
EXPLORING EQUIPMENT

Making Maintenance a Team Effort

*By John Oldenburg, Technical Services Manager,
Jacobsen Division of Textron*

Maintaining a sports field or golf course is a team effort. One person doesn't have the time or talents needed for all the work. Equipment maintenance follows the same principle. Even if you have a mechanic, that person can't be everywhere. Involve everyone in keeping grounds care equipment in top working order.

Operator involvement

Tell operators how important their input is in your preventive maintenance program. Operators can notice when a machine is making a peculiar sound, smelling of burning oil or not handling properly. If the operator passes on this information, the mechanic can repair the minor problem before it becomes a major breakdown.

To improve the information flow between operators and mechanics, assign a unit number to each machine. Hang a clipboard where operators park the equipment. Have operators visually inspect their mowers each time they get off their machines. Each operator can report loose hardware, damaged parts, frayed belts and other specific problems on the correct unit's clipboard.

Some organizations have operators do minor maintenance work. In addition to cleaning the machines, operators put air in tires, check fluid levels, clean air filter dust cups, make minor belt adjustments and lubricate daily. This practice not only helps operators become more involved with their machines, but it also frees the mechanic for more involved tasks.

Reel Maintenance

For riding reel mowers, the reel-to-bedknife adjustment should be the first thing on the mechanic's list of daily maintenance tasks. A daily adjustment ensures a consistent cut.

Check the height of cut after the bedknife adjustment because the adjusting process can alter the cutting height. Also, examine the bearings in the rollers regularly because a worn roller bearing

also can affect the height of cut. When you notice the roller bearings becoming worn, replace them because it's a lot cheaper than replacing a roller.

Lubricate and check pivot points where the cutting unit frames mount to the tractor or lift arms. If these points get tight due to lack of lubrication, the cutting units won't float properly across the ground. This can cause uneven or step cutting.

If the mower has counter-weight or weight-balancing spring adjustments, make sure they are set to match mowing conditions. For cutting slopes, a lighter adjustment will concentrate more weight on drive wheels for better traction. For roughs or cutting dense grasses, a heavier setting keeps the cutting units down on the surface for a better cut. Adjust all mowing units to approximately the same weight so they all cut at the same height.

Keeping Your Edge

The key to a high-quality cut with a reel mower is keeping the reel and bedknife sharp. If either is dull, the turf appearance will suffer.

Backlapping is one way to maintain a sharp cutting reel. However, it's only meant as a finishing touch for an edge, not as a substitute for regular reel sharpening. Only grinding can restore a severely dulled reel to proper sharpness.

The front vertical surface, or face, of the bedknife also is important. As it wears, the cutting edge of the bedknife is reduced to a sharp point. It's then susceptible to nicks from small stones or sand, creating a jagged edge and giving a poor-quality cut. To keep a square front edge on the face of the bedknife, use a flat file or a small, hand-held grinder.

A bedknife should wear in a straight, flat pattern across its entire length. If it becomes waved or develops a dish pattern, the reel may be adjusted too tightly, the reel bearings may be worn or misadjusted, or the mower may be dam-

aged and twisted out of its box construction.

When you detect a wavy pattern, regrind the bedknife and reel. Before you regrind, correct the problem that caused the symptom or the wavy condition will reoccur.

Other Regular Checks

Engine oil is an important ally in your preventive maintenance program. Check oil levels daily. During the break-in period, change the oil more frequently. Afterwards, follow the manufacturer's recommendation.

On belt-driven units, check the belts weekly for proper tension and signs of wear. Always use the replacement belt the manufacturer recommends. Belts may look alike, but they are designed to handle pressure in different places, depending on the load. Using the correct belt is important.

For mowers with hydraulic systems, check the hydraulic reservoir every day, and look for fluid leaks. Make sure this is a visual inspection. DO NOT use your hands to feel for leaks on a pressurized system. Hydraulic fluid is highly pressurized and can cause serious injury.

Equipment operators should report any leaking fluids, damaged hoses or bad seals to the mechanic for repairs. If you notice hoses rubbing together, tie them back. Replace leaking hoses with ones that are rated for the system's hydraulic pressure.

Replace leaking seals at once. Leaky seals allow air into the hydraulic system. Air can cause major damage. If the fluid in the reservoir looks foamy, air is probably getting into the system. Water also contaminates hydraulic systems and destroys components. If the fluid looks milky, water is getting into the oil.

When operators make these inspections, they should make notes on the designated clipboard. The notes then become part of each machine's equipment file. Combining operator involvement with regular preventive maintenance and good record keeping will keep your equipment in top form.. □

CHEMICAL LOG

Controlling Elm Leaf Beetles

John Goolsby, a graduate research assistant in the Department of Entomology at Texas A&M University in College Station used to watch helplessly as elm trees were defoliated by large populations of elm leaf beetles (*Xanthogaleruca luteola*) in the spring.

One study ranked the elm leaf beetle as the second most destructive pest among urban trees, said Don Clair, pest management specialist for the Texas Department of Agriculture, Austin.

"The beetle was originally brought to this country from Europe, and now they can be found in the U.S. virtually everywhere that elm trees are found," Clair said.

Both environmental stresses and tree variety selection can increase the risk of attack. English elms and Siberian elms are among the most susceptible, according to Clair. Other species, such as the Chinese elm, have a degree of tolerance to the pests. Other trees, such as the Japanese zelcova, also can succumb to elm leaf beetle attacks.

The standard practice has been to spray elms on a regular basis. However, grounds keepers often waited to call until the beetles had reached large numbers and had caused significant damage. Then, although the insecticide treatments reduced the pest population, they did not return the tree's foliage. Goolsby felt he was treating the symptoms, not the problem. He looked around for another method.

How Trunk Bonding Works

Goolsby read about a new technique, called trunk banding, that was being used successfully in California. It targets a key weak point in the pest's life cycle.

During the spring, adult elm leaf beetles emerge from their winter resting places and fly to trees. There, they lay eggs on the underside of leaves. In about a week, the eggs hatch into small, yellow and black larvae. These immature larvae soon develop into mature larvae that feed on the foliage. Then, they crawl down the tree's trunk to pupate on

the soil surface. You can most effectively destroy the pests at this critical time.

"Since they have to crawl down to the soil, we decided to spray the trunks with the insecticide Sevin," says Goolsby. "What this does is knock out the first generation, so there are few surviving insects that can fly back into the tree and lay more eggs. If you do that for one or two generations, they are never going to reach a population level that can do any real damage to the tree.

"By using this strategy," says Goolsby,



"we're getting better results than with traditional spraying." It's also a lot faster and requires only conventional application equipment.

The results of his first trunk sprayings, he says, spoke for themselves. "By using the trunk bonding technique, we were able to keep the trees green all year. Otherwise, they would have been severely defoliated by July.

"I think it's crucial for landscape managers and groundskeepers to use a preventative treatment when dealing with these pests," he adds. "If you wait until the leaves turn brown, you've obviously waited too long."

The traditional method used for elm leaf beetle control involves spraying entire trees. This practice requires equipment that can spray high into the tree canopy. Drift concerns make this application method difficult in heavily populated areas or on windy days.

"What you can do now is send a single man out with a low-pressure three-gallon sprayer in virtually any kind of weather," says Goolsby. "He can do it quickly, inexpensively and during working hours for people in the surrounding buildings."

The trunk treatments also avoid killing off the elm leaf beetle's natural enemies, such as various egg parasites, Clair said.

"The most important natural predators of the elm leaf beetle are earwigs that feed on eggs and lacewings that feed on both the eggs and larvae," says Clair. "By treating the tree's trunk, you are killing 95 to 99 percent of the larvae that crawl through the sprayed band, but not the beetle's natural enemies."

Damage Beetles Cause

"City environments are particularly tough on trees," he says, "because they are stressed by compacted soil, air pollution, poor fertilization and poor irrigation. Trees that are already in a weakened state are less able to withstand attacks, and when the trees are grouped closely together, the beetles are able to reproduce rapidly."

Severe defoliation by beetles can seriously stress or even kill a tree within three to four years, he adds. Goolsby advocates using a preventative approach to help avoid the cycle of tree decline.

"You need to start looking for the bright, yellow eggs in the early spring," Goolsby says. "You should apply the insecticide before the larvae start crawling down the tree trunk to pupate.

"Once a tree is defoliated, it is stressed and suffers from a reduced ability to store carbohydrates during the winter. The tree then becomes more susceptible to stress-related pathogens, as well as insect pests, such as borers."

The war against destructive pests, such as the elm leaf beetle, is far from over. However, innovative techniques like tree banding have given golf course superintendents and groundskeepers new weapons in the fight. □



Littick Field (top) and Roy Rike soccer field (right).



Field Maintenance Improves Play at Ohio Wesleyan

The Ohio Wesleyan University men's soccer team has been a contender in the National Collegiate Athletic Association Tournament every year since 1978. After years of minimal maintenance, the Roy Rike Field has finally reached the same level of excellence, hosting the 1990 Division III National Championship games.

According to John A. "Jay" Martin, Ph.D, athletic director for Ohio Wesleyan University, the team has been top-notch since he joined the institution in 1977 as a one-year replacement. "We lost the

championship last year (1990) in penalty kicks."

This and other fields at the university have not always been as "finely tuned" as the teams.

In 1978, after becoming a permanent faculty member, Martin inherited the winning soccer team and six poorly maintained sports fields, including the soccer field. Since then, he has helped the soccer team maintain its high level of performance and initiated improvements on all athletic fields.

In addition to soccer, Ohio Wesleyan also offers a variety of sports that use the athletic fields. These include baseball,

played on Littick field; women's field hockey and lacrosse, which compete on Henry Street Field; and football, played on Selby Field and the football practice field.

"With the exception of the football field," said Martin, "I was personally responsible for maintaining all the fields. My assistant coach and I would buy a bag of fertilizer, throw it on and hope it would work."

He added, "I also watered the fields myself in the summer. They looked terrible those first few years."

Martin indicated the fields were

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Field Maintenance

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receiving minimal maintenance due to a lack of funds, time and manpower. The surfaces were rough, with a mixture of grasses. And the soccer and football practice fields— those used the most received very little care. In 1989, Martin and Ohio Wesleyan turned to Dennis Kasper of the O.M. Scott & Son's company's School/ Sports fields division for help.

"We decided to have Scotts work on our fields because of a test program at Wooster College," said Martin. "We also chose Scotts because of the company's proximity to the university, name recognition and special service program." According to Martin, Roy Rike Field and the Henry Street field received all the attention the first year of service.

All the fields — except for Selby, which has a sand base — are heavy on clay, according to Kasper. He is responsible for most general services on the fields.

"Our maintenance program includes over-seeding, fertilizing, topdressing and insect and weed control," said Kasper. "Service-wise, we core aerify each field. However, we consider soil testing and subsoil crucial to maintenance."

The subsoil decompactor is used to subsoil the fields. Unique, it breaks the compaction of the soil without disturbing the surface. On it are 10-inch blades with "bullets" at the ends. Upon entering the ground, the blades vibrate at high frequencies, shattering the hard pan of the soil while the bullets cut channels which increase drainage. The use of this machine holds moisture lower in the ground and attracts downward movement of the root systems. In addition, the fields are level and softer.

"Topdressing and overseeding are also more effective after subsoiling and core aeration." Scotts Sports Turf Seed and a variety of methylene urea fertilizers, among other products are used at Ohio Wesleyan.

Martin still waters the fields himself and has an outside contractor mow. The fields are cut to a height of three inches once a week in the summer and every three or four days during the school year. In addition, Scotts cares for the infield on Littick Field.

According to Martin, Scotts has solved

major problems on Roy Rike. "The field has been in existence since the 1920's. It needed general maintenance and there were some low areas that had to be fixed."

In addition to the 1990 Division III National Soccer Championships, the field is also used for the Central Ohio High School All Star games, a number of local soccer clubs and summer soccer camps.

"A professional team from Holland is going to work out on it for two weeks in mid-June," Martin added.

The Henry Street women's field hockey/lacrosse field also takes some abuse. "There isn't a practice field for these two sports," said Martin. "So the field gets daily use for two seasons of the year." The university has hopes of adding a practice field for the teams.

Even with all the traffic on Roy Rike and Henry Street, Martin explains that these fields need to be in top condition, "Field hockey and soccer differ from football in that they're played with the ball on the ground. The surface of the field is as important as any other factor in a game. These should be the best two fields on campus.

The teams have high caliber athletes. They play better because the fields are now level and smoother." Martin added that the field hockey team has gone to the National Tournament every year since 1989. In addition to withstanding traffic and play, the fields have also held up well in harsh winters and under heavy rains.

He noted that having the fields maintained by Kasper has also prevented administrative headaches.

I'm not going to ask him to coach my team, so I'm not going to tell him what he has to do to maintain the fields. I don't have to worry about the fields anymore," he added.

As a small university, Ohio Wesleyan

has not allocated a large amount of money to maintain the athletic fields. "That first year, the booster club raised between \$4,500 and \$6000. To get the most out of the money, we put it to use on the sports fields along with some funds from team budgets.

"Our initial budget to refurbish Roy Rike and Henry Street fields was close to \$8,000," said Martin. Ohio Wesleyan's filed maintenance budget has remained within those parameters. Even though they have fewer fields that need "overhauling," more fields now receive general maintenance.

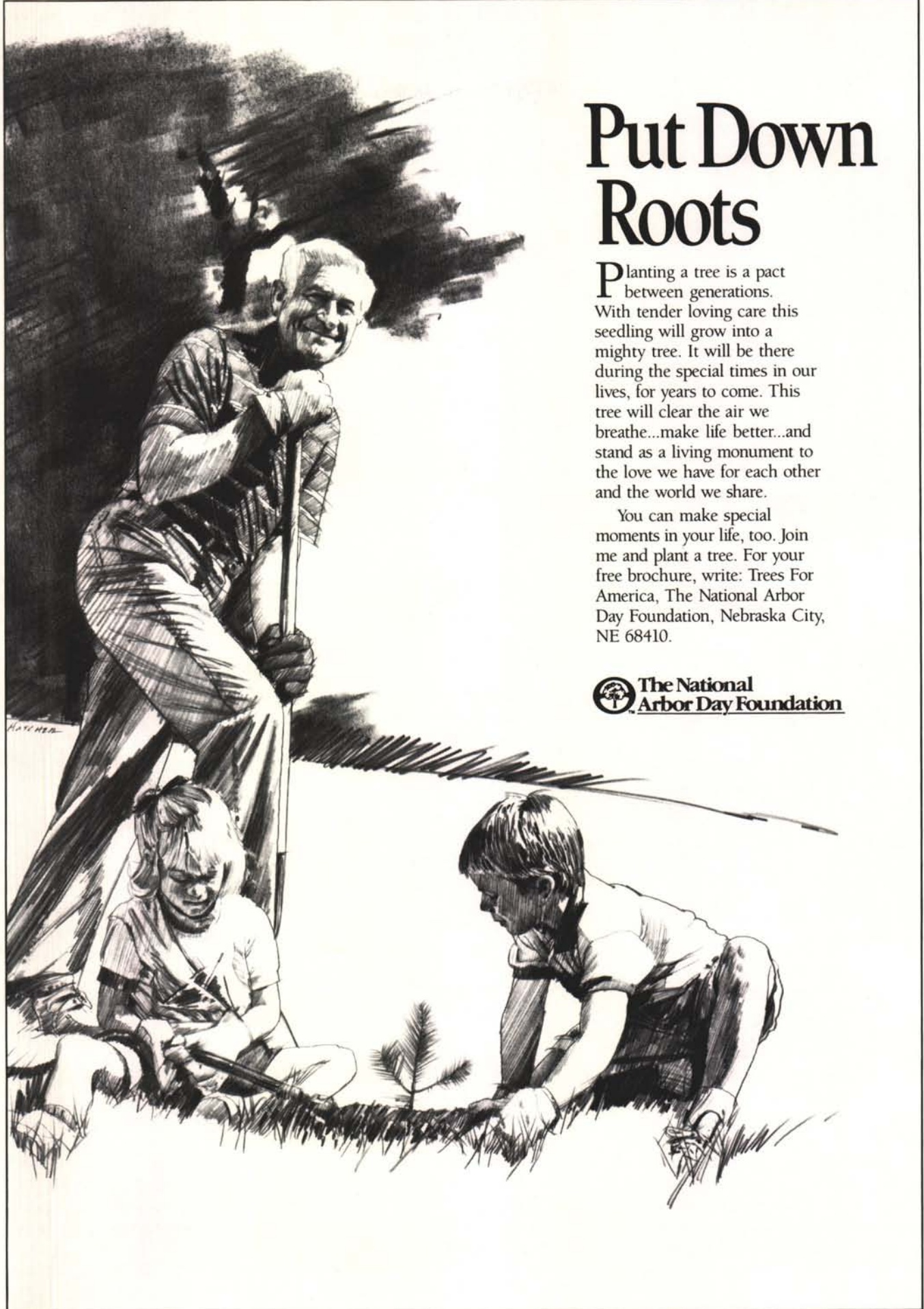
According to Martin, the fields are much better since regular maintenance has become a priority, "Players, coaches and even alums notice that the fields have improved a great deal." The university would like to do more with the fields, funds permitting, Martin indicated.

Martin has been with Ohio Wesleyan's athletic department for 14 years. Currently, he is the chair of the department and the men's varsity soccer coach. He has a doctorate in exercise physiology from Ohio State University.

Ohio Wesleyan University, founded in 1842 by the United Methodist Church, is located in Delaware, Ohio, 20 miles north of Columbus. A 200 acre campus, the liberal arts university has approximately 2,000 students. Notable graduates include Norman Vincent Peale, '20, clergyman and author; Branch Rickey, '04 major league baseball executive; and Jim Berry, '55, syndicated editorial cartoonist. □



Dr. Jay Martin (left) and Dennis Kasper.



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AQUATROLS NAMES NEW PRESIDENT



Aquatrols of Pennsauken, NJ has named Tracy D. Moore as its new president. She replaces Robert A. Moore, who is retiring from full service. He will continue part-time as consultant to the company's research and development and technical departments.

Ms. Moore has been with the company for 10 years. She started as a bookkeeper and was eventually promoted to financial and human resources manager. She has been responsible for implementing many of the firm's administrative changes during the last decade. Her previous responsibilities will be assumed by Patrick Holroyd, who has been with the company for eight years.

RESEARCH FOUNDATION ELECTION HELD

At the recent O.J. Noer Directors and Membership Annual Meeting, William Schmidt, general manager and sales manager of E.H. Griffith, Inc., in Philadelphia, was named vice president. Alan Nees, acting manager of sales and agronomy in the marketing division of Milorganite in Milwaukee, was elected director.

The non-profit, tax deductible foundation is dedicated to financial support of scientific research in turfgrass. It was founded in 1959 by associates and friends of O.J. Noer, one of the most widely known and respected turfgrass agronomists.

FERTILIZER DOUBLES AS DEER DETERRENT

Milorganite has been used for years to discourage deer browsing by garden centers, landscapers and golf courses in New England. Residents of many urban areas throughout the U.S. with growing numbers of deer can attest to the amount of damage browsing deer can do to shrubs and ornamental plants. Milorganite, a fertilizer, is now the subject of applied research to determine its effectiveness in an urban area where deer predation is a problem.

A study at Cornell University's Cooperative Extension Service is attempting to quantify the result of using the fertilizer to deter deer from browsing on valuable ornamental plants and shrubs.

So far the study shows Milorganite has deterred deer from browsing on *Hosta* and *Taxus* (yews) when applied around the target shrubs' base. While the demonstration is still in the initial stages, the results are positive thus far.

ECONOMICS OF PUBLIC GOLF TO REPEAT

More than 200 delegates attended the "Economics of Public Golf Workshop" presented in Orlando, FL. As a result of the interest shown, the workshop will be repeated at the next Crittenden Golf Development Expo, planned for May 11-13, 1992 in Palm Springs, CA.

James L. McCumber, chairman and CEO of McCumber Golf, presented a case study of the successful conversion of a private club to an upscale, semi-private facility. In addition to presenting the conversion case study, McCumber and members of his facility management team outlined for the delegates the development of a successful public operation from market study and land acquisition to opening and operation.

O.M. SCOTT NAMES HOST PRESIDENT

The O.M. Scott & Sons Company has appointed Theodore J. Host as president and chief operating officer.

Host will assume responsibility for Scotts' Consumer Products Group, Professional Business Group, Operations, Information Systems, Research and Development and Human Resources.

Host joins Scotts after serving as senior vice president, marketing, at Coca-Cola USA. Prior to that, he spent 23 years with American Home Products, the last five years as division president for the company's Boyle-Midway Household Products division.

LOFTS SPONSORS CHARITY TOURNAMENT

Professional golfer Thad Daber swung his six iron to a round of 71 and victory at the 1991 One Club Tournament at the Prestonwood Country Club in Cary, NC. Lofts Seed, Inc., sponsored the event, where golfers play all 18 holes using one club, even for putting. Proceeds of the event—\$4,000 this year—will benefit the Make-A-Wish Foundation.

The Make-A-Wish Foundation is dedicated to fulfilling the special wishes of children up to age 18 who suffer from life-threatening illnesses.

MODEL COMPOSTING FACILITY UNVEILED

The O.M. Scott & Sons Company is helping local governments and private companies solve the environmental problems of yard waste recycling. The company's model composting facility was unveiled in November at the company's headquarters, and is the latest addition to a nationwide network of specially designed composting facilities to recycle organic waste material.

The system combines the technical expertise of Scotts and its Hyponex subsidiary with good site location to provide solid waste managers with an easy, responsible alternative to landfill disposal.

The composting facility is part of a five-year pilot project in cooperation with The Franklin County Solid Waste Management Authority. Ten similar Scotts/Hyponex facilities are already operating in California, Pennsylvania, Virginia, Alabama, Texas, Georgia, and South Carolina. Other composting sites are currently being planned.

Each of the facilities handles organic waste from sources including golf courses, residential and commercial locations within municipalities, landscapers, tree companies, utility companies, and lawn care companies. Yard waste delivered to the sites includes leaves, grass and brush, and must be loose or in recyclable paper bags.

Field Maintenance

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Now, Chip Toma has earned his own place among the ranks of professional sports turf managers. He is in charge of grounds care operations for the Kansas City Chiefs, who play at Arrowhead Stadium. He and his father work together on the Super Bowl and have their own turf consulting business.

Like his father, Chip has an abundance of energy. He is forever doing three things at once. Chip laughs at the comparison.

"We both get antsy very quickly. We're hyper, high-strung people. When you are so much like another person that you are almost a clone, then you are bound not to get along with that person all the time."

What father and son have is a mutual respect for their abilities. "His biggest strength is that he was never scared to try something he thought would work, even if people told him it wouldn't work," Chip Toma said.

For example, when George Toma looked out over the Super Bowl playing field in Tampa last year the night before the game, he didn't like what he saw. He ordered his crew to resod the center of the field. They worked through the night to get the job done.

"We were so tired the next day," Chip remembered, "but it looked so good."

Trevor Vance also helped that night in Tampa. Like Chip Toma, George Toma has been his teacher and mentor. Vance has been his assistant for the last seven years. At first, groundskeeping was just a summer job where you got to meet some ballplayers. Then Vance became caught up in "Toma Pride."

"You put a rake or a float in his hands and he's incredible with it. He's such a perfectionist. There's only one way to do it and that's the right way," Vance said of George Toma.

"George is willing to teach anybody. Every day I come here, I learn something from him. He's like another father. I feel like I'm getting a degree from George Toma," Vance said.

Helping and teaching are a way of life for Toma whether it's a high school kid on the grounds crew in Kansas City, a charity in need of a spokesperson or a grounds manager in Japan. Toma wants to help them all.

"George is one of the kindest gentle-



From the turf beside the outfield fountain at Royals Stadium sit Trevor Vance and Toma.

men whom I have ever known. George has spent his life helping others and expecting nothing in return," said Robinson.

At 62, Toma sees himself mellowing. When he was in Berlin a couple of years ago to help prepare the field for a Kansas City Chiefs' football exhibition, he let his wife, Donna, and eight-year-old son, Ryan, talk him into visiting the Berlin Wall that was being torn down. As a general rule, Toma remembers cities more by their stadiums than their tourist attractions.

"I try to pass the knowledge down to help people internationally," Toma said.

"Everyone wants to give him a farewell party," Chip Toma laughs. He can see his father cutting back, but he can't envision him retiring totally.

Toma's blood runs Royals blue. The pull of the stadium is too strong. There always will be youngsters to teach, pitching mounds to perfect and tarps to supervise.

"Like Herk Robinson says, they'll bury me in front of the scoreboard," Toma said. □

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