

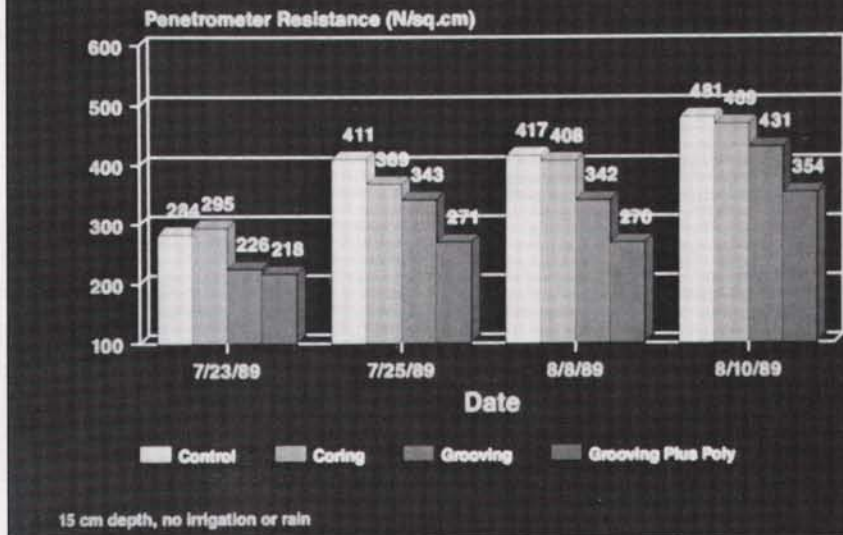
ening and a more dense condition. These observations support the theory that the expansion-contraction cycles of the polymer were having a substantial effect on loosening the turfgrass rootzone.

To determine how much cross-linked polyacrylamide is necessary to significantly affect irrigation intervals, several 15 x 15 foot, independently irrigated plots were injected with different amounts of the polymer using the Olathe 831 planter. Established plots of Mustang tall fescue were treated with 0, 20, 40, 80, 160, and 320 pounds per acre.

They received no rainfall from August 17 to September 17. Each plot was irrigated only when time domain reflectometry indicated a soil moisture content of 24 percent (vol:vol). The average number of days to reach this level of moisture depletion was recorded for each plot.

Little difference occurred until rates exceeded 80 pounds per acre. Best results were realized with 160 and 320 pounds per acre treatments. Based on these data, significant improvement of the irrigation interval begins at rates of 150 to 200 pounds per acre. Adjustments might be necessary depending on the type of polymer (e.g. starch, polyacrylates, or cross-linked polyacryl-

Penetrometer Resistance of Tall Fescue Soccer Field Through a Dry-Down Cycle



Differences in field hardness levels were consistent as the soil became drier.

amides) and soil type (e.g., clay versus loam or sand).

The results of these studies suggest that the use of water-absorbing polymers might present considerable potential benefit for

turfgrass sites from the perspectives of both irrigation management and compaction resistance. Although these results are very encouraging, additional research needs to

continued on page 22

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AGROSOKE was specifically developed and patented for plant water maintenance.

PERMANENT SOIL AMENDMENT

Fertilizers applied to the soil in any form are compatible with AGROSOKE. Unlike other polymers which release their water and lose the ability to maintain rated water retention in the presence of nutrient salts, AGROSOKE is unaffected. Fertilizer ions are retained and available to the plant along with the water. Since AGROSOKE provides free exchange, salt buildups within the polymer are not possible.

REDUCTION OF CONTAMINATED GROUND WATER RUN-OFF

AGROSOKE incorporated in the mixes will reduce the frequency of water and nutrients being applied therefore reducing the run-off by a minimum of 50%. In addition, when the water, fertilizer, and chemicals are applied the AGROSOKE absorbs a large percent of what would normally run through.

NONDEGRADABLE

AGROSOKE is a small synthetic anionic polymer (polyacrylamide) crystal. It is NOT starch based! Since the polymer was designed to ONLY absorb 40 times its weight in water, the cellular walls are still quite strong when fully expanded. These factors provide for a physically stable, stronger product, even under heavy traffic areas, such as in golf course installations.

AGROSOKE, unlike starch based and most superabsorbing polymers, is not affected with chemical degradation in the presence of nutrient or other additives. In fact, it absorbs water even more rapidly once the initial expansion has been accomplished. Since it is permanent, it is ADDED VALUE providing benefit to the plant for the entire life cycle. Therefore Agrosoke provides a tremendous value to golf courses, sports turf, landscaping, & tree planting.

Agrosoke has been tested by Conlee Seed Co. using the USGA recommended greensmix — significantly favorable results were obtained in water savings, turf quality, percolation, and cold tolerance.

Complete test results are available upon request.

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Polymers

continued from page 21

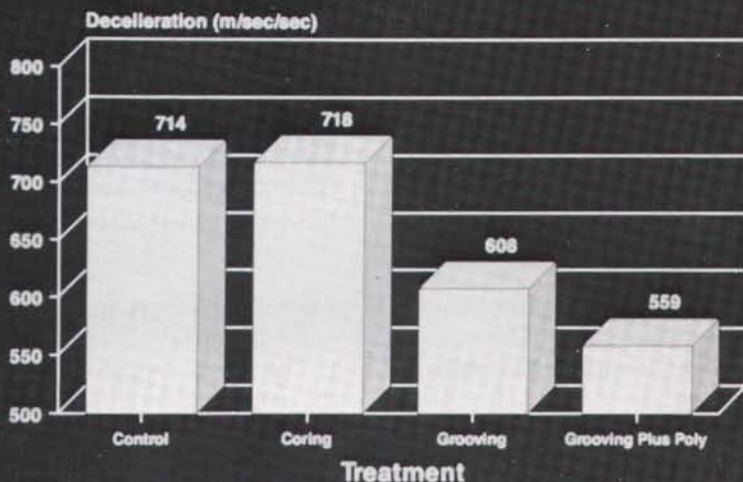
be completed before a thorough understanding of the benefits of these materials for turf is realized.

For instance, certain fertilizers, saline irrigation water, or saline soils can greatly reduce the absorbency of certain water-absorbing polymers (Bowman et al, 1990). Starch polymers are different from syn-

thetic polymers in their rates, water-holding capacities, and longevity in the soil system. There is also evidence that too high rates of water-absorbing polymers can be detrimental, resulting in loss of turf density. There might also be benefits or drawbacks from the use of these polymers that we have yet to consider.

Kansas State University is conducting additional studies to investigate the effect

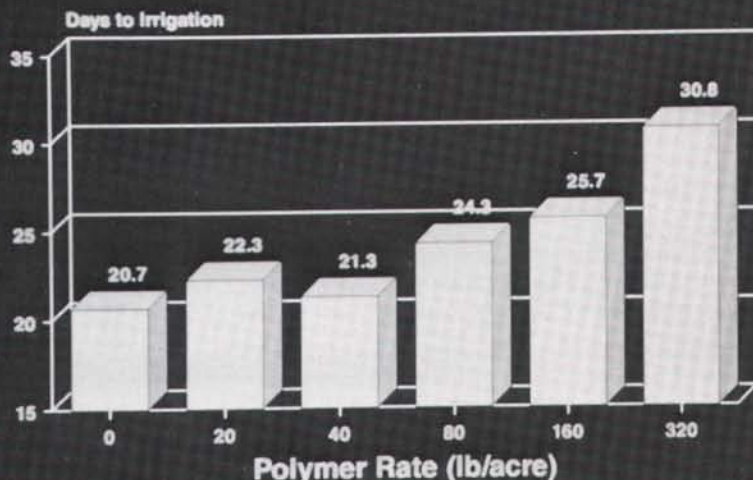
Impact Absorption of Tall Fescue Soccer Field



June 12, 1990

Grooving, with or without polymer, softened the heavily-used soccer field more than hollow-tine coring.

Number of Days to Reach Soil Moisture Depletion as Affected by Polymer Rate



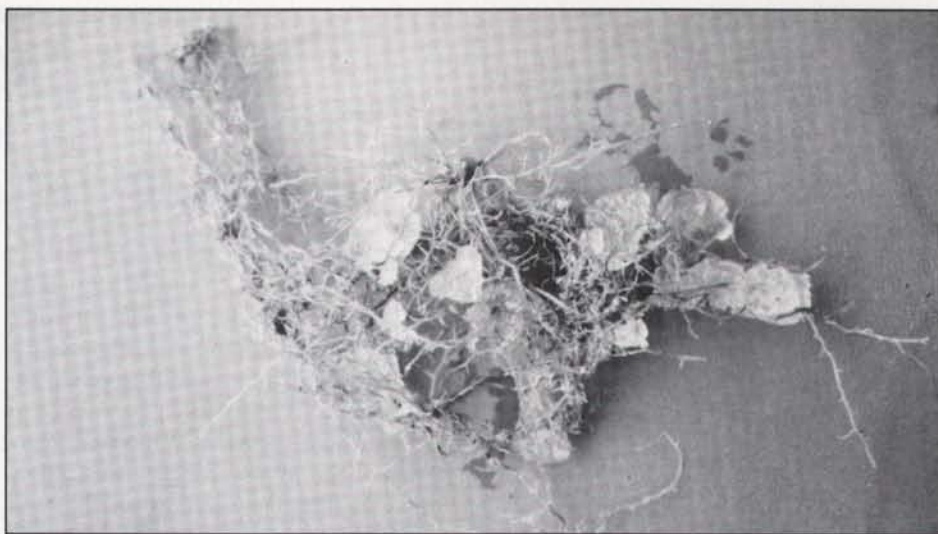
8/17 - 9/17, 1990 Dry to 24% (vol:vol)

Irrigation intervals were lengthened significantly at polymer rates of 150 pounds per acre.

of both starch and cross-linked polyacrylamide polymers on water holding capacities, expansion strengths, oxygen diffusion rates, bulk densities, and impact absorption of both natural soil and sand-based rootzones. Research is also underway on how the behavior of these materials is affected by differences in initial bulk density, salinity, applied pressures, and rates. Finally, experiments with the polymers have been initiated on tall fescue, Kentucky bluegrass, perennial ryegrass, and creeping bentgrass.

Although much more needs to be learned, results to date are encouraging and suggest that water-absorbing polymers might play an important role in turfgrass management in the future.

Editor's Note: The following research was supported in part by Olathe Mfg., the Sports Turf Managers Association, and Western Polyacrylamide, Inc. Jeff Nus is assistant professor at Kansas State University in Manhattan, KS. Mike Boaz is a graduate student in turfgrass science at KSU and recipient of STMA's Jeff Wishard Scholarship. Dan Wofford, Jr., is general manager of Western Polyacrylamide, Inc, Castle Rock, CO.



Addition of polymer increased root mass by as much as 30 percent.

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TIPS FROM THE PROS

Wildflowers, a casual and colorful alternative to conventional ornamentals, have brought both excitement and frustration to enthusiastic superintendents and groundskeepers in recent years. Here are "Seven Sure Steps to Success," developed by The Wildflower Group of the American Seed Association, that can help make wildflowers flourish.

Determine Your Objectives. Purposes and goals vary widely, but a showy display of color is often the primary objective in growing wildflowers. Another goal may be to plant only wildflowers that are native to a specific geographical area. Other important considerations may be height, color range, bloom time, and cost. The role of the seed supplier is to meet the customer's needs, so be sure to define and discuss your objectives. Wildflower mixes to suit a wide range of requirements are available from a number of sources.

Site Selection. Wildflowers perform best in moderately fertile soils with good moisture-holding capacities. Adequate rainfall or irrigation will insure germination and long-term growth. It is unrealistic to expect wildflowers to grow in areas that have never supported vegetation. Steep slopes present a special challenge. They should be planted after consultation with experts, and usually require the use of a mulching material to hold the seeds in place.

Rainfall and Irrigation. Climate and precipitation are primary considerations. In climates with at least 30 inches of rainfall per year, supplemental watering is usually unnecessary except during periods of drought. If rainfall is less than 30 inches, plan to supply 1/2 inch of water per week.

Selecting the Seed. Reputable suppliers can provide advice about which mix or individual species to plant, as well as soil preparation and maintenance. In warm climates like those along the West Coast and in the Gulf Coast states, mixes may contain a high proportion of annuals because they will readily reseed. In cold climates, however, mixes should contain about 40 percent perennials. It is important to include annuals because they act as a nurse crop for the slower growing perennials, which do not bloom until the second or third year.

The annuals grow quickly, help to prevent erosion, and discourage weeds while the perennials are becoming established. Most annuals will not reseed in cold climates.

How To Plant. The best times to plant wildflowers are determined by rainfall and climate. Planting in the fall is advantageous because it facilitates early germination and growth. In cold climates, fall plantings should be late enough so seeds do not germinate until spring. In mild climates, fall plantings prior to periods of moisture will insure an early display of annuals. Planting in early spring is also recommended in most climates. However, if seeds are planted in late spring or early summer, supplemental waterings may be necessary to insure wildflower establishment.

Weed Control. The importance of preventive weed control cannot be over-emphasized. When preparing your site, first remove the existing vegetation. Create a loose seed bed by tilling. If tilling is not feasible, at least scarify the top surface of the soil. Most importantly, eliminate the weed seeds that are on or near the surface. To accomplish this, irrigate, and then eliminate seedlings by chemical or mechanical means. If weeds are very numerous, it may be necessary to irrigate and spray twice before sowing the wildflowers. Do not till a second time or more weed seeds may come to the surface.

Maintenance. A successful maintenance program may include weeding regularly, irrigating during dry periods, and mowing once in the fall to achieve a neat appearance. Weeding may be by hand or by appropriate spot-spraying with an herbicide. To eliminate undesirable grasses, a post-emergent herbicide may be applied anytime during the growing season. After mowing, leave the cut plant material in place for reseeding and to provide a protective mulch for the perennials. Good maintenance is important to create an ongoing display of wildflowers that will provide beauty for many years. Overseeding of bare areas in the fall or spring will insure broad diversity and a beautiful display.

For more information, or a list of seed suppliers, contact: The Wildflower Group, A.S.T.A., 1030 15th St., N.W. Washington, DC 20005-1593.

BRITISH FIRM IS HARLEY DEALER OF THE YEAR



Receiving the 1990 Harley Landscape Power Rake Dealer of the Year award from Glenmac president, Mac McPherson (far right), are sons Guy and Richard Overton, and Derek Overton, Gannon principal (center).

Gannon UK Ltd. of Welbourn, Lincoln, Lincolnshire, England has been named the Harley Landscape Power Rake Dealer of the Year by Glenmac, Inc., of Jamestown, ND. The British firm was chosen for the honor from some 200 dealers worldwide.

"Gannon's outstanding achievement in developing the market for landscape power rakes helped them gain top honors in sales volume," said Mac McPherson, Glenmac's president. "We're very pleased with the fine job accomplished by the company principal Derek Overton and his sons, Guy and Richard."

SUPER TERMITES INVADE TAMPA

The first Formosan "super termite" infestation in the Tampa Bay, FL, area has been confirmed by a University of Florida entomologist, who said the pest will continue to spread slowly throughout the state. "The new infestation in a Tampa home is more evidence that this destructive pest is going to leave no urban area of the state untouched," said Nan-Yao Su, with the university's Institute of Food and Agricultural Sciences.

The Formosan termites were found in a single family residence by Tim Berriault, branch manager of Truly Nolan Pest Control, Inc.

"When we broke the mud tubes, hundreds of soldier termites came charging out," said Berriault. "They secreted a sticky white substance and tried to bite my fingers. This is termite swarming season, but I've never seen a subterranean termite like this before."

Alarmed by the termites' unusual behavior, Berriault contacted UF/IFAS entomologists who provided positive identification of the pests. Researcher Su says the Tampa infestation is probably several years old, considering the amount of damage the termites did in one home.

Su will conduct a seminar this summer on the Formosan termite for pest control operators in the Tampa Bay area. He is also testing several new chemicals for controlling the pest and expects to have results within two or three years. He says he is confident that materials and strategies can be developed to control the pests.

"The key is to reduce the underground populations of termite colonies," said Su. "The current practice of applying large amounts of pesticide beneath buildings may keep the pest out of structures, but it won't destroy underground nests that could be as far as 300 feet away."

However, until new control measures are proven effective, conventional pesticide treatments should be used.

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ROOKIES

PRODUCT UPDATE

TRIPLE SWING ASSEMBLIES

King Brothers' triple swing assemblies are available in 1/2, 3/4, one, 1-1/4, and 1-1/2-inch sizes and all configurations.

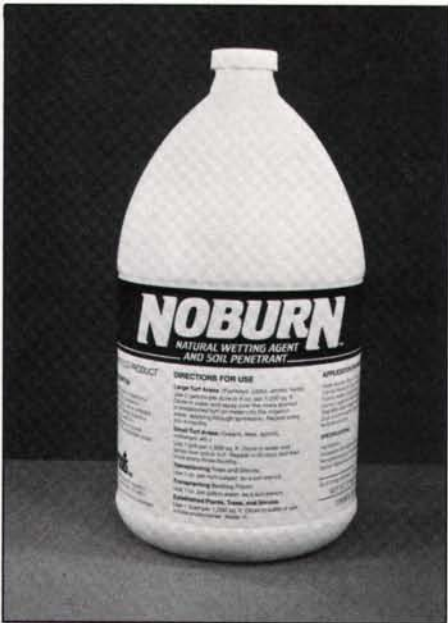


Options include the ability to specify a solvent weld or threaded inlet and/or outlet. The assemblies come preassembled and are also available in metric/BSP sizes. They are made in the U.S. with Schedule 80 material and are rated 200 psi. A brochure and specification sheet are available upon request.

KING BROS. INDUSTRIES

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WETTING AGENT



NoburN Natural Wetting Agent and Soil Penetrant is a steroid saponin extract from the desert yucca plant. It does not have to be watered in after each application, and it

will not burn or discolor leaf tissue when it is applied in hot or dry weather.

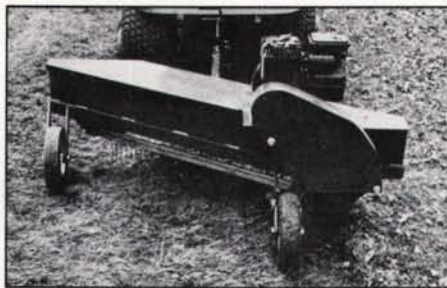
Steroid saponins are natural floccing agents that open the soil to air and water by aggregating soil particles. They increase the movement of water through hydrophobic soils, improving water penetration and retention.

Since steroid saponins are natural plant fluids that are extracted only by pressure, there is no danger of burning on any crop, and no danger of groundwater contamination. NoburN is recommended by the manufacturer in situations where there is risk of injury or burn from synthetic agents, and in programs where chemical use is undesirable. It is biodegradable in the soil and presents no residue problem. The product mixes with all liquid fertilizers and is sprayed on soil/foliage or metered into irrigation water.

ROOTSinc

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TURF TOOL



The improved Model LFT lawn rake removes lawn thatch without damaging the grass roots. It also clears away leaves, pine needles, twigs, grass clippings, and other debris.

The raking action is achieved by three tine bars. They work in a down-and-across loom action and contain 108 spring teeth, closely spaced and mounted in molded plastic. The rake clears a three-foot-wide swath in a single pass, and is angled to discharge material to the right, in neat, continuous windrows. Rake height is adjustable to permit the user to control the depth of the teeth, depending on the surface being groomed.

A simple pin hitch permits easy attachment to most makes of lawn and garden

tractors. The rake's rugged construction, including its welded steel frame, ensures long, dependable service.

YORK RAKES

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MIXING CONTAINER



The Accu-Mix Bottle is designed for use with concentrate cleaning solutions or insecticides, or for operation with any two-cycle gasoline engine that requires a gas/oil mix. It is not a storage container.

Side "A" is for basic liquid or gasoline. Fill the required amount of fluid to a numbered line, one to 10. Side "B" is for concentrate or oil. Fill to the same number line, one to 10, that was filled in Side "A" under manufacturer's recommended mixing ratio. A chart provides the correct mixing ratios.

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ADJUSTABLE TEE MAT

With the pull of a lever, the Realtee Golf Tee Mat can be adjusted to various heights to simulate fringe, fairway, and rough conditions.

The tee area consists of strings vertically adjustable parallel brushes on a shock-ab-

ROOKIES

PRODUCT UPDATE

sorbing mat with a tee peg. The 3-1/2-inch bristles are made of nylon/polypropylene. Brush strings can be changed individually or replaced.

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LAKE COLORANT



Lake Colorant WSP is a highly concentrated product packaged in water soluble packets. Each packet colors one acre foot

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The product will not harm wildlife.

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TURFGRASS GUIDE

Turf-Seed's 16-page publication, "Grass Heals the Scars of Man," will recommend the right turf for your task, whether it is for roadside soil control, golf course roughs and greens, or shade and traffic areas.

This colorful guide describes the environmental benefits of turfgrass, and explains the characteristics of five cool-season species and the advantages of blends and mixtures.

TURF-SEED, INC.

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HERBICIDE

Basagran T/O herbicide controls yellow nutsedge foliage, roots, and tubers in most established turf situations. It is not for use on newly seeded or sprigged turf.

Multiple applications can be made without concern for established turf. The product can be sprayed on golf courses, commercial turf, and municipal parks, among others. It is labeled on these varieties of established turf: bahiagrass, bentgrass, bermudagrass, bluegrass, annual and perennial, centipedegrass, fescue, tall and fine, ryegrass, annual and perennial, St. Augustinegrass, and zoysiagrass.

This herbicide also controls broadleaf weeds, including purslane, thistles, and mustard, with the same effectiveness and turf tolerance.

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PRODUCT UPDATE

BERMUDA SEED

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greener longer during periods of water stress.

Sold only as certified seed, the product is available in one-, three-, five-, 25-, and 50-lb. sizes.

FARMERS MARKETING CORP.

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will automatically pair them with additional golfers if the pro requires it. Tee Master also has the ability to accept input and provide daily updates of handicapping.

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AERATORS

Oxygen AGL series aerators feature high oxygen transfer rates coupled with strong horizontal circulation which promotes clean, algae-free water. The units also eliminate the need for chemical treatment, according to the manufacturer, and minimize odors and clogging potential in irrigation systems.



The aerators come in a number of horsepower and voltage and sizes. Decorative covers are available for low-profile applications.

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EYE WASH STATIONS

Zee Protector I is a self-contained, gravity-fed unit which can be wall-mounted near or in an area where eye hazards are present. It delivers 15 minutes of eye flushing action and comes with a collection tank that prevents spent water from accumulating on the floor.

Zee Protector II is a supplementary system designed to provide immediate care until the injured worker can be moved for more complete care. It provides three to four minutes of eye wash action that rinses the eye with a soothing isotonic preserved saline solution. It comes with a closeable basin that provides a sanitary seal when not in use.

ZEE MEDICAL

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ROOKIES

PRODUCT UPDATE

WATER TESTERS



Series 941 Single-Test Water Testers are hand-held, compact portable colorimeters. Each model is designed to perform one of the following tests: ammonia nitrogen, low;

chlorine, free and total; chromium, hexavalent; copper, DEHA, fluoride, iron, low; lead, manganese, low; molybdenum, nitrate (as N), pH wide range, orthophosphate, silica, and zinc.

Each tester has a pre-calibrated direct reading analog meter scale and permanent wavelength filter for its specific test and range. Each is also supplied complete with a "Quick 'n Easy" test kit containing all necessary reagents and labware for the test, six sample tubes, batteries, complete directions, and a rugged carrying case.

ORBECO-HELLIGE

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and a weather data base. The software's record keeping capacity has been increased. It allows unlimited editing of labor records, purchase and work orders, and maintenance records.

LABB SYSTEMS/SOFTWARE

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SEEDER AERATOR

The Green-Rite III is a one pass overseeder aerator with large seed and fertilizer hoppers in a 58-inch working width for small tractors from 18 to 40 horsepower.

Straight blades allow the aerator to overseed with minimum damage to existing turf. By changing to a "C" tiller blade, the machine can be used as a standard tiller for turf bed preparation and seeding.

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Trims Grounds Management Software Version 2.3 includes chemical and fertilizer application logs, an MSDS filing system,

CHAPTER II

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As Casanova Ken musters up enough of his notorious "Suave de vive", and leads the guys into **Growth Products Turf Grass Clinic**, little did the Blade Boys expect to hear the bad results of their physicals.



EPILOGUE ... Will Brent survive the missile attack? Or meet his fate? **HAS THE DYNAMIC TRIO** become a desperate duo?!?!?! Will Nurse Flo's **Mighty Methyle-ee-n Make Miracles ...** to be continued

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June, 1991 29

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Regular use of Regal Crown root growth stimulator exhibits phenomenal results. Turfgrass types such as bermuda, bent, zoysia and others develop more roots that are healthier and penetrate deeper. More roots imbedded deeper into the soil means better nutrient and moisture up-take creating thicker, greener tops.

Regal Crown is a blend of hormones specifically designed to promote root growth in turfgrasses and ornamentals. Used regularly, Regal Crown roots can minimize hot weather dry wilt stresses and winter desiccation.



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30 Golf & SportsTURF

ROOKIES

PRODUCT UPDATE

TURF MANAGEMENT HANDBOOK

"Turfgrass Management, Third Edition," by A. J. Turgeon is a handbook that describes effective ways to design, upgrade, and maintain turf areas.

Topics include growth and development, turfgrass species, the turfgrass environment, primary cultural practices, supplementary cultural practices, pest man-

agement, propagation, and cultural systems.

The book contains 405 pages and 131 illustrations. It is available on a 15-day trial basis.

PRENTICE HALL

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SCOREBOARD

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