grasses. No set specifications can be made that will satisfy all conditions. Physical testing of soils and soil amendments is necessary to prescribe the right soil mix. Such a mix will not only promote grass growth, it will also favor the activity of soil organisms.

Topdressing. Material used for topdressing must be of the same texture as that of the root zone. Any variation from this in terms of higher silt and clay content could be disastrous. Sand topdressing is used under some conditions with satisfactory results. However, for best microbial activity select material exactly the same as the root zone.

Biological Activators. Some topdressing materials are formulated with biological activators. These contain organic substances that are conducive to the population growth of soil microbes. Some contain cultures of specific organisms.

A healthy sports turf soil will not require biological activators and little benefit should be expected from their use. A poor sports turf may benefit from treatment with these activators, however. The critical factor is the amount of root growth. Where roots are inactive and organic matter content of the soil is low, activators seldom do much good. When applications of the activator are timed so that roots are still active and organic matter is still readily available for decomposition, benefits are more frequently noted.

Slow-release natural and synthetic organic fertilizers best meet the needs of both turfgrasses and soil organisms.

Pest Control. Insecticides, fungicides and herbicides are essential in the culture of heavily used sports turf. “Organic” methods of turf management will not make turf sufficiently resistant to insects, diseases and weeds to eliminate the use of pesticides. Do not exceed the rates and frequency of application that are recommended by the manufacturer. Also apply pesticides at the proper time to achieve the best results. When this is done, injury to turfgrasses and soil organisms will be minimal.

Fertilization. Slow-release natural and synthetic organic fertilizers best meet the needs of both turfgrasses and soil organisms. These are subject to decomposition by soil microbes. Other fertilizers used in sports turf fertilization should be applied in such ways that they duplicate the slow nutrient release properties of natural and synthetic organics. This may involve use of sulfur-coated urea or IBDU. It may mean frequent applications of urea or methylene ureas or inorganic materials in relatively small amounts. Most importantly, it means reducing nitrogen applications during stress periods and occasionally utilizing iron, either as chelates or other turf formulations, instead of nitrogen to maintain turf color and vigor.

Wetting Agents and Irrigation. Soils that do not wet uniformly cannot support either a healthy, vigorous turf or an active population of soil organisms. Regular use of non-ionic surfactants is advised.

Rainfall is seldom adequate for meeting the water requirements of sports turf. Although some fields are overwatered, many others dry down too far because of inadequate irrigation systems. Irrigation schedules should be programmed to prevent excessive dry down while avoiding constantly wet conditions. Soil probes or moisture meters can be utilized to determine the necessary frequency and depth or irrigation for each field. Take factors such as shade, wind and weather into consideration and check and adjust system operation frequently. You want to apply water in such a way as to encourage deep root penetration.

continued on page 32
The remarkable SUPER SOPPER line of water removing machines, which have been used throughout Europe, Asia and Australia for the past 8 years, are now manufactured and available in the USA. The SUPER SOPPERS have proven their reliability and effectiveness on baseball and cricket fields, golf courses, tennis courts- anywhere water collects. They are much more effective than any other devices in that they don't just push the water around, they actually pick it up and carry it away.

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The successful use of this synthetic membrane liner in a variety of water conservation control applications for more than 20 years has gained Flexalon's Membranes an enviable reputation for stability and durability.

The Living Soil
continued from page 31

Aerification. Sports fields are always prone to compaction regardless of the soil mixture used. This means that regular aerification or coring is necessary. Spiking may also be needed on a frequent basis to loosen up surface compaction. Both grass roots and soil organisms require oxygen and release carbon dioxide. Neither can survive in compacted soil.

Mowing. In sports turf, the grass roots are the source of organic matter that conditions the soil and makes it a living, dynamic system. Close mowing restricts root growth and reduces the amount of soil organic matter that is available for soil microorganisms. Mow sports turf as high as the play of the game will allow. Even a small increase in leaf length will help make a sturdier grass plant by increasing carbohydrate production for use in root growth.

Seeding. As grass plants wear out, they must be replaced by new plants. The frequent seeding of sports fields is necessary in order to introduce new plant life. Use seed that germinates quickly and produces seedlings of high vigor such as the new turf-type perennial ryegrasses. Fine fescues, Kentucky bluegrasses and turf-type tall fescues are also used for sports fields. New improved grasses that have increased disease and insect resistance, enough vigor to heal injuries fast and crowd out seeding weeds are highly recommended.

Conclusion. Scientific information on soil micro- and macro-biology is much more extensive than many people realize. In 1955, Dr. William Albrecht of the University of Missouri published a paper entitled “The Living Soil” in The Golf Course Reporter. Thirty-three years later the subject is still very much alive. A one-day seminar entitled “The Biology of Turfgrass Soils” will be presented at the Golf Course Superintendents Association of America Convention in Houston, TX, in February 1988.

There is no doubt that soil microbiology and biochemistry are complicated subjects. Despite the wealth of information on the subject, only limited discussion of soil microbiology is found in the trade journals or in the programs of leading turf conferences across the country. Clearly it is a difficult subject to learn. Nevertheless, it is very important for sports turf managers to have a grasp of the fundamentals to protect the beneficial organisms and the roots below the surface of our valuable sports turf.

We must keep in mind that sports turfgrasses are living plants subjected to harsh growing conditions most of the time. Without the assistance of the organisms living in the soil, the physical and chemical processes taking place there can change little to accommodate the stress of unfavorable conditions imposed on the grass, particularly its roots. It is the living organisms in the soil that share the good times with the bad with turfgrass roots. They work together to make things better for each other.
GOLFCOURSESINCLUDED
INHALFOFNEWREAL
ESTATEPROJECTS

The appeal and profitability of golf courses has convinced the developers of one out of every two new real estate projects to include courses as a centerpiece, according to the American Society of Golf Course Architects (ASGCA).

The results of the society's study showed three primary reasons for the popularity of golf courses among real estate developers. The first is the attraction of golf courses to golfers and non-golfers when they look for year-round or resort residences. Since 1960, the number of golfers in the U.S. has more than quadrupled while the number of courses has only doubled. Home buyers, conventioners and vacationers like the convenience of being able to play a course associated with a development.

Finally, ASGCA cites the excellent track record of profits for developers and soaring property values for homeowners. Such success is not limited to southern resort areas. One New England resort and conference center that included a golf course had sales more than twice its projected target. Buyers who paid $90,000 for their units were able to sell them two years later for $150,000.

ASGCA says developers can expect to spend at least $1 million to build a regulation 18-hole golf course. The society said developers should plan on spending between $100,000 to $250,000 annually for course maintenance.

The complete report, Planning the Real Estate Development Golf Course," is available from ASGCA, 221 N. LaSalle St., Chicago, IL 60601.

NATIONALCAMPAIGN
DIRECTEDATSLOWPLAY

A national campaign to address the problem of slow play on golf courses has been launched by Golf Digest magazine. More than 13,000 golf facilities in the U.S. will be receiving large posters featuring a turtle with a golf club and 11 symptoms of slow players. "We want to gently remind all golfers that slow play is a disease that can strike golfers of both sexes and all handicaps," says Jerry Tarde, editor of the magazine.

Part of the program allows club members to identify the slow players at their own clubs to their club professionals. In addition to posters, there are buttons and decals to keep the message alive.

"We believe that the players on the PGA and LPGA Tour have contributed to the problem because many amateurs imitate what they see on television," said Tarde.

"At the same time, golfers like Fuzzy Zoeller, Tom Watkins, Lee Trevino and Patty Sheehan prove that you can still play well if you play fast."

LOFTSEXTENDSLINK
WITHFIRMINHOLLAND

Lofts Seed Inc. recently signed an agreement to extend its 15-year-old relationship with Barenbrug of Holland for another decade. The marketing and production pact started in the early '70s with Baron Kentucky bluegrass.

The popular bluegrass developed by Barenbrug is produced and marketed by Lofts in the U.S. More than 70 million pounds of Baron are sold worldwide each year.

"Bert Barenbrug (left) and Jon Loft."

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You Could Win the BEAM CLAY®
BASEBALL DIAMOND
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AWARD

Enter your best baseball field in the Beam Clay Baseball Diamond of the Year Award contest. No entry fee is required. You could receive the beautiful trophy to display at your facility during the upcoming Sports Turf Managers Association Awards Banquet.

The Award is sponsored by Beam Clay, the Sports Turf Managers Association and sportsTURF magazine in recognition of efforts in promoting excellence in the management and appearance of baseball diamonds. Entries will be judged in three categories: professional diamonds, college diamonds, and school, municipal or park diamonds.

Send the information below to enter:
1. Age of baseball diamond (year of installation).
2. Geographic location (city and state).
3. Operating budget for baseball diamond.
4. Irrigation: None, Manual, Automatic
5. Total number of maintenance staff for field.
6. Does baseball field have lighting for night games?
7. Number of events on baseball diamond per year.
8. Types and number of events on diamond other than baseball?
9. How many months during the year is the field used?
10. Why do you think this field is one of the best?
11. Include an assortment of color slides or prints of diamond.

Deadline for entries

Entries must be postmarked no later than November 30, 1987. Mail your entry to sportsTURF magazine, P.O. Box 156, Encino, CA 91426. Selection of winners will be made by a committee of the Sports Turf Managers' Association.

Mail entries to: Beam Clay Award

sportsTURF magazine
P.O. Box 156
Encino, CA 91426

sportsTURF

September, 1987 33
In addition to the trade show, Pro Show '87 will also serve as an educational learning experience. A comprehensive seminar program featuring speakers with an international perspective on industry topics will offer information on a variety of subjects, ranging from equipment maintenance and irrigation design to the business end of the landscape industry.

Many of the industry's major equipment and irrigation manufacturers, as well as manufacturers of landscape supplies, have already committed for exhibit space. For more information contact Mary Jane Reynolds, Vistor Information, Pro Show '87, 101 N. Seventh St., Louisville, KY 40202 or call (502) 582-1672 (In the U.S.A.-toll free 1-800-654-0349.)

NEW YORK CONFERENCE EMPHASIZES SPORTS TURF

The New York State Turf and Grounds Show to be held November 3-6, in Rochester, NY, will have more sessions on golf and athletic turf management than any other topic. There will be two sessions each on golf course and athletic field management, in addition to one session on lawn care, one on weed control and one on pest management.

George Toma, turf consultant to the National Football League, will have more than two hours to discuss sports turf-related problems and solutions. John Liburdi, grounds managers for the New York Yankees farm club in Albany, NY, and winner of the 1987 Baseball Diamond of the Year Award, will discuss his turf program at Heritage Park. Dr. Robert Sheehan of the University of Nebraska will focus on maintaining wear-tolerant turf while Jim Kelley of Partac Peat Corp will talk about infield safety. Cornell University's Dr. Martin Petrovic completes the second sports turf session with a discussion on wetting agents.

Pesticide leaching and groundwater will be the chief concerns addressed during the first golf session. The second session will concentrate on water restrictions and reducing turf water needs. Drainage and aquatic weed control will also be discussed.

Tree care and irrigation system maintenance will be the topics of two preconference seminars this year to provide sports turf managers with valuable landscape maintenance tips. Many national companies and regional distributors will participate in a two-day trade show during the conference. For more information contact Beth Seme, New York State Turfgrass Association, P.O. Box 612, Latham, NY 12110, (518) 783-1229.

RANSOMES PURCHASES BRITISH REEL COMPANY

Ransomes Group in England has purchased Mowing Machine Maintenance (MMM), a British manufacturer of reel cylinders, bed knives and grinding machines. Ransomes Group Chief Executive Robert Dodsworth said the acquisition will allow the company greater potential for both replacement parts and original equipment parts in its growing export market.

The company will operate under the MMM name with minimum interference from Ransomes. Founder Ralph Winstanley will serve as a consultant to MMM for the next two years.

MMM's U.S. dealer, Mowing Machine Grinders and Reels, Inc., of Andalusia, AL, will also operate independently, said Don Cotton, vice president. "Ransomes support will help us expand our supply to the U.S. market greatly," said Cotton. "We will continue to supply reels and bed knives to a number of U.S. manufacturers in addition to a complete line of replacement reels and bed knives for other company's mowers. We also expect to increase our line of grinders and sharpeners."

MMM reels and bed knives are utilized in Bunton, Brouwer, John Deere, Ransomes, Roseman and Steinier mowers. The company also has replacement reels for Toro and Jacobsen reel mowers.

"The two companies will operate independently with one exception," said Mark Foree, marketing manager for Ransomes Inc., in Johnson Creek, WI. Foree said Mowing Machine Grinders and Reels products will probably be sold by Ransomes distributors.
A little maintenance goes a long way with Nassau Kentucky Bluegrass.

Why is Nassau a low maintenance bluegrass? Because it requires less fertilizer to maintain a dark green color, has superior drought tolerance, produces less thatch compared to other varieties while having excellent resistance to Fusarium blight, leaf spot, red thread, pink snow mold, stem rust, and stripe smut. This resistance decreases the need for costly fungicide applications.

Nassau is a hybrid variety (P-59 X Baron) developed by Dr. C Reed Funk of Rutgers University.

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Hinspergers Poly Industries Ltd.'s EVERGREEN is designed with the superintendents and turf managers convenience in mind. The covers are lightweight and strong, for easy handling. The one-piece construction and simple anchoring peg system allow installation or removal in less than half an hour per cover. These simple steps are all that's needed to provide trouble-free protection and enhanced germination throughout the year.

PROVIDES FROST AND COLD WEATHER PROTECTION to the recreation and horticultural markets throughout North America and Europe. Prevents desiccation from strong winds and keeps soil temperatures several degrees warmer than the surrounding areas. EVERGREEN is 85% transparent allowing grass to receive the proper amount of sunlight to survive winter and get a head start on growth in early spring. Healthy root development is already underway very early in spring.

ENHANCED GERMINATION. EVERGREEN covers create a greenhouse effect stimulating more rapid growth than uncovered grasses. Acting as a soil blanket, EVERGREEN covers retain necessary heat for plant growth while the patented weave construction allows the cover to "breathe", minimizing the risk associated with excessively high temperatures. Minimizes water requirements by retaining soil moisture near newly planted sprigs and seed at the soil surface.

Features:
- Permits air and water circulation.
- Cover will not absorb water.
- Resists rot and mildew.
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- One-piece construction eliminates overlap marks and discoloration.
- Six (6) standard sizes: 12' x 50', 24' x 50', 48' x 60', 60' x 90', 72' x 90' and 84' x 110'.
- Custom sizes available upon request.

Unique one-piece construction is easy to install.

1) EVERGREEN is removed from its handy storage bag.
2) The cover is unrolled onto the green or tee.
3) The cover is unfolded onto green or tee.
4) EVERGREEN is secured with anchoring pegs supplied with...
After aerating, reseeding and topdressing various areas on the golf course this past fall, we installed our Evergreen covers. The results were excellent! Good growth continued even during cold, dormant growing conditions. These areas went from 60% coverage to nearly 100% in early spring. Healthy root development was well underway. The Evergreen covering system extended our growing season at least one month in the fall and spring while providing winter protection.

"Over the past few years we have tested a variety of materials designed to protect our greens throughout the winter. In late fall we installed 18 Evergreen one-piece covers. Installation and removal was easy and took less than one day. Our covers can now be re-used for years to come. This unique Evergreen covering system is exactly what I was looking for and I recommend them as a positive management technique."

Evergreen one-piece covering systems not only protected our greens from desiccation throughout the past two harsh winters, they also created a greenhouse effect stimulating more rapid growth and enhanced healthy root development in early spring compared to uncovered grasses.

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GRINDING AND BACKLAPPING TO REEL BLADE SHARPNESS

Few turf managers doubt that the reel mower makes an impressive cut. The scissor action of reel blades against a bed knife cuts turf almost like a razor. When operating properly, a reel mower uses less energy than rotary or flail mowers to cut the same turf. It's getting reel mowers to operate properly that drives some turf managers away from them.

Don Cotton of Mowing Machine Grinders and Reels Inc., Andalusia, AL, has been trying to calm the nerves of frustrated reel mower owners for almost ten years. More than once he has seen reel gang mowers just sitting idle, abandoned because the operator couldn't figure out how to adjust the reels. "The clients said the mowers worked beautifully the first year or so, but eventually got to the point that keeping belts on these units was nearly impossible. If they worked when new, there was no reason why they couldn't be repaired to mow again."

In the end, he discovered that the belts weren't at fault, the problem was how the blades and reels were ground.

When he attended the GCSAA Show in Atlanta he found that every grinder representative had a different theory about grinding reels and bed knives. He heard about spin grinding, relief grinding, cylindrical grinding and single-blade grinding. No wonder reel mower owners were confused, he thought.

During the show, Gerry Brouwer, president of Brouwer Turf Equipment Ltd., of Ontario, Canada, introduced Cotton to a British gentleman by the name of Ralph Winstanley. For more than 25 years, Mr. Winstanley had been making reels and grinding equipment as owner of Mowing Machine Maintenance in Wath-upon-Dearne, UK. His company makes more reels than any other company in the world.

As Winstanley explained to Cotton, the movement of the blades across the bed knife creates heat and friction. As blades wear down with use, the part of the blade contacting the bed knife is thicker thus increasing the amount of friction. One way to reduce this friction is by decreasing the blade thickness by "relief grinding," or making the tip of the blade thinner. The other way is to add a relief angle to the bed knife. Winstanley said relief grinding both blades and bed knife would greatly enhance the performance of a reel mower and produce a more consistent quality of cut.

After grinding, the mower operator can maintain an adequate cutting edge by frequently adjusting the reel to the bed knife. Eventually, the edges of the reel and the bed knife become rounded. It then becomes necessary to back lap until the blades are square again. Back lapping, says Cotton, is nothing more than a grinding job using a grit compound and the friction produced by spinning the reel in reverse and adjusting it toward the bed knife to rapidly wear the blades down to a sharp edge.

Back lapping is also the norm for producing a perfectly round reel after individual blades have been ground. The ideal situation, according to Winstanley, is to relief grind the individual blades and then spin grind to assure a perfect reel.

When adjusting reel mowers, the blade should be as close to the bed knife without actually touching. Make this adjustment with the trailing edge of the blades, not the leading edge. The leading edge can cut ribs out of the bed knife if they touch.

So, if you have a reel mower sitting in the maintenance building because it is out of adjustment, take it to someone with the proper grinding equipment and give it another try. With a better understanding of reel adjustment, you should be able to bring that mower back into full production once again.

Layton Overstreet, superintendent of Marriott Orlando World Center, manages a two-pronged assault against the southern mole cricket.

When the leaves start falling up North in autumn, the starters at Florida's prestigious resort golf courses get busy. That's the way it has to be for these courses to be profitable. One of the biggest threats the past few years has not been the weather or airline fares, but rather an inch-and-a-half-long insect called the southern mole cricket.

This hard-to-control pest hides from the daytime Florida heat in burrows as deep as ten inches below the surface. As temperatures drop in the evening, the mole cricket burrows up to the surface to feed on the turfgrass roots, especially those of bermudagrass and bahiagrass. The insect's enlarged front legs act like spades for digging and also serve as scissors for cutting continued on page 40
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Photo courtesy of Nat Binns, golf course superintendent, Lakewood Country Club, Rockville, Maryland. (unretouched photo)
Southern mole cricket nymph.

Chalkboard continued from page 38

grass roots. Their tunnelling causes severe damage to roots and can create mounds in the turf. Before the crew can get the sprayer out at dawn, the pest is out of reach once again deep in the ground. As a result, insecticides are often applied in the evening to catch the insects near the surface.

Although its damage is most evident in July, the southern mole cricket is a concern during much of the year. In central Florida, the insect’s eggs hatch in late spring, while in southern Florida spring and fall hatches are common. Turf managers must stop the feeding nymphs as well as the adults before they can reproduce.

Layton Overstreet, superintendent at Marriott Orlando World Center resort, has seen the damage mole crickets can do to greens and tees and has instituted a two-wave attack against it. In addition to his regular durs-ban applications for mole crickets, armyworms, and sod webworms, Overstreet also spreads a mole cricket bait containing the insecticide throughout the summer. The bait and insecticide are impregnated on a corn cob carrier. It is applied at 150 pounds per acre on all important turf areas as well as areas adjacent to that turf. When the nymphs feed at night, the bait is there too.

In southern Florida, superintendents must contend with two generations of mole crickets every year. “We’re learning we have to worry about them year-round,” notes Dan Jones, manager of Banyan Golf Club in West Palm Beach. Luke Majorki, general manager of golf course maintenance at PGA National in Palm Beach Gardens, has to balance his mole cricket control program with more than 900 golfers per day in the fall. “We make an extreme effort to keep spray tanks invisible to golfers,” he states. “We’ll start spraying with Orthene in the evening on the front nines only when everyone has made it to the back nines. If we need to spray the back nines, we reverse the tee times for that particular day so by six p.m. we can spray the back.”

Majorki likens mole crickets to northern dandelions. “You can have them completely eradicated and then find them coming in from an adjoining property. While you can’t totally get rid of them, you can certainly control them. If left unattended, mole crickets will stay in one place until they absolutely devastate you.”

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