advance. Superintendents in these areas became concerned, got organized, and asked their state turf research specialists to step up breeding and development work on bentgrasses.

Turf researchers at the University of Arizona in Tucson; North Carolina State University in Raleigh; the University of Rhode Island in Kingston; Rutgers University in New Brunswick, NJ; Texas A & M Research Center in Dallas; and Washington State University in Puyallup were among the universities that joined Penn State in breeding and selection of creeping bentgrasses.

Dr. Richard Skogley at the University of Rhode Island had for decades preserved and cared for some of the oldest plots of bentgrass in the country. Dr. Reed Funk at Rutgers managed a highly productive turfgrass breeding program with numerous improved perennial ryegrasses, Kentucky bluegrasses, and turf-type tall fescues to show for it. Dr. Robert Kneebone at the University of Arizona had established bentgrass maintenance trials beginning in the '70s, as had Drs. Roy Goss and Stan Brauen at Washington State University in Puyallup. All these men played a role in the development of new seeded creeping bentgrasses released in the last five years.

The insatiable demand for creeping bentgrasses in the U.S. and in developing foreign golf markets was recognized by a number of seed marketing companies. They began to sponsor bentgrass breeding research at universities in the early '80s. Among them were International Seeds, Inc. of Halsey, OR; Jacklin Seed Company of Post Falls, ID; and Seed Research of Oregon, Inc., in Corvallis, OR. While these companies were basically starting from scratch with bentgrasses, the universities they approached had been working with them for more than a decade.

International selected a dark-green, semi-erect creeping bent that had exhibited strong drought tolerance and resistance to dollar spot in the plots at Rutgers for nine years. To test its tolerance to heat and humidity further, seed was sent to North Carolina State University and the University of Georgia in 1985.

After two years of trials, the bent called Cobra was judged to have dark winter color with comparable density, speed of establishment, and texture. The first commercial quantities of Cobra were sold in 1988. International also markets Emerald, a variety of bentgrass of European origin best adapted to northern climates with low heat and humidity.

Jacklin found the bentgrass it was looking for at Washington State University. After 18 years of evaluation, Brauen selected one particular creeping bentgrass that was darker than others, had a dwarf, upright growth habit, and fine texture. It had exceptional resistance to take-all patch, a common problem in maritime climates which predisposes bents to invasion by Poa. The disease is difficult to cure and is a considerable problem in the Pacific Northwest and a growing problem on the East Coast.

The original parental material for the new bentgrass called Putter came from golf course greens in five different New England states. Because of its dwarf growth habit, Putter covers the ground following seeding slightly slower than Penncross, according to Gayle Jacklin, but still forms a full stand within four weeks of planting. When overseeded into a putting green, she adds, it outcompetes many other bentgrass varieties, yet its vertical growth rate is relatively slow.

Seed Research also seems to have taken a regional approach to bentgrass selection. Providence, a variety developed in cooperation with the University of Rhode Island, has demonstrated resistance to dollar spot and brown patch as well as cold tolerance. Its upright growth habit and fine texture are credited with eliminating grain in greens. Wear tolerance, recuperative ability, and fast establishment are tied to Providence's aggressiveness and strong tillering.

The dark green variety is the result of a breeding program which began in 1965 with the collection of plants from old putting greens throughout the Northeast and those taken from trials at the university dating back to the 1920s. In 1982, the nine most promising selections were placed in a putting green trial. Two years later, the best five were planted in a polycross nursery. After two more selections, the first certified seed was harvested in Oregon in 1988.

Seed Research's second bentgrass, SR 1020, comes from a program at the University of Arizona designed to identify bents best adapted to Southwestern conditions. Kneebone collected material from old golf greens in Arizona, California, and South Carolina to create his plots in 1971. Five years later, the best 26 were planted and maintained under putting green conditions without applications of herbicides, insecticides or fungicides. By 1982, five clones maintained a dense stand with good quality and color. They originated from golf courses in Phoenix and Tucson, plus one from Clemson University. The first certified seed of SR 1020 was harvested in Oregon in 1987.

Some of the characteristics of SR 1020 include dark color, fine texture, upright growth habit, better heat and drought tolerance, and improved resistance to Pythium blight and powdery mildew. It can be maintained successfully in full sun or moderate shade.

These are the major players in the seeded creeping bentgrass market today. Superintendents and golf course architects are very aware that choosing the right variety for their projects is more complicated than it was just five years ago. While all these bents have been used on golf courses, the amount of university data comparing all varieties is limited and short-term.

"Certain varieties of creeping bentgrass are better adapted to specific environmental conditions," explains Virginia Lehman, research associate for Dr. Milt Engelke at the Texas Agricultural Research Center in Dallas. Engelke has been engaged in bentgrass heat- and drought-resistance research at the center since 1985. The work was sponsored by the United States Golf Association and Bentgrass Research, Inc., a group made up of southern golf course superintendents.

"You really need three to five years of data based on a wide range of different conditions to draw any conclusions," adds Lehman. "Our work has been targeted at heat and drought resistance. There are many other conditions that need to be studied."

Texas A & M is one of 18 universities cooperating in the National Turfgrass Evalu-

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Bentgrass plots at Pennsylvania State University in University Park, PA. Photo Copyright © Larry Kassell.

The Perfect Creeping Bentgrass
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ation Program (NTEP) bentgrass trial managed by Kevin Morris at the USDA Research Center in Beltsville, MD. The first test plots were seeded last year at test locations across the U.S. and Canada. NTEP has carried out similar research in the past for Kentucky bluegrasses, perennial ryegrasses, and fescues. The first bentgrass data will be available in April 1991.

The trials have been divided into three categories: native soil greens, modified soil greens, and fairways and tees. Cooperators in each location will be evaluating general turf quality, color, density, disease resistance, putting speed, and drought tolerance at various times of the year.

"We've never before had a coordinated effort to compare bentgrasses," states Morris. "Participation by universities and seed companies is strictly voluntary. Each company pays an entry fee to make the program totally self-supporting." Both creeping and colonial bentgrasses are included in the three studies.

However, superintendents don't necessarily have to wait for the next three years. "I highly recommend that superintendents experiment with various bentgrasses in their nurseries," Lehman says. "In this way, they will discover which variety best fits their specific environment and maintenance program."

Superintendents may also want to try different varieties or blends for greens, tees, and fairways. "Blending different varieties to add more elasticity to turf stands is common with perennial ryegrasses, tall fescues, and Kentucky bluegrasses," reveals Dr. Leah Brillman, turf breeder for Seed Research. "Why shouldn't it work as well for bentgrasses?" Her company has done just that with Dominant, a blend of Providence and SR 1020. Tee-2-Green introduced a blend called Pennway in 1983 containing Penncross and Penneagle. This year it introduced a new blend of certified Penncross, Penneagle and PennLinks called PennTrio. Jacklin suggests Putter can be blended with other varieties.

Regardless of the variety, superintendents should be extremely careful to buy certified seed. Seed growers go through an extensive process monitored by agricultural officials to provide seed which is pure, has a specified percentage of germination, and will perform to the full capabilities of the variety. It is possible to identify a specific variety once it has been planted by a laboratory procedure called electrophoresis. Always buy seed from a reliable supplier in bags with certification tags attached. Keep the tags until you are satisfied that the bentgrass you purchased is the variety stated.

No bentgrass will perform to its potential without careful attention to soils, drainage, and maintenance. There is a considerable difference in managing bentgrasses on soilless greens as opposed to soil greens, remarks Duich. "We have more to learn about how to manage soilless greens," he adds. "The basic problem is eyeballing sand during construction. Green specifications are based on exact principles of soil physics. If you don't match the specifications to the letter you will run into trouble." To preserve the characteristics of sand greens, superintendents must be equally concerned about topdressing materials.

"A major fallacy concerning bentgrasses is that they require high levels of nitrogen and water," Duich remarks. "For years, textbooks, articles, and advertisements have stated bent greens need 1 to 1½ pounds of nitrogen per month of growing season, tees higher yet, and fairways approximately half these rates. At 1/4 to 1/3 these rates, bentgrasses can be among the most hardy of manicured grasses. Those superintendents adhering to modest fertility programs and thatch prevention have discovered that water needs can be reduced by up to 75 percent!"

The single limitation of low fertility programs, Duich points out, is the prevalence of dollar spot diseases. The introduction of systemic fungicides, maintenance practices to control thatch, and judicious irrigation has increased the reliability of disease control. In fact, bentgrass maintenance has reached a point where some superintendents prefer it to Kentucky bluegrass on fairways. Lightweight reel mowers, clipping removal, and improved drainage are helping bentgrass crowd out annual bluegrass to provide a shorter, dense fairway surface.

There is some disagreement, however, on the use of bentgrasses in place of perennial ryegrasses for overseeding dormant bermudagrass greens. The disagreement centers around spring transition. While ryegrasses germinate faster and are less expensive, the fine-leaved bentgrasses can provide a faster putting surface during the important winter season. The aggressiveness and competitiveness of bents helps in winter Poa control, but also allows them to hang on longer into spring when the bermudas come out of dormancy.

In the transition zone, where winterkill of bermuda can be a problem, bentgrasses are an option. Furthermore, architects are specifying bentgrasses for greens as far south as Florida and Texas for their playability. Both these factors raise the question, when and where is summer management of bentgrasses worth the extra effort?

These are a few of the questions currently being evaluated by superintendents working in conjunction with university researchers and seed companies. Before the end of this decade, we will all have a clearer picture of the role and scope of bentgrasses in golf course maintenance. In the meantime, superintendents need to begin testing the growing number of bentgrass varieties in their nurseries to determine which one best fits their environment and maintenance program.

GCSAA ELECTS BOARD OF DIRECTORS

(L to R) Stephen Cadenelli, Gerald Faubel, and William Roberts.

During its recent meeting in Orlando, FL, the Golf Course Superintendents Association of America (GCSAA) elected its board of directors for 1990. Gerald L. Faubel of Saginaw Country Club, Saginaw, MI, was elected president. He succeeds Dennis D. Lyon of Aurora, CO, who as immediate past president will continue to serve as director for a year.

Stephen G. Cadenelli of Metedeconk National Golf Club, Jackson, NJ, was elected vice president. Reelected as director and appointed secretary/treasurer was William R. Roberts of Lochmoor Club, Grosse Pointe Woods, MI. Charles T. Passios of Hyannisport Club, Hyannisport, MA, was appointed to the board to fill the director position vacated by Cadenelli.

Also reelected as directors were Joseph G. Baidy of Acacia Country Club, Lyndhurst, OH, and Randall P. Zidik of Rolling Hills Country Club, McMurray, PA.

Gary T. Grigg of Shadow Glen Golf Course, Overland Park, KS, and Randy Nichols of Cherokee Town & Country Club, Dunwoody, GA, will continue serving their two-year terms as directors. Officers serve one-year terms.

AARON JOINS ARTHUR L. DAVIS

Tommy Aaron, Georgia Golf Hall of Famer and Master's winner, has joined the golf course architectural firm of Arthur L. Davis, Inc., as PGA Tour Consultant. "Tommy will be an active participant in sales and promotion of our golf course projects," says Arthur Davis, ASGCA, president of the firm. "His experience and knowledge of the game will be a valuable part of the services we can offer to our clients."

Aaron graduated from the University of Florida as a marketing major. While attending the University, he was a member of its golf team and was named All American in 1958. He was the Southeastern Conference Golf Champion in 1958 and 1959.

Aaron was selected to the 1959 Walker Cup Team with teammates Jack Nicklaus and Tour Commissioner Deane Beaman, and played on the PGA Tour from 1961 to 1978. He was a member of the 1969 and 1973 Ryder Cup Teams. Aaron won the 1969 Canadian Open, the 1970 Atlanta Classic, the 1973 Masters, and several tournaments in Japan, South America, and France. He was inducted into the Georgia Golf Hall of Fame in 1989.

Aaron is currently playing the Senior Tour, representing Stouffer's Pinelsle Resort, a course designed by Arthur Davis in 1970.

Tommy Aaron (right) with Arthur Davis.

Construction and Maintenance Of Baseball Infields

Baseball diamond prior to renovation. Photos courtesy: Van's Enterprises.

Same diamond following reconstruction and installation of sod.

INFIELD CONSTRUCTION

By Marc Van Landuyt

Development of a quality field requires proper design and construction, selection of high-quality soils, careful turf establishment, and proper field management after installation.

Each site is unique. Careful consideration of specific site characteristics, such as soil type, slope, drainage, and location of existing structures must be integrated into site planning. Field design is usually predetermined in the guidelines set by the affiliated athletic association, but these may only include field dimensions and markings. More importantly, good field design reduces the risks of hazards.

Funding ultimately will determine the attainability of any proposed construction. Each of five factors and their relative costs must be weighed equally during initial planning. They include: initial planning, field construction/materials, erection of site amenities (bleachers, lighting, etc.), and subsequent field maintenance and maintenance equipment. Don't plan for a professional-level field if you won't be able to afford its maintenance. Budget for these costs and then choose a plan that meets your needs *and* budget.

To put your plans into action, choose a contractor with the experience and equipment to successfully complete the project. Experience can be measured through reference calls and on-site inspections of similar projects. Ask how much of the work was done by the contractor himself and how satisfied the organization is with the work.

The fields we will consider here are high school and small college baseball infields. This pertains to site-specific soils, how to deal with them for drainage and turf establishment, and the aspects of infield materials.

Proper construction begins with using the right equipment. There are two types of construction equipment. The first type is what I call key equipment, and includes a level or laser and a grader. The level or laser is necessary to set the angles and check the grade properly. A lightweight grader is the only machine specifically designed for leveling material and adjusting the grade to the desired elevation.

The second type of equipment is called help equipment, because it is extremely helpful during construction. It includes small, lightweight loaders with enough capacity to move the necessary material without damaging the finish grade. A land pulverizer (Gill pulverizer) keeps the material loose while grading and prepares

the seedbed. A lightweight roller is important in providing a firm surface without excessive compaction. A landscape rake is excellent for any handwork, because of its width and low surface weight.

Avoid using sod cutters, dozers, and tractors with attached implements. Sod cutters cut too shallow and only to the existing contour of the ground. Dozers and tractors with implements are not as adjustable as graders for leveling the surface.

Site construction begins with field layout. Working from the architectural plans or from permanent benchmarks, such as backstops or drain openings, the field elevations are established and marked. These marks indicate both the subgrade and the finished elevation so the correct amount of soil can be removed or added.

Emphasize accuracy when removing the existing soil to the designated elevations. The subgrade contour is more important than the finished grade because it provides for even drying, a stable crown, uniform settling, and lower maintenance over the years. To prevent uneven subgrade compaction, fill low areas with loose, consistent soil spread in even layers.

A soil mixture is prepared for the new turf areas before application. Blend the soil and amendments thoroughly and correct for pH. If sand is an amendment you are using, remember that the soil may already contain sand. Check the sand content of the soil before determining the volume of sand you want to add.

Apply the soil to the designated turf areas in even layers up to the indicated elevation. Blend the first few layers with the subsurface material to avoid an interface which may cause drainage or rooting problems. Before the turf area is seeded or sodded, spread the infield mixture in the skinned areas.

The most important consideration on a baseball infield is the skinned area surface material. Infield mixes vary greatly and selection is primarily governed by climate, available resources, and preference of the management . . . *not always the players.* Materials chosen should be safe. Avoid sharp, abrasive materials. If a material is sharp, but aesthetically pleasing, it should be used only on warning tracks or entranceways.

The skinned area *should not be hard.* It should be firm but loose. Apply the material in even, consistent compacted layers four to eight inches deep. A definite line should exist where the soil mixture meets the infield material. You don't want turf to encroach into the skinned area or loose infield material spreading into the turf.

With a properly formed subgrade, suitably amended soils, and an accurate finished grade, the field will have positive drainage. This promotes optimal plant growth and minimizes disrupted play due to rain.

If subsurface drainage was budgeted for during initial planning, a slit-trench method

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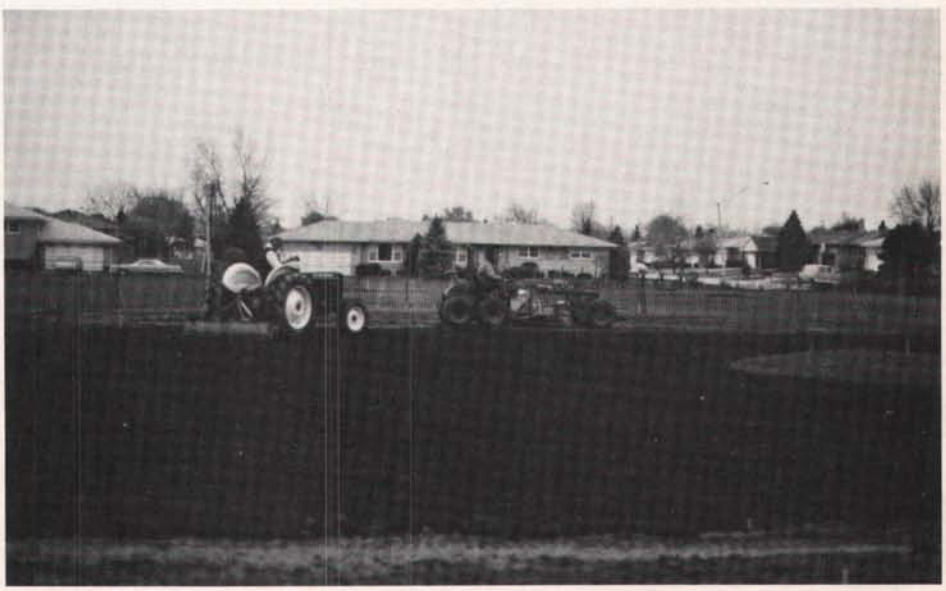
Stakes indicate both the subgrade and the finished elevation.

Clay mixture is placed in basepaths, pitcher's mound and batter's box before the field is sodded.



Soil is applied to designated turf areas in even layers, blending the first layer with the subsoil.

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should be chosen. Open trenches can be installed on both the turf and the skinned areas. For turf areas, cut narrow trenches up to 1/2 inch wide and eight to 12 inches deep on three- to four-foot centers. In skinned areas, the trenches should be two to four inches wide and eight to 12 inches deep on four- to eight-foot centers. These trenches can be filled with either a uniform sand approximately .5 mm or a calcined clay product. If a calcined clay product is used, it can also be incorporated into the top four inches of the skinned infield to improve drainage there as well.

When drainpipe is used it should be the wrapped vertical type. Install it on the perimeter of the infield with varied patterns in the outfield. The open slit trenches will deposit directly into these pipes, which in turn are connected to four- or six-inch round main drains on the edges of the field. Remember, do not install drainpipe under the skinned area of the infield. Most infield materials become compacted and sealed off. The pipe will not receive water to help playability after a normal rainfall.

At this time the soil areas should be prepared for seed or sod. Always consult your local seed distributor for the best seed mixtures for athletic fields in your particular region.

Remember, do not take short cuts to finish a job quickly. The safety of the playing surface is most important. With proper planning, construction, equipment, supplies, and maintenance any facility can look nice and be safe on a small budget. Stress that the layout and construction of a field must coincide with the available maintenance equipment and budget.

Editor's Note: Marc Van Landuyt, is vice president of Van's Enterprises, Ltd., Mundelein, IL.

MANAGING A BERMUDAGRASS INFIELD

Arlington Stadium, home of the Texas Rangers, has earned a reputation as one of the best fields in Major League Baseball. Players, coaches, and other groundskeepers are impressed by the condition of the bermudagrass field under the care of Head Groundskeeper Jim Anglea and his crew.

However, they might be shocked to see the stadium's field between home stands. That's when Anglea scares management with his renovation practices that leave the field looking thin and brown . . . but only for a few days. He's not guessing. After more than six years with the Rangers, he knows how the turf will respond.

In addition to the height of the bermuda, Anglea pays close attention to thatch and runners.

Frequent vertical mowing is part of Anglea's program to keep the 419 hybrid bermuda growing at all times to make it play up to professional standards. "If a field drains properly and you keep the grass growing, you can have good turf," he contends. "But in the big leagues, you need to treat the whole field as if it is a putting green."

Anglea spoon feeds the bermuda depending upon the game schedule, special events, and weather. Some months he may apply two pounds of soluble nitrogen per 1,000 square feet, but he does this in quarter-pound doses. The day before a home stand he will spray with a quarter pound of nitrogen mixed with iron for "a little extra push."

The entire field is mowed daily, weather permitting, and the clippings are removed. With such a rich diet the turf can grow more than 1/4-inch per day. If rain keeps the mowers off the field for more than a day, the cutting height has to be raised. "The grass grows more under canvas," he points out. "If we don't raise the height of cut you can tell the field was scalped by that afternoon." Except for such occasions, the infield is cut between 3/8- and 1/2-inch with Jacobsen walk-behind greens mowers.

In addition to the height of the bermuda, Anglea pays close attention to thatch and runners. Based on the Rangers' schedule, the turf is verticut at least twice a month during the summer. "If the team is away for eight days, we'll put thatching reels on our Toro Greensmasters and thin the grass pretty heavily,"says Anglea. "If they're out for four days, we do it lighter." As if that weren't enough, one of the walk-behind greens mowers is equipped with a groomer to lightly thin the infield almost every other day.

The only disease problems that crop up at times are brown patch and pythium. The Arlington crew treats at the first sign of brown patch with Chipco 26019. "Everyone on the crew knows what to look for and we are usually treating within an hour," says Anglea. The crew is also on the alert for pythium whenever the tarp is removed, especially when it's humid. After spraying curatively with Koban one or more times, he

SKINNED INFIELD RENOVATION

In many cases, skinned infields can be reconditioned by mixing processed clay amendment into the top three inches of soil. The total amount of amendment would be seven to 11 tons per average infield or one 50-pound bag every 60 inches.

The amendment is spread evenly over the infield with a drag. Photos courtesy: Aimcor, manufacturer of Turface.

A disk is used to mix the amendment with the existing soil. After allowing the field to dry for one hour, the infield is dragged again to smooth and level the surface.

turns to Subdue for preventative control.

Twice a year the infield and sidelines are aerified to soften the loam soil and to improve drainage. All cores and debris are raked and removed. Anglea has found aerifying is also a handy way to control lips of dirt in the turf. "We'll make two passes with a greens aerifier in slow gear, pick up the cores, then push the area down with a two-ton roller," he explains. "If you edge the dirt areas frequently and hose the dirt off the grass, you don't need to use a sod cutter to get rid of lips."

Brad Richards, Anglea's assistant, is primarily in charge of dirt work and pregame preparations. "The goal is to have the field ready the day before a home stand starts," says Anglea. "That way you have time to correct any problems."

The dirt is worked and watered every day, whether or not the team is in town. One problem Anglea and Richards have noticed occurs when the team has been out of town for a few days: The dirt gets loose with no one playing on it. So, for the first game of a home stand, the basepaths are watered and rolled to pack them down. Then a nail drag is used to loosen up the top 1/2-inch and blend in calcined clay as needed.

The turf is kept on the dry side for games. Any hot spots are hand-watered.

At the end of the season, Anglea and his four-man, year-round crew overseed the field with perennial ryegrass. The reason is to make sure the field will be in perfect condition for the opener the following April. While 150 pounds of a blend of three differ-

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ent varieties would be enough for a standard infield, the Ranger crew sows almost 500 pounds. "On average, the 419 would be growing by April," admits Anglea. "But in this area we can have late cold spells or even snow in March. Overseeding is an extra touch that makes the field perfect for the players when the season opens."

By June, the ryegrass surrenders to the bermuda and Anglea's maintenance program. "We don't have a problem with transition here," he explains. "For 81 games a year, this field is the best we can make it."

The crew clearly shares his goal. In addition to Richards, Randy Cummings, John Kirchner, and Ron Masters are almost fanatical about details, from the straight lines in the mowing pattern to the matching slopes of the mound on the field and those in the bullpens. Arlington Stadium is smaller than some of its rivals. But visiting teams like to play there because of the field. It's enough to make all teams wish they had bermudagrass in their stadiums.

MANAGING A KENTUCKY BLUEGRASS INFIELD

By Greg Petry

Maintaining bluegrass infields requires a combination of people management and agronomics. Although bluegrass "heals" relatively quickly following stress, it cannot take unrestricted use placed on it by scheduled games, practices, and special events. Whether the field is bluegrass or another species, guidelines or ground rules should be established to control its use. Cooperation and communication must exist between the groundskeeper, those scheduling the field, and those using it.

Kentucky bluegrass is characterized as a "cool season" grass but it must withstand extremely hot summer baseball seasons. It forms a dense, smooth, dark green playing surface ideal for baseball. Kentucky bluegrass spreads vigorously by underground stems called rhizomes to quickly fill in worn areas. The rhizomes also hold the turf together to help it resist damage from tearing.

Irrigation is a must to achieve and maintain a quality bluegrass infield. Often late spring and summer have high temperatures coupled with drought. Many bluegrass infields are installed with great pride and expectations, only to deteriorate because water is not available in sufficient quantities during critical periods of heat and drought. During the summer, when game play is at its peak, rainfall is at its lowest level and temperatures are at a maximum. The result can be fatal for a bluegrass infield.

Therefore, when constructing an infield, don't even consider a pure bluegrass infield unless an adequate supply of water is available at the site. If installing an irrigation system is not feasible, consider a "skinned" infield until irrigation can be installed.

The growth characteristics of bluegrass require that an intensive maintenance be established. Proper irrigation, fertilization, aerification, and overseeding must be programmed on a regular schedule to maintain quality bluegrass throughout the playing season.

The maintenance program begins in April with a soil test to check nutrients and soil pH. Kentucky bluegrass grows best in a pH range of between six and seven. As the crew begins edging and dirt work, a preemergence herbicide (Balan) is applied to the turf.

In May, the infield is aerified twice with hollow 1/2-inch tines followed by treatment with granular sulfur as indicated by the soil test. A slow-release 19-5-9 fertilizer is then broadcast on the field. Emerged weeds are knocked out with Trimec and the disease-control program begins with an application of Chipco 26019 for brown patch. During May the irrigation system is checked, repaired, and adjusted. A twice-a-week mowing schedule is put into effect using reel mowers set at 1¾ inch.

As temperatures rise in June, a wetting agent is applied to assure deep and uniform wetting of the soil and to help reduce the frequency of irrigation. Grubs are treated with Diazinon and Bayleton is applied for dollar spot control.

Today people are very environmentally conscious of pesticide applications. Therefore consideration should be given to applying pesticides only when necessary and only at rates needed to control the problem. Consult a specialist before including pesticides in your program.

In July, humidity coupled with high temperatures requires close attention to irrigation and diseases. A half rate of wetting agent is applied and irrigation is scheduled only to run in the early morning instead of at night. Efforts to control brown patch, dollar spot, and summer patch are stepped up with an application of Bayleton early in the month and Daconil 2787 toward the end of the month. Fungicides are rotated to avoid any problems with resistance.

August is tournament time in our district's parks. The turf is aerified early in the month. Potassium and phosphorus are applied as a 6-25-25 fertilizer before overseeding with a mix of three Kentucky bluegrasses and three perennial ryegrasses. We borrow a topdresser from the parks district's Bonnie Brook Golf Course to apply a sandy loam for Grosche Field, our main stadium. Any low spots are