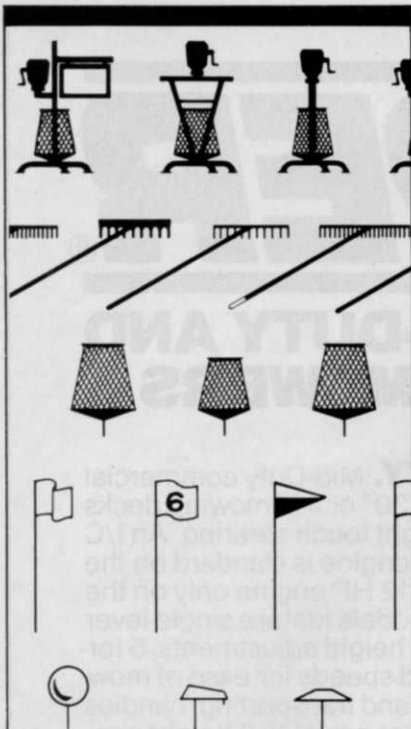
Travel, too, to recreational havens

like North and South Carolina is increasing. The World Tourism Organization, a division of the United Nations based in Madrid, predicts travel will be the world's largest industry by the year 2000.

"There's a sizeable market of people willing to pay top dollar for a non-plastic, uncrowded experience," says Donald Holecek of the Michigan Travel, Tourism and Recreation Resources Center. "What a lot of people need is to get away from the computer terminal and TV, and get back to situations they can control."

And—again—golf certainly fills the bill.

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the value of a golf course as a recreational facility for its residents, an attractive green belt, and as a magnet for tourists, golf course development will continue to boom," says Roger Rulevich, president of the American Society of Golf Course Architects.

Yet the increased number of courses and cries from the public for increasingly higher maintenance have placed a greater pressure on golf course superintendents: pressure to use more sophisticated chemicals, equipment and seed.

"The trend toward more play on golf courses will challenge the most sophisticated superintendent," says Don Parsons of Old Ranch Country Club in Seal Beach, Calif. "Our technology is increasing at a phenomenal rate, (but) there always seem to be new problems that rear their ugly heads."

Golf vs. EPA

One recent problem superintendents face is a more critical look at golf course pesticides by the Environmental Protection Agency.

"A large portion of our most effective chemicals have been taken off the market; some rightfully so, some not," wrote Reed LeFebvre of Plant City (Fla.) Golf & Country Club in *The Florida Green*. "We don't have the answers right now, but we are working hard to find them."

LeFebvre, president of the Florida Golf Course Superintendents Association, pointed out these figures:

- In 1977, it cost \$25 to \$50 per acre to treat a course for nematodes;
- In 1987, it costs up to \$300 an acre to treat a course for nematodes;
- Treatment for mole crickets (a big problem in Florida) this year cost his golf course \$400 to \$800, depending on which rate was used.

And the problem could get worse before it gets better.

Black layer

Anaerobic black layer has taken the golf industry by storm. Every day, reports come in about another course that has developed this black layer that kills greens.

Many hypotheses have been put forth on the cause.

Michigan State suggests that the layer is made up of insoluble precipitates formed by the reaction of hydrogen sulfide with metal ions. The hydrogen sulfide is produced by anaerobic bacteria that live under high moisture conditions.

Iowa State believes that algae and their mucilaginous by-products cause poor water infiltration, thus causing the anaerobic material.

No matter its cause, attempts are being made to find acceptable solutions through university research. Until such solutions are found, superintendents cannot rest easy.

Technology

The introduction of new bentgrasses to the seed market is an indication of increased need for more material to handle more golfers. In the recent past, it has been extremely difficult to obtain bentgrass seed, so the seed industry is answering the superintendent's call.

Spurred by wholesome competition, equipment-makers continually improve their products. Despite more restrictions imposed by the EPA, chemical companies continue to release new, better pesticides. Last year, the newest control product—Triumph insecticide—received the

The increased number of courses and cries from the public for increasingly higher maintenance have placed a greater pressure on golf course superintendents.

EPA's official blessing.

Infrared thermometers that can read the drought stress level of turf have hit the market. Michigan State has developed a set of disease models that are very accurate at predicting the possible introduction of pathogens in turf. Some disease testing kits have been marketed recently.

And university research is creating options to chemical control. In recent years, insect-resistant endophytes have been found in certain grasses, decreasing the need for pesticide use. Biological control for annual bluegrass is being worked on at Michigan State (see Research Update page 92).

"Biotechnology is on the cutting edge of new discoveries. They are developing plants that are disease and insect resistant," says Parsons. "They may be none too soon. The pesticide restrictions and regulations are absolutely scary. The ability to make adjustments will be essential as we continue to experience more restrictive environmental restraints."

The outlook for golf course superintendent-ing, then, is bright, despite some problems. The future looks both exciting and challenging. **LM**

Circle No. 155 on Reader Inquiry Card

THE MAKING OF A GREAT COURSE

Old Marsh Golf Club used to be a cattle ranch located on wetlands. Scheduled to open last month, the Pete Dye creation is now one of Florida's finest.

It is a rare gray morning on the back nine at Old Marsh Golf Club in North Palm Beach. Golfers are greeted by families of wild sandhill cranes and dense hammocks of tall cypress, sabal palms and pines.

And that's exactly what developer Robert B. Whitley had in mind when he asked Pete Dye to transform a cattle and horse ranch into a championship course.

The 450-acre, 18-hole Old Marsh course was designed by Dye to be unique in Florida because natural prairies were incorporated. The predominantly grassy marshlands provide a natural setting of beauty that ideally lends itself to a Dye creation.

An 11,000-square-foot maintenance facility includes offices, storage space for \$350,000 worth of new maintenance equipment, a caddy lounge and a separate, 600-square-foot chemical and soil storage building.

Wooden bulkheads, long a Pete Dye trademark, have been used sparingly. However, boardwalks spanning the marshes and wooden cart bridges have been built throughout the course. Complicated irrigation and drainage systems protect five separate, 18-acre natural Everglades parcels and 30 acres of newly-created marsh from fertilizer and pesticide runoff.

Florida protects wetlands because they are vital for fresh water supply replenishment, flood control and irrigation. Perhaps most importantly, they are feeding grounds for many species of Florida's wading birds. Florida has lost an estimated 12 million acres of wetlands—about 60 percent—between 1850 and 1973, according to state estimates. For this reason, Old Marsh developers spent two years getting all the needed environmental permits before breaking ground. A strict monitoring program has guaranteed protection of the natural wetlands.

Wetting non-wetlands

To irrigate the golf course, Old Marsh chose the Toro Vari-Time II hydraulic system. State regulations allow no irrigation in the wetland areas. There-



Old Marsh superintendent Dennis Weber says the Steiner TRS 20 is "an up-and-coming piece of equipment" for golf courses with steep banks.

fore, almost every pop-up head that Toro manufactures—including 690s, 670s, 650s, 640s and even Super 600s—had to be used. To pump water through the system, a PSI pump station with 1800 gpm capacity was selected.

The cost of irrigation installation, including materials, labor and pump station was approximately \$350,000. Drainage materials and installation cost approximately \$225,000, says superintendent Dennis Weber. Very little fill has been used on this unusual course. The greens are generally on the same level as the surrounding trees and vegetation.

"This is my first Pete Dye-designed golf course, and due to the stringent environmental standards, I really got an education from him on the subject of drainage," says Weber. "Almost 50 percent of our construction costs on this course were underground," he adds.

Excess irrigation and rain water flows into an average of 50 drain tile catch basins on each hole. The runoff water is then moved through a series of custom-fit pipes into deep-water lakes where vegetation cleanses it. Gravity flow eventually takes the water from the lakes into one major outfall canal which is force-pumped three miles into the South Florida Management District canal system, says Weber.

"Everybody here in South Florida has problems with draining their greens. But Old Marsh is using a method preferred by Dye that has



Shown here is hole No. 5 while under construction. That hole has been made even more difficult by a man-made marsh surrounding it.

proven to be effective," he notes.

Beneath the putting surfaces, a 14-inch layer of ortona sand (with five percent Canadian peat tilled into the top six inches) was placed over a four-inch deep layer of pea gravel. Under the pea gravel, a herringbone drainage field draws the water into six-inch diameter feeder pipe that leads into a 24-inch main line. That line delivers the excess water into the strategically-located lakes.

Bermuda is king

The irrigation system was designed so that areas grassed with non-Bermuda species can be shut off while Tifdwarf on the greens will still be irrigated.

The Tifdwarf greens are overseeded in winter with creeping bentgrass. Tifgreen 328 Bermudagrass was planted on tees and approaches.

Centipedegrass, carpetgrass and Bahiagrass were chosen for rough areas because of their natural, contrasting appearance. Centipedegrass was sodded onto the pot bunkers and the faces of all steep banks. The full-time maintenance crew will fertilize the roughs only twice per year and cut it only about six times, to retain the natural look of each grass.

Generally, fertigation is the chosen method of feeding. That, however, is supplemented with dry applications broadcasted with Lesco rotary spreaders on greens, tees and approaches. PTO-driven Lely L4000 and Vicon PS402 tractor spreaders are used on fairways.

New cutters

Weber says that a pair of Toro 450D mowers was purchased to cut the fairways and roughs, while the Toro Groundsmaster 72 is used for roughs around trees. The Toro Turf Pro 84 trim mower is used for an intermediate fairway cut. Three Lesco 300 triplex mowers cut approaches and collars. Ten Jacobsen 22-inch greens-mowers share duty on Old Marsh's tees and greens.



Old Marsh has five preserved natural wetlands bordering the course.

continued on page 48

OLD MARSH from page 46

Weber calls the Steiner TRS 20 with Triplex mower and four-wheel drive, "an up-and-coming piece of equipment" for use by golf courses with steep banks. Four Honda ATC 250s came in handy for supervisors during the course construction stage, but more importantly, are now efficient transportation vehicles when used with trailers for the Jacobsen mowers.

"Because the course is so spread out, it's nearly impossible to just walk over to the next green with your mower, so we divided the course into five sections for mowing purposes," Weber explains.

Six Cushman 461 Trucksters transport other workers to their job sites within the course, while four Massey Ferguson tractors serve to pull implements like sweepers and spreaders.

Since pesticides are required year-round in this part of Florida, Weber purchased a Hahn truckster with sprayer, model 3157. He likes to minimize thatch build-up on his fairways by using an Olathe Model 61 PTO-driven blower, pulled by a Massey Ferguson 240 tractor to blow clippings off fairways. In total, Weber purchased 77 pieces of new equipment to



Pete Dye incorporated natural prairies into Old Marsh's design.

maintain the course at old Marsh.

Top of the line

The market demographics for both home buyers and club members is decidedly upscale. Prices for homes being built at Old Marsh start at \$500,000. Two-hundred-thirteen lots are reserved for single-family homes (90 of which have already been sold). Homesites start at \$125,000. The five participating builders are providing custom homes ranging in size from 2,900 to 4,500 square feet. The homes have natural materials and color schemes that express "old Florida" in

their quality, style and compatibility with the surroundings of native flora.

Membership in the traditional club is limited to 300 members, who each pay an equity fee of \$35,000. A \$3.5 million clubhouse—sitting proudly between the 9th and 18th greens and overlooking a beautiful, preserved marsh, was due to welcome members in late December.

Designed by Atlanta architects Nichols Carter Grant, the 21,000-square-foot, one-story structure features natural wood and tabby stucco construction, with rich earthtone colors finishing the exterior. In addition to featuring a dining room and cocktail lounge, a spacious men's locker room with sauna, steam room and an adjoining men's grill, the Old Marsh clubhouse also houses the golf shop and administrative offices.

Near the clubhouse is a 275 x 200-yard practice area complete with four target greens with bunkers, two chipping and two putting greens. Weber believes it is one of the best practice facilities available.

"Being a part of the construction of this course was a great experience, but it sure was nice to see that first foursome tee off," says Weber. **LM**

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IN TOUCH WITH NATURE

Blacklick Woods Metro Golf Course is visited regularly by wildlife from the surrounding metropark. The superintendent, however, would be a little happier without the added animal traffic.

by Jeff Sobul, assistant editor

Kerry Ortmeyer could probably use some help from the late Marlin Perkins of TV's "Wild Kingdom." His course, 36-hole Blacklick Woods Metro Golf Course near Columbus, Ohio, gets regular visits from the local wildlife. But it's no party.

"We're right next door to the park," he notes. Deer make an almost daily trek across the course. "What-

ever gets in their way, they just go right across it."

By land...

A number of holes get deer tracks on the greens and in the sand traps. (Ortmeyer speculates that the deer like the way the sand feels on their hoofs.) He says that if the deer walk across the course the damage is usually minimal. But if they run, and the course



Despite an ongoing program to plant trees over the past 10 to 15 years, Blacklick Woods Golf Course remains relatively wide open, to the delight of most weekend golfers.

happens to be a bit moist, then there are problems with tracks. The deer also ate a wildflower area he was attempting to establish, as well as some other flower beds.

Ortmeyer says, however, that deer problems are not that serious, merely annoying. Besides, he adds, "we're not allowed to do anything because all park lands are open to wildlife. The course is part of the park. The deer have more right to be there than we do."

Wildlife problems don't stop there. "We are vastly overpopulated with racoons and skunks," Ortmeyer says. When grubs invade the fairways, immediate roughs and green banks in September and October, skunks and racoons follow shortly thereafter, tearing up the ground in search of the tasty little morsels.

Part of the problem, Ortmeyer notes, is that the park is "landlocked," surrounded on all four sides by either interstate highways or housing developments. "(The animals) don't have anywhere else to go," he says. "They've literally torn up whole areas looking for grubs."

Ortmeyer estimates that he and his crew spend three to six hours per day repairing damage done by the little furballs. Sometimes it involves removing and reseeding the damaged area, other times it only involves rolling a piece of sod displaced by a racoon back in place.

This year and last year the problems have been mostly with masked chafer grubs. However, seven or eight years ago, the city of Reynoldsberg, the closest town to the park, suffered a Japanese beetle invasion. These were taken out just in time for the masked chafers to arrive. "If it's not one thing, it's another," Ortmeyer laments.

The grubs like to take up residence on green banks shielded from the wind. "We get mostly west winds so grubs infest the east-facing green banks where they have shelter from the wind," Ortmeyer says. "When the winds are from the east, the grubs are on the west side."

For four years he had been using Oftanol to control the grubs, with some success. Now, however, the Oftanol seems to no longer be effective. Therefore, Ortmeyer has switched to using Sevin and Mocap.

The insecticides got an early test this year. In the spring, grubs started surfacing on the fairway near the creek on the par five 4th hole, and the 'coons and skunks started feasting. Ortmeyer came in with an application of Sevin and Mocap, watered them in well and effectively got rid of the grubs.

...and by air

Geese also cause problems at Blacklick Woods, as they seem to do at many courses. Ortmeyer says they overwinter near the course and in spring they congregate on course ponds.

They eat turf on greens and fairways and then leave their deposits on the same. Luckily (for the golfers), there are only a few ponds on the course so the problem is not a major one. It did become enough of an inconvenience to get the Ohio Department of Natural Resources out to trap and transplant a number of the foul fowl. "We've had a few others come in," notes Ortmeyer, "but they don't seem to be hanging around."

The geese are probably fortunate they aren't

hanging around. The two courses, one championship length and one executive length, handle about 75,000 rounds each year, about 60 percent on the championship course. That's a lot of errant golf balls for the geese to dodge.

Year-round job

The course is open year-round so those rounds are spaced out somewhat over the course of an entire year. Ortmeyer stresses that being open year-round does not put any added pressure on him or the course. "The weather is what puts pressure on me.

"If we're going to have problems, we don't let it get out of hand," he says. "If our tees and greens aren't playable, we won't open."

Ortmeyer terms this past winter as extraordinary. "There was much play during the winter," but, he adds, "we weren't open more than 45 days over a three-month period (December-February)."

"We open when conditions are suitable," adds course general manager Joe Hoover. "We'll close the course even in the summer. It's a day-to-day decision."

Working in traffic

Maintaining a high level of playability around all those golfers is a difficult task for Ortmeyer's six full-time staffers and six or seven additional summer help.

Because of the traffic, Ortmeyer notes, "we can't do everything we want. We have to get in and get out fast." To conserve time and keep disruption of play to a minimum, the staff works on only one nine-hole section at a time. Aerifying and top-dressing are done on a limited basis at best, but he says they have "plenty of chemicals

doing a good job."

His biggest cultural problem has been anthracnose on *Poa annua* in poa/bluegrass fairways. A fungicide program has kept that in control. The greens are bentgrass. "We don't have the irrigation or budget to maintain bent fairways," he notes. "but our budget is enough so that we don't have to cut corners either."

The course is funded by Franklin County though it is actually a sub-division of the state. A board of directors is appointed by a state probate judge to run the course. The course submits its own budget to the county and, according to Ortmeyer, has had sufficient funding in each of the 19 years he has been superintendent.

Keeping in shape

One of the most successful methods the course has had for keeping costs down has been to hire a staff mechanic. "We do a pretty good job of maintaining our old equipment," he says proudly. That equipment includes 20-year-old tractors and a 15-year-old Cushman Truckster.

"Any 18-hole facility should have a mechanic who understands the equipment," he advises. "A mechanic can pay for himself by keeping a machine running."

And with some careful driving, none of those machines will hit any deer, flatten any skunks, run through any goose. . . .

LM

The grubs like to take up residence on green banks shielded from the wind.

BUILDING THE LINKS AT SPANISH BAY

An all fine fescue course is a bold stroke at Pebble Beach. Yet The Links at Spanish Bay is giving it a shot.



Despite the drought tolerance of fine fescue, Spanish Bay is irrigated. The system is checked by assistant superintendent Carl Rygg.

Imagine for a moment that you're about to tee off at a links-type course in Scotland. You toss a blade of fescue grass in the air to test the wind; you're exhilarated by the coastal view, the wind-swept dunes with bunkers formed over the years by sheep seeking shelter from the elements. You remember the history of those who have passed this way before. You tug at your tam, take a practice swing and address the ball...

The bunkers, dunes and absence of trees on the course are similar, and fine fescues covering the course from tee to green are the same. But you're playing The Links at Spanish Bay, Pebble Beach, Calif. What nature needed years to develop in Scotland was very intentionally integrated into this 6,870-yard, par-72 course along the 17 Mile Drive.

The design team of Robert Trent Jones Jr., Tom Watson and Frank D. "Sandy" Tatum transformed the 195 acres into a world-class course with large dunes, rolling fairways clipped short from tee to green, a continuous concrete cartpath, state-of-the-art amenities and equipment. A superb blending of the old and new.

Superintendent Mike Phillips started with the Pebble Beach Co. in 1978. He has been superintendent at Spyglass Hill and Pebble Beach Golf Links where he supervised preparations for the 1982 U.S. Open. After coming to Spanish Bay, Phillips was responsible for supervision and construction of The Links, and now, its overall maintenance. Assistant Carl Rygg had 14 years experience at the Steamboat Springs course in Colorado. Rygg helps supervise the staff of 28.

Plans and permits

Greenscape Ltd. built the course, but years of planning and permits preceded the first scoop. The Links at Spanish Bay falls into the authority of the California Coastal Commission. With committee meetings, review boards and public hearings behind, the Coastal Commission approved the plans and granted a permit for the construction of a golf course on July



The Links at Spanish Bay has 95 acres of fine fescue. It's the only fine-fescue course in the United States.

11, 1985.

This permit was contingent on the reconstruction of 100 acres of silicon sand dunes that had been mined from the 1930s through 1973. All that was left was coastal bedrock, so a conveyor belt system was implemented to transport sand two miles from Sand City. In May, 1986 the conveyor belt began hauling the 530,000 cubic yards of sand required to construct and contour the dunes...some up to 24 feet high.

As part of the land reclamation agreement in the Monterey County Land Use Plan, Pebble Beach Co. is replanting the dunes with native plant species and enhancing two wetland areas. Ryegrass and native plants were hydroseeded onto the dunes in June 1986. The ryegrass is to stabilize the sand until the native plant seedlings could establish.

Some of the flowering plants included in the seeding program are California beach poppies, pink sand verbena, lizard tail and yellow bush lupine. The dunes themselves are planted in dune sedge, a gray-green low growing plant that becomes a buffer between the native plants and the maintained areas of the course. Dune sedge covers the gallery areas. Ice plant, used for dune stabilization at one time, is not native to the area, so the spreading vegetation must be removed by hand...a painfully slow and labor-demanding process.

'Fine' turf

The Links at Spanish Bay is the first all

fine fescue golf course in the United States; 95 acres are seeded with the fine-leaved cool-season grass.

"Fine fescues are commonly found in fairways and tees as part of a mixture," explains Phillips, "but mowing them at $\frac{5}{32}$ of an inch for daily play is an innovative concept. The more the course matures, the more impressed we are."

The course was said to be outstanding for its "soft" opening on Nov. 4, 1987.

The turf seeding, fertilization and maintenance recommendations were prescribed by Rich Hurley, Ph.D., of Lofts Seed.

The tee and fairway blend is $\frac{1}{3}$

Jamestown, $\frac{1}{3}$ Barthala and $\frac{1}{3}$ Koket; all chewings type fescue. Tees and fairways were seeded at a rate of 250 lbs./acre. This amount was felt to be adequate even though 300 lbs. was recommended. Roughs and steep grades were also seeded at 250 lbs./acre with a blend of 40 percent Reliant hard fescue, 30 percent Ensylda creeping red fescue and 30 percent fairway/tee blend.

The greens were all seeded with a 50/50 mix of Jamestown chewings fescue and Exeter colonial bentgrass. This is actually 20 percent fine fescue and 80 percent bent by weight. The base for the greens is a 14 inch sand/peat cap with 10 percent peat. Of the 90 percent sand, 90 percent of that is in the medium grade range.

Fertilizer applied at the first seeding was 16-16-16 with one lb. N/1000 sq.ft. Establishment rates for the first 14 months was 21-7-4 after eight weeks, with four lbs. N/1000 sq.ft. "Fertilization rate now that the course has matured is determined by soil testing," Phillips says. "We then order our fertilizer with minor nutrients mixed according to the resulting analysis."

Tees and fairways are mowed at $\frac{1}{2}$ inch with triplex mowers with catchers. Greens are hand mowed at $\frac{5}{32}$ inch. In addition to golf, the 24,000-sq.ft. clubhouse will accommodate a pro shop, locker rooms, starter area, retail shops, health club and 50-patron restaurant/bar. Across from the clubhouse are eight outdoor tennis courts with pro shop and lockers.

As with the other Pebble Beach Company courses, The Links at Spanish Bay will be open to the public. Carts are required and winds with gusts to could be a factor, but playing this unique course will offer its own rewards. **LM**



A crew member rakes one of Spanish Bay's large sand traps.

A STRONG RECOVERY

Golf course superintendents weathered a disease-filled year in 1987. But the new year holds promise for better health.

by Jeff Sobul, assistant editor

Fungicide manufacturers must have been happy in 1987. The superintendents? Well. . .

It seems turf diseases hit just about everybody this year, some harder than usual.

"It was ideal weather for diseases this year," says Joseph Baidy, superintendent at Acacia Country Club in Lyndhurst, Ohio. "We had so many extremes this year with all the moisture we had and then dryness. The grass really couldn't tolerate it." Baidy notes that take-all patch did the most damage at Acacia.

Pythium blight reared its ugly head at PGA National just in time for the PGA Championship and the national media. Nearly 20 straight days of temperatures above 90 during the day and 70 at night, combined with 90-plus humidity, ravaged the bentgrass/Bermudagrass greens. The pythium was helped along by the presence of an aquatic herbicide in the irrigation water, unbeknownst to superintendent Luke Majorki.

At Quail Hollow in Painesville, Ohio, the presence of diseases was constant this summer. Along with leaf spot, dollar spot and pythium, among other things, superintendent Jim Loke found brown patch on some greens, tees and fairways. "That was a first," he comments. The cause for the diseases was a combination of high temperature and humidity and weakened turf. "In general, everybody had problems with pythium this year," he concludes.

Dan Pierson, superintendent at Cherry Hills Country Club in Englewood, Col., reports that his course was one hit by pythium this year. It should be noted that the Denver area's climate is usually not conducive to turf diseases. The humidity is low and the summer temperatures generally drop down far enough at night to keep diseases at bay. In fact, the course only has a \$6,000 chemical budget.

However, one Friday night it happened. "I was out Saturday morning and was not cognizent of what the humidity had been the night before. One of the tees had pythium running



Though high-priced, lightweight mowing is making bentgrass fairways a reality on many courses, reducing compaction and cutting water use.

through it pretty badly," Pierson says. "A lot of guys around here have never seen pythium."

Pierson says they had enough fungicide in house to spot spray, then bought enough material from a local distributor to treat the greens and tees and put a preventive down. He says the par-three eighth hole was hit particularly bad, but it was mostly *Poa annua* that was killed. "It was kind of a Godsend," he says.

Speaking of poa

Is there control in sight? Possibly.

"The tools are at hand to perpetuate poa or remove it to the extent wanted," says Tom Watschke, Ph.D., Penn State University.

The decision then is whether to keep the poa or eventually convert

greens, fairways or tees, usually to bentgrass. New growth regulators are entering the market which will perform one of those two tasks.

The host of new regulators include Cutlass from Elanco, O.M. Scott's TGR, and Embark, marketed by PBI Gordon. Nor-Am's Prograss herbicide and Elanco's Rubigan fungicide have also been tested as poa reducers. Researchers at Michigan State University may have discovered a biological control for poa (see Research Update in this issue for more information).

To strengthen annual bluegrass, Watschke says Embark will inhibit seedheads but improve the stand of existing turf when at seed. In addition, poa benefits because Kentucky bluegrass shows signs of weakening when treated, Watschke says, and



Pythium won the "Disease of the Year Award" for most appearances by a pathogen on different golf courses in 1987.

thus is more susceptible to disease.

Ohio State's Karl Danneberger, Ph.D., has also seen this reaction from both the annual and Kentucky bluegrasses, but has no hard data. However, when Embark is applied regularly to an area, he seems to notice more annual bluegrass.

Cutlass and TGR also inhibit poa seedheads but selectively reduce poa to aid conversion to desired species, usually bentgrass since these products are used mainly on golf course fairways. (The only side effect is some discoloration of the bent.) From there, Watschke says, cultural practices can help to speed the conversion: strict water management and lower cutting heights. Danneberger suggests using these in conjunction with overseeding of desired species.

Stan Zontek, Mid-Atlantic Region director of the USGA Green Section agrees. "A single chemical or management practice rarely controls *Poa annua* by itself," he says. "The best results are obtained when all the programs are meshed together."

There are some cautions in using Cutlass, TGR, Prograss and others to reduce poa, especially if the percentage of poa in the treated turf isn't exactly known.

"The problem is sometimes you really don't know how much poa you

have," Danneberger says. He notes that annual bluegrass and Kentucky bluegrass can look pretty similar when cut at, say, two inches. The key then is to assess the turf closely when going in to kill the poa. Zontek adds that the chemicals should first be

tested on a limited basis to avoid massive annihilation of poa.

Danneberger says Prograss, a herbicide registered to kill annual bluegrass, has been most successful killing annual bluegrass in Kentucky blue and perennial ryegrass.

Despite these successes—and they are successes—Danneberger says, "it's always going to be there; it's always going to be a problem." When Kentucky bluegrass weakens or dies, it's replaced by annual bluegrass. When annual bluegrass dies, it's replaced by annual bluegrass.

"I'm not ready to write it off," Danneberger concludes. "It's going to be here long after I'm gone."

Muirfield Village Golf Club superintendent Michael McBride concurs. "I don't think you'll ever get rid of poa. People have been trying to get rid of it for 50 years. You can keep it under control, to a certain point, but I don't think you can totally eliminate it and keep it out effectively and economically."

Lightweight

One of the cultural practices that shows hope for propagating bent on fairways, thus helping to reduce poa, is lightweight mowing.

This is one of the newest management practices to be developed, starting about eight years ago at Coldstream Country Club in Cincinnati, Ohio. As with other "inventions," this was discovered somewhat by accident, and then by experiment: using a greensmower on an approach that was compacted by a heavy fairway mower.

Continued on page 68



The lightweight five-gang mower from Lesco could increase lightweight equipment quality and bring prices down to the budget of the public course.

As the turf improved, experimentation spread to a par-three fairway, and then the rest of the course. It has now spread to numerous cool-season courses where bentgrass is the dominant or desired species.

It is not a fad, says Kevin Dushane, superintendent at Bloomfield Hills (Michigan) Country Club, where he has used lightweight mowing for six years. It is a general shift in cultural practices that improves bentgrass noticeably. Those who use it rave about its effects. Lighter-weight machines, such as the Toro 84 triplex, reduce compaction and improve root zone development and drainage.

"I think the biggest thing is compaction," Dushane says. His lightweight mowing has resulted in improved playability and aesthetics. "When the program first started," he says, "the membership was really pleased with it."

"It's amazing," says Acacia's Baidy. "You don't know what you

have in the fairway until you start mowing with a triplex." On one fairway, he says, bent now covers 90 percent of the turf because of lightweight mowing.

"You can cross-cut and do anything you want with the triplex and go different angles and it helps the grass," he says, "and it gets rid of deep gullies."

As with many good things, there is a flip side. Lightweight mowing is expensive. New machinery can run \$30,000 to \$50,000 for sufficient equipment (three triplexes or two five-gangs). Many public courses have little hope of affording the equipment at this time.

Also, because the units are smaller, they take more time and labor. Dushane estimates it takes three triplexes 15 to 18 man-hours to cut 18 holes, plus picking up clippings if so desired. One man on a seven-gang, he says, can do the same job in perhaps six man-hours.

However, Dushane feels that the expense balances out in less water use, sometimes as much as one-third, and healthier grass requiring less fertilizer. Plus, he says, "If you're going to have a better golf course the members will pay for it." And anytime you can make such an improvement on 25 to 30 acres, it can't be all bad.

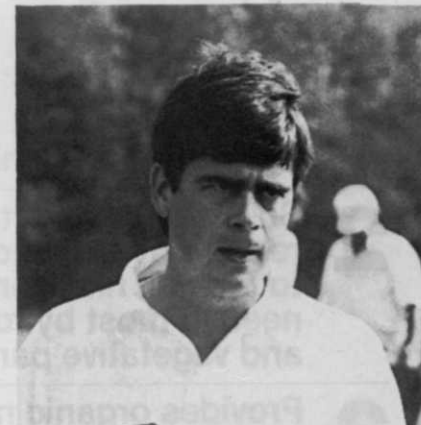
And there is hope for lower-budget courses. Dushane feels the recent introduction of the less-expensive Lesco five-gang lightweight mower will lead to an opening of the market and a reduction in overall equipment prices and an improvement in equipment quality.

In conclusion

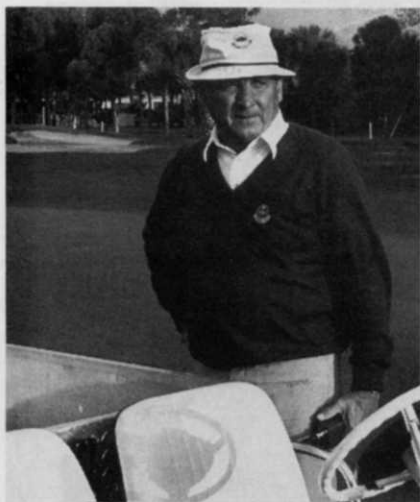
It may sound from this report like 1987 was a down year for golf courses. On the contrary, it has been a year far and above anyone's expectations (see lead



McBride: poa can be controlled but never eliminated economically.



Danneberger: know how much poa is in the turf before treating.



Luke Majorcki and PGA National were hit by massive pythium right before the 1987 PGA Championship.



Despite Denver's arid climate, Dan Pierson and Cherry Hills Country Club had to deal with pythium.

article this section). There seems no reason to believe 1988 won't be at least as good.

The black layer issue has died down some, mainly because speculation on the cause and nature of the disease is giving way to some hard data, most notably by Joe Vargas, Ph.D., at Michigan State University and Clint Hodges, Ph.D., Iowa State University (see October and November, 1987, *LANDSCAPE MANAGEMENT*). There is some hope that a solution to the problem will be found this year or next.

Turf diseases will be around as usual, and there seems no catch-all solution, except maybe to get an earlier start on preventive applications. (Danneberger has been recommending April or May.) But things probably won't be much worse than in 1987.

As long as the economy remains strong, the golf course industry should follow right along. The only problem with that is a shortage of seasonal labor because of lower unemployment, which the industry can probably live with for now.

So, happy disease-hunting, and have a good 1988. **LM**

GOLF PRODUCTS

Fluid overflow systems stops leaks and streaks

Standard Golf's improved Professional Series Ball Washer features a fluid overflow system that prevents leaking and streaking of the case.

The overflow tube keeps the fluid level below the crank shaft opening in order to prevent soap from building up on the outside of the case. It cannot be overfilled.



A drain plug makes it easy to drain and can't be overtightened. The washer can handle up to four balls at a time, comes in eight colors and can be mounted on a number of stands.

Circle No. 190 on Reader Inquiry Card

Limb chipper features 90-degree in-feed angle

Promark Products has introduced the model 400 brush and limb chipper to handle tough brush and limb jobs.

The 400 chipper uses a 90-degree in-feed angle to let both knives cut the full diameter of the limb. The chipper



provides a fixed hydraulic feed rate of 152 F.P.M.

A safety bar on each side and over the top of the hopper can instantly start, stop or change the direction of the feed rollers. The feed table is located at the rear of the chipper to keep

operators away from moving parts. The two 14 1/2-inch knives and 14-inch bed knife will cut limbs as large as 10-12 inches in diameter.

Circle No. 191 on Reader Inquiry Card

LV lighting system brightens floating aerators

A high-intensity, low-voltage lighting system from Barebo, manufacturer of Otterbine floating aerators, is designed for use in conjunction with Otterbine floating aerators.

However, the light's universal mounting bracket allows its use on any type of fountain such as those around pools.

The light meets national electric code requirements and passes testing standards of the electrical test-



ing laboratories, according to the company.

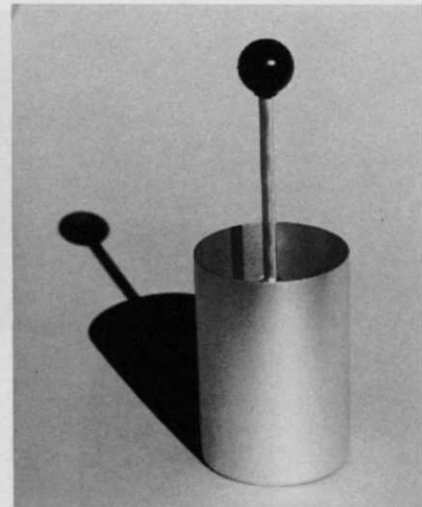
Circle No. 192 on Reader Inquiry Card

Simple device removes water from cup holes

The Model 950 Cup Hole Cleaner from Par Aide removes water from cup holes before turf plugs are replaced. In doing so, it helps eliminate unsightly turf damage resulting from plugs replaced in water-filled putting green holes.

When placed in the hole, water rises through a center tube and flows into the outer holding section of the cup cleaner, which is lifted out and emptied.

Par Aide will display this and other products at booth 2053 of the Golf Show.



Circle No. 193 on Reader Inquiry Card

Custom flags emblazoned with course logo or number

Custom flags from J.D. Ober are made of 100 percent nylon and sewn with sun-resistant Dacron thread and double hems.

Personalized logos or numbers are screened with long-lasting epoxy ink. The flags are mounted on double-sided grommets or plastic tubes.

Circle No. 194 on Reader Inquiry Card

Portable sprayer comes with or without wheels

Falkenberg's Spotlyte portable sprayer is available with pneumatic tires for towing or without wheels for easy mounting on trucks, tractors or ATVs.



The Spotlyte comes with a 20-gallon polyolefin tank with an eight-inch vented lid. The tank also has a 20-year U.V. protection. The sprayer comes with a 30-foot nylon reinforced hose and lightweight gun with an adjustable conejet nozzle.

Available options include addi-

tional hose lengths, 12 volt or 110 volt connections, flat fan nozzle, solution tank agitator and variable pressure control.
Circle No. 195 on Reader Inquiry Card

Cabinet maker branches into golf course market

Robert P. Marasco Cabinets has added golf signs to the company product line. The sandblasted, 1 1/2-inch-thick vertical grain redwood signs come painted in a variety of colors indicating tees, hazards, distances, etc.

In addition, the company shoots distances for accurate installation of yardage markers. It will also install tee markers if requested.

Circle No. 196 on Reader Inquiry Card

Injection-molded products add to company's line

Five new injection-molded golf accessories have been added to Outdoor Products' line of golf accessories. Directional signs are sturdy plastic and 6x12 inches in size.

They are mounted on foot-long stakes. Two-inch lettering is easy to read from a distance.

Flat anti-rebound tee markers are made of high-impact plastic in red, white, blue and yellow. The one piece markers are five inches in diameter but just a quarter inch thick to virtually eliminate rebound from a dubbed shot.

Erasable ink makes for multi-pur-



pose directional signs for nearly any purpose. The company also manufactures proximity markers for closest to pin and longest drive contests, and 15-inch tall (when in ground) hazard stakes.

Circle No. 197 on Reader Inquiry Card

Boom sprayer mounts on back of golf cart

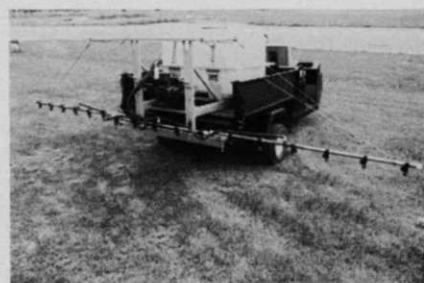
The Westheffer Company's newest golf cart sprayer features a "Cable-

flex" boom, a completely cable-suspended boom for less bounce and more even coverage. "Cable-flex" booms are available in 15- or 21-foot lengths.

The sprayer also features an adjustable boom height rack, three section boom control valve, an easy-to-read pressure gauge and a polyethylene corrosion-resistant tank with 100- or 150-gallon capacities.

In addition, it comes with a centrifugal pumping system and gas engine or PTO drive. The golf cart sprayer is also available with a 30- to 40-foot swath Boomjet. A hand-gun, hose and hose rack assembly for spraying trees and shrubs is optional.

Continued on page 74



Circle No. 198 on Reader Inquiry Card

Before you fertilize . . .

GET THE THATCH OUT!

According to turf experts, **excessive thatch** must be **removed** after a hard winter in order to have healthy turf in the spring. Thatch prevents **nutrients** from reaching down into the root structure. Result: the lawn cannot breathe and grow properly.



BLUEBIRD INTERNATIONAL®



knife reel



flail reel

BlueBird has the **most complete line** of power rakes in the industry, a rake for every lawn and purpose. Spacings for every application. Interchangeable flail reels and knife reels are available for vertical mowing, and together they answer **every need** of lawn service professionals in every part of the country. Call your distributor **today** for a BlueBird catalog. For the name of your distributor call the BlueBird Action Center. BlueBird International Inc., 2778 South Tejon, Englewood, Colorado 80110. Phone (303) 781-4458.

Circle No. 106 on Reader Inquiry Card

Company's complete line fits golf course needs

A complete line of golf course accessories from Rico Manufacturing & Supplies can outfit a golf course from the practice green to the 18th tee.

Fiberglass flag poles come in regulation and tournament sizes in seven- and eight-foot lengths and are highly flexible. Custom striping is available.

Fiberglass sand trap rakes have a flexible four-foot handle and will float if they encounter any angry golfers. Flags come in custom designs with ei-

ther numbers, course logo or both in tube or grommet styles. The silk-screened nylon flags also come in sizes for putting greens.

In addition, the company manufactures ABS plastic cups and other accessories like brooms and squeegies.

Circle No. 199 on Reader Inquiry Card

Hole designs etched in 'natural stone'

Tri Dimensional Designs puts numerous finishes and colors in a dis-

tinguished appearance on new Cylex Granite signs.

The signs won't crack or peel and have the look of real sandblasted granite. Raised or depressed lettering gives distinctive, multi-dimensional signs.

The company also makes tee, cart path and yardage markers in both Cylex granite and Cylex marble.

Circle No. 200 on Reader Inquiry Card

Jacobsen triplex works in tough conditions

Jacobsen's new Tri-King 1471 offers superintendents 3-wheel drive. The new option gives operators better traction and maneuverability. The triplex will perform on slopes or in wet conditions.

The turf manager can mold the mower to fit the property's conditions. The triplex is available with options including 5- or 10-blade reels, grass catchers, grooved or solid front wheels, front micro-height adjusters and traction wheel weights.



Circle No. 201 on Reader Inquiry Card

LANDSCAPE MANAGER OF THE YEAR

co-sponsored by



1987 Landscape Manager of the year
Michael Hugg

Entry forms are now being accepted by the Professional Grounds Management Society and Landscape Management magazine for their second annual "Landscape Manager of the Year" award.

Purpose of the award is to recognize superior job performance among landscape managers, to challenge those involved in the industry to achieve higher standards of excellence, and to bring national recognition to deserving managers.

Any person directly responsible for the professional maintenance of one or more landscapes is eligible to enter. Applicants will be judged according to job performance, honors and awards, procedures and philosophies, and contributions to the green industry. Applicants will be asked, at the time of entry, to submit four 5 x 7 black-and-white glossy photos and 10 color 35mm slides of current work areas with a short narrative on each.

(clip and mail)

Applicant's name

Title

Applicant's company

Official entry form should be sent to:

Name

Title

Company

Address

City/State

Zip Code

Mail to: PGMS, Landscape Manager of the Year, 1201 Galloway Ave., Suite 1E, Cockeysville, MD 21030

Ball washer cleans up with six-pint capacity

The new Lesco Ball Washer has a six-



pint capacity and is constructed of rigid ABS plastic.

The helix-shaped agitator, unlike crank-type agitators, provides agitation for complete cleaning. A minimum of working parts keeps mechanical troubles down.

The red plastic body resists damage, can be painted as desired and can be personalized with decals.

Circle No. 202 on Reader Inquiry Card

Tee markers supported by national sponsorship

Tee markers manufactured by T-Graphics, Inc., are made of sand-blasted California redwood and painted in different colors for tees, fairways, greens and hazards.

The company operates on a national sponsorship program which allows golf courses to obtain the signs for free, and even get revenue sharing for each sign.

The company does this by attracting national sponsors such as American Express, for the signs. The advertising pays for the signs, which are supplied to golf courses at no charge under a five-year program. Courses get \$75 per sign per year in



revenue sharing.

About 400 courses receive the signs, which the courses must install. T-Graphics will be in booth 2653 at the GCSAA Show.

Circle No. 203 on Reader Inquiry Card

Controlled release nitrogen has low burn potential

Coron slow release nitrogen fertilizer from the Coron Corporation is an organic slow release fertilizer with low burn potential.

It is storage stable and has low volatility of nitrogen to the atmosphere to stay where it is put. Coron promotes quick green-up and even turf growth over a longer period of time.

It is compatible with commonly available turf care products and is easily

blended into N-P-K liquid fertilizer.
Circle No. 204 on Reader Inquiry Card

Repair tool cuts sod for all parts of golf course

The Turfgrass Repair Tool from Gordon Witteveen Enterprises cuts a square




piece of sod nearly four inches deep. It is ideal for repairing scars and scrapes, fertilizer burns or chemical spills.

The Repair Tool can be used on tees, greens and fairways. It is available in six- or nine-inch sizes.


Circle No. 201 on Reader Inquiry Card

Broyhill

3030 Series
Broyhill's Deluxe
State-of-the-art
Turf &
Commercial
Sprayer



2000 Series
Broyhill's Best - A
Low Profile,
Versatile Tree &
Turf Maintenance
Unit



— See The Performance & Quality,
Features & Selection Our Customers Are Talking
About At The GCSAA Show, Booth No. 919
February 1988, Houston, Texas —

Special Offer

All Turf Dealers who place a new order for one of Broyhill's 2000, 960 or 3030 Series units will receive **FREE** our Item 2330-CS5 - a 5 gal. cordless cart sprayer with 110 volt A.C. charger, spray gun and 12 ft. of hose.

Offer valid until February 1, 1988 or while supply lasts.

The Broyhill Company
Dakota City, NE 68731-0475

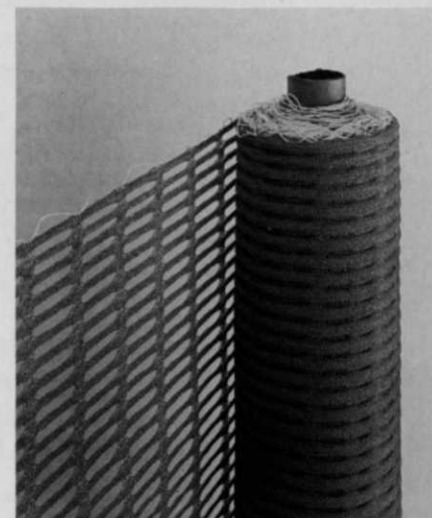
Phone: 402-987-3412
Telex: 438082

Versatile barrier fence available for crowd control

"Fence-it Plus," a barrier fence, is available from J.A. Cissel Mfg. The versatile Fence-it can be used for crowd control, as a snow fence or to protect newly-seeded areas.

It is highly UV-stable, has long life and is lightweight and easy to install.

It is available in rolls of 4x50 feet and 4x100 feet. See J.A. Cissel at booth 2838 at the Golf Show.



Circle No. 206 on Reader Inquiry Card

Circle No. 108 on Reader Inquiry Card