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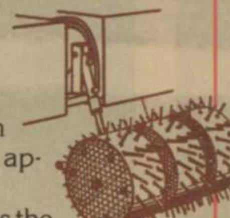

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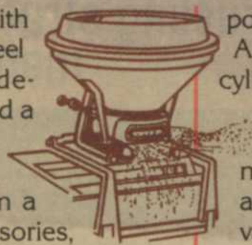

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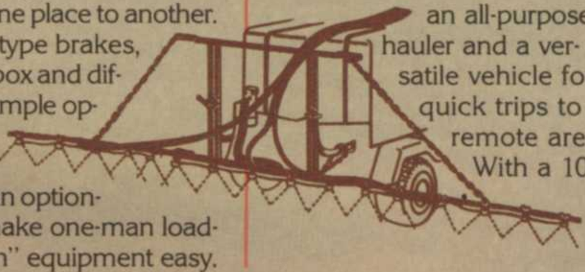

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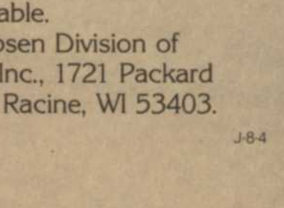

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Going for the Green: The XXIII Olympic Fields

by Dr. Kent Kurtz, professor of horticulture, California State Polytechnic University, Pomona, CA

Winning a medal at the Olympic games may depend on the condition of a turf surface. At the same time, field managers must fit the Olympics into their existing schedule of events. The result is a grueling struggle between man and nature.

The Rose Bowl *turf crew faced this the day after a motocross and just weeks before the Olympics began.*

Specialist spectators *Youngner, Kurtz, and Davis ponder the most critical field, the Coliseum following rebuilding.*

Despite the impending boycott by the Russians and other Eastern European countries, the Los Angeles Olympic Organizing Committee has continued to push for the best possible playing surfaces available for the competitors of the XXIII Olympiad.

Throughout southern California, managers and landscape personnel have spent countless extra hours feeding, grooming and putting the final touches to their fields. Several Olympic events will take place on natural grass surfaces and these areas must meet the strict and rigid standards of world competition.

Olympic turf *is spread throughout the Los Angeles area. Numerous turfgrasses and field construction designs are being used. Soccer, baseball, equestrian and track and field events must fit into the turf manager's regular schedule.*

These managers have had to fit the Olympics into their regularly scheduled events. Consultants have been called in to make sure the turf satisfies regular tennants as well as the Olympic Committee. This endeavor makes a unique story.

LA Memorial Coliseum

The opening and closing ceremonies and all track and field events will be held at the Los Angeles Memorial Coliseum, which had been constructed originally for the 1932 Olympic games.

The turf area of the Coliseum will be used mainly for shot put, discus, javelin, and hammer throw and ceremonial events. More television time will be spent on the Coliseum than other Los Angeles area fields used for Olympic competition. It is the showcase field.

To satisfy the athletes and discerning world eyes, the Coliseum management asked many turfgrass professionals to contribute their time, energy and expertise. They include the late Dr. Victor Youngner, who developed Santa Ana hybrid bermudagrass; William Davis, a sand field expert from the University of California, Davis; Dr. Henry Indyk, extension specialist from Rutgers University, New Brunswick, NJ; Dr. James Watson of the Toro Company; Dr. Victor Gibeault, University of California, Riverside; John Van Dam, University of California turf advisor; Steven Cockerham of the University of California, Riverside; and the author, a professor who has taught many of the area's superintendents and turf managers.

The Coliseum completed a major stadium renovation during the summer of 1982. This included replacing the common bermudagrass on a soil-based field with Santa Ana on a new sand-based field. The field architect was Richard Jenks, a member of the Jenks seed clan (Jenks-White Seed Co., now part of Jacklin) in Aurora, OR. Jenks' design, called the Hi-Play System, was also used for the Los Angeles Raiders practice field in nearby El Segundo. Indyk assisted Jenks with the planning and installation of the field.

Cockerham is the primary consultant for field maintenance, under the direction of the Coliseum's Larry Nielson.

Dodger Stadium

Baseball has appeared in the Olympic games seven times as a demonstration sport, the first in 1912 in Stockholm, Sweden. More than 40 countries will field teams this month, with the U.S. and Cuba as co-favorites.

Dodger Stadium, just North of downtown Los Angeles, features a Tifgreen hybrid bermudagrass field on a heavy adobe clay soil. The field is overseeded with Adelphi Kentucky bluegrass for the winter. Field superintendent Chris Duca moved with the Dodgers in 1959 from Brooklyn to Los Angeles.

The infield turf is mowed daily with a reel mower at one-half-inch. The outfield is cut at three-quarters-inch with all clippings removed. The primary nitrogen source is urea which is applied regularly every four to five weeks.

The automatic irrigation system in the outfield is set to water after all home games. Supplemental irrigation is used daily depending upon soil moisture and weather conditions. Duca tries to maintain root depths in excess of eight inches.

The infield is watered manually, as is the new "Dodger Dirt" which is now being used in the skinned infield areas.

The Rose Bowl

Soccer (football to the rest of the world) is the most popular sport on earth. The Rose Bowl in Pasadena will host the soccer finals. Sixteen out of the original 100 nations in the soccer competition will play off in the Rose Bowl. The U.S. automatically qualifies for the finals as the host country, but it has never won an Olympic medal for soccer, a sport dominated by eastern European countries.

Last year, the Rose Bowl's turf was replaced with a relatively new turfgrass from Australia, known as Excalibre or seashore paspalum. To help the paspalum survive a heavy schedule of events, including UCLA football, the Rose Bowl game, concerts, graduations and even motocross, the field has been overseeded with Olympic tall fescue.

Frequent fertilization, aerification and sand topdressing in addition to careful irrigation were attempted to help the field recover from the stress of intense use. Olympic soccer requires a table-top smooth surface so the ball will roll consistantly, thus the sand topdressing.

In late-June, based upon a recommendation from George Toma of the Kansas City Chiefs and National Football League field consultant, the decision was made to replace 75 percent of the field with Santa Ana sod from Pacific Sod. Pacific was also the supplier of the paspalum and stood behind the Rose Bowl in preparation for the Olympics.

Santa Anita

The equestrian jumping and dressage events will be held at Santa Anita Park race track in Arcadia. The competition will take place not on turf, but on specially prepared soil. The cross country equestrian events will be held at the Fairbanks Country Club in San Diego.

The Santa Anita soil areas (slides) are tiled for maximum drainage and worked into condition by dragging and watering. Soil needs to be stable for the 1,200-pound beasts and their riders to make sharp turns and to allow rapid acceleration for the timed events.

Frequent fertilization, aerification and sand topdressing in addition to careful irrigation, were attempted to help the field recover ...

USC field

Besides these major fields are practice fields such as Cromwell Field at the University of Southern California. Drs. O. R. Lunt and George Schmitz of Donald Eberhardt & Associates designed and built the field, replacing a silty clay soil with a medium particle sand and organic matter. It was then sodded with "Sports Blend", a combination of Tifgreen and Tifway.

Just in time

Preparing for the Olympics has demanded everything turf managers and turf science has to offer. Image is critical and playing quality even more important. With regular events to contend with, final preparations have been done almost at the last minute with daring atypical to the turf and landscape industries.

By mid-August, the Olympics will be just a memory and turf managers will refocus on their day-to-day challenges, helping other athletes perform at their best and safely on turf. **WT&T**

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Now that ORTHENE® Tree & Ornamental Spray has been cleared for use against turf insects, you've got effective insect control you can count on.

ORTHENE has been used for years to stop tough pests like gypsy moth larvae, aphids and bagworms, with no sign of resistance. It provides effective fast-acting control against armyworms, sod webworms, leafhoppers and greenbugs.

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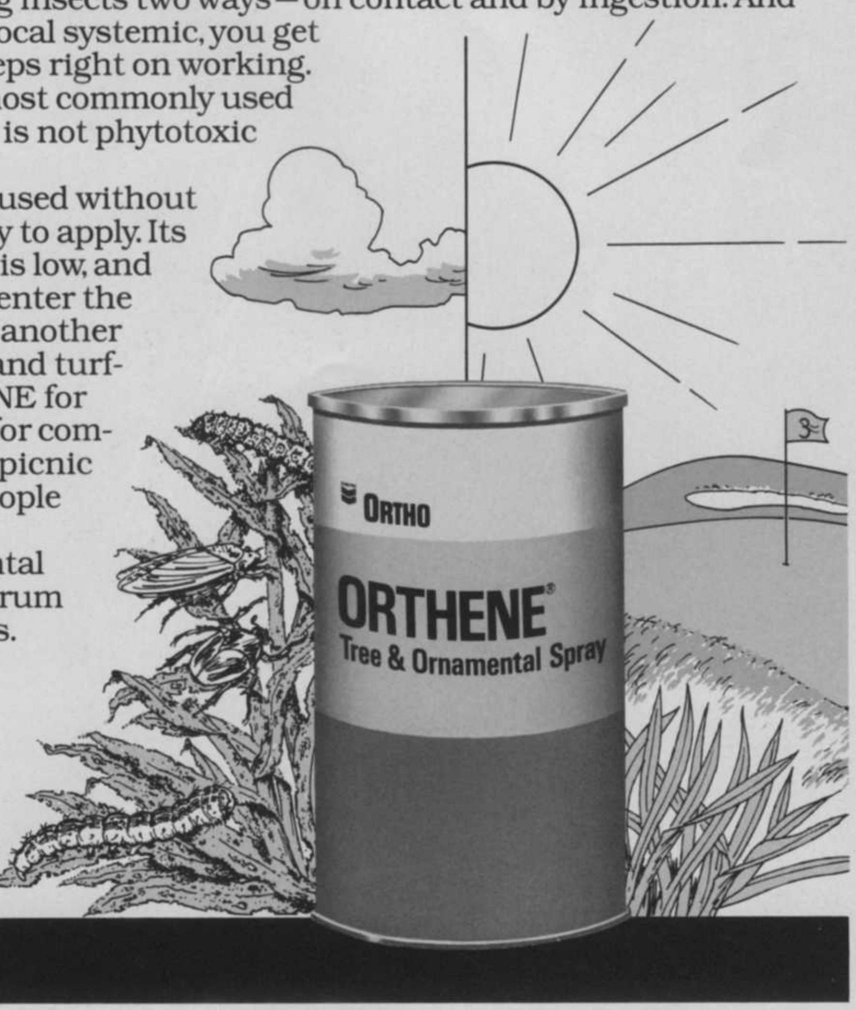
ORTHENE Tree and Ornamental Spray—for effective, broad-spectrum control of foliage-feeding insects.



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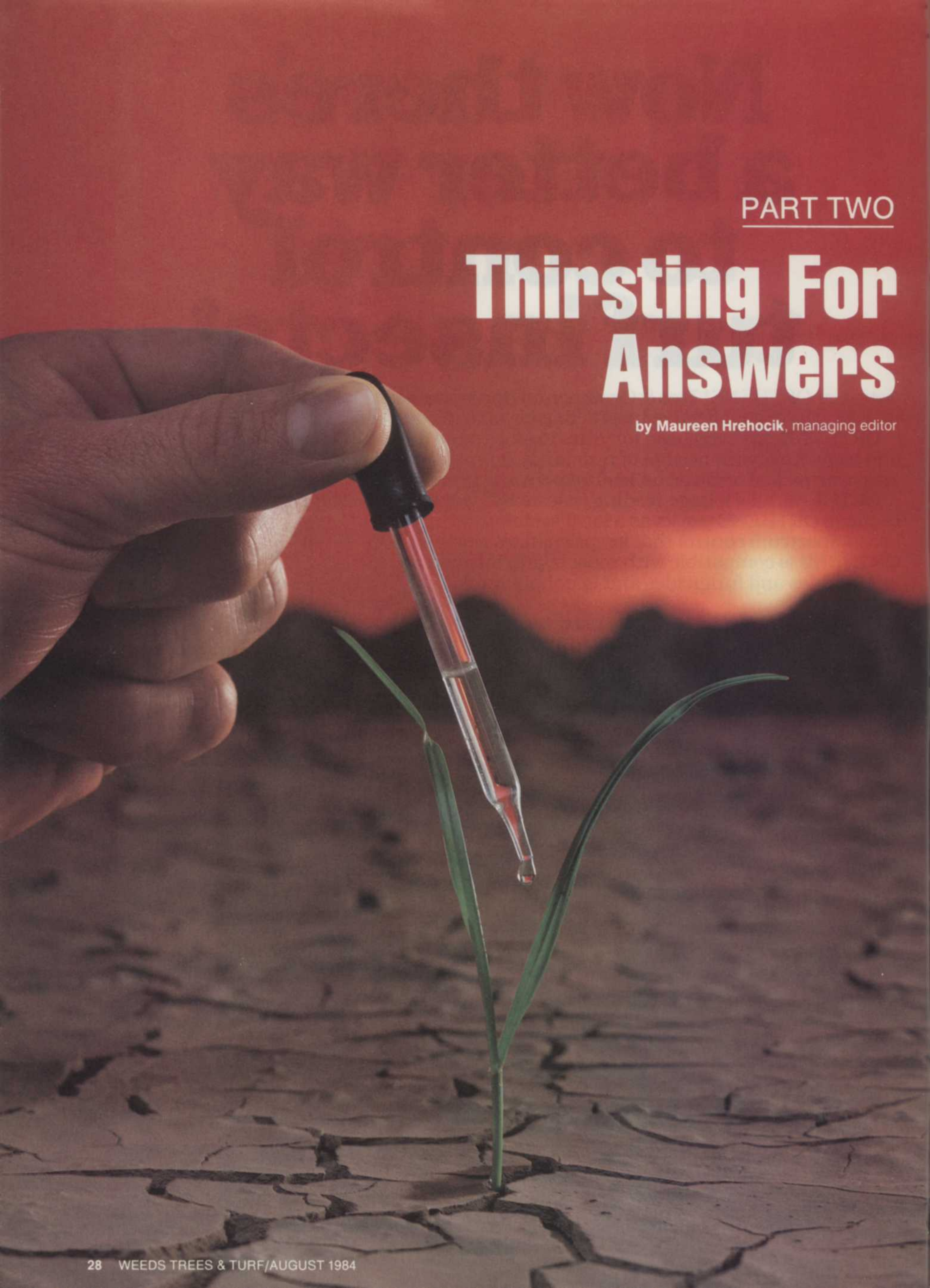
PART TWO

Thirsting For Answers

by **Maureen Hrehocik**, managing editor



One of the most critical challenges facing the Green Industry is an adequate supply of water. The lifeblood of this industry is slipping away through waste and pollution.

Last month WEEDS TREES & TURF began a two-part series on water use, conservation and quality in the Green Industry.

In "Thirsting for Answers, Part I," we examined water problems and issues in three key states; California, Texas and Florida.

In this second and final part, some solutions to these problems are offered through research, irrigation industry and Green Industry association involvement.

Development of low water use turfgrass is the kingpin in research currently being conducted.

University-level researchers across the country are currently trying to develop types of drought-resistant turf.

Backed up by concern for producing more efficient irrigation equipment from irrigation companies and financial and moral support from associations such as the USGA Green Section and Golf Course Superintendents Association of America, progress, slowly, is being made.

Tall cylinders *provide growing chambers for Dr. David Casnoff's root enhancement work study at the Texas A&M greenhouse in College Station. He is studying 11 warm season grasses.*

Research is kingpin in ebbing water woes

Dr. Jim Beard of Texas A&M, College Station, TX, oversees one of the largest turf water usage programs at the college level in the country.

With a staff of six, Beard's current research emphasis is water use rates, root enhancement, drought resistance and salt tolerance. His staff is doing interspecies work with 30 species. When that's complete, intraspecies work will be done.

"The future of the turfgrass industry rests on this type of research," Beard says. "It is a sobering responsibility and tremendous challenge."

Also, according to Beard, the number of man-year-equivalents (number of Ph.D-level researchers) doing work has doubled in the water area, largely due to the support of the USGA Green Section, this year to the tune of $332,000 with an estimated $3 to $4 million being spent in this area in the next eight to 10 years.

"When I first started my work back in the '60s, I had a budget of $2,000," says Beard. "Our USGA grant this year is $85,000."

Add to that the $90,000 in capital Texas A&M University has supplied and a half-a-million dollar physical plant, and Beard's operation is impressive.

Work is done on the 14-acre turfgrass research farm on the A&M campus. Field and plot manager Doug Dahms is responsible for its overall operation, mowing and fertilizing.

Root enhancement

Dr. David Casnoff is a post-doctoral student working with Beard in the area of root enhancement and stomata, the parts of a plant that allow water to enter and exit the leaf.

He believes the key to turf water usage is in the root system.

Casnoff is looking at the maximum root growth of 11 warm season grasses including Tifway; Tifgreen; FB119; Tex Turf 10; Texas Common St. Augustine; common centipedegrass; Argentine bahia; Adalayd sandknot grass; Emerald and Meyer zoysia; and Texoka buffalograss.

"We're not only trying to describe the difference between growth rate, but also how different species respond during spring when in their maximum growth period," explained Casnoff. "The ones that have more new root tips at a lower depth will probably have more active surface area for uptake of water."

Casnoff is also doing research with stomates.

Dr. Jim Beard *heads one of the largest turfgrass water use research programs at the college level in the country.*

"Stomates could possibly tell us why some grasses use more water than others," Casnoff said. "We know the size and number of stomates on the plant leaf are inversely related to each other, but we don't know whether or not it's better to have more or less."

Casnoff's work dovetails with turfgrass stress work research associate Steve Griggs is doing.

"Steve will have the low water use data and I will have stomate data. We can combine the two, and hopefully, come up with some important discoveries. At this point, the negatives are as important as the positives."

Griggs is a research associate in charge of testing humidity, dewpoint and light in the university's turfgrass stress chamber. Known environmental conditions can be created in the chamber which holds individually planted pots or lysimeters, of different species of grass.

Griggs said denseness in grass is becoming more important than stomata.

"Drought tolerance and water use are two different things," Griggs explained. "Buffalograss doesn't need a lot of water, but it will use water if it's available."

Griggs' daily routine includes weighing the lysimeters to calculate grams of water used. Cutting height is also important. Three replications per week are done of several cultivars of different turfs—mainly warm season grasses.

Sam Sifers, a retired colonel with a degree in history, is another research associate involved with minimal maintenance turfgrass—water, labor, energy and equipment.

Sifers set out to prove grasses with low nitrogen grow and perform as well as grasses with a high nitrogen content to give breeders parameters to judge turf.

"I eventually want to deny nitrogen totally and see what happens," Sifers explained.

His work entailed studying four bermudagrasses that required high medium and low doses of nitrogen—Midway (high); Tifgreen (medium), and TexTurf 10 and FB119 (low).

"We analyzed many different aspects of the grasses; shoot density, spring green-up, shoot growth, things like that."

Spring root decline is another area that Sifers is involved with.

Beard discovered the phenomenon of spring root decline—the grass turns brown above ground, but the roots don't stop growing—in the university's rhizotron, an underground growing chamber that allows the roots of live, growing grass to be seen from behind glass-like walls placed in the ground. (Texas A&M's rhizotron was the first in the world and is only one of seven that currently exists). Beard describes the phenomenon as the most significant discovery of his career.

Sifers has duplicated the rhizotron conditions in boxes in the greenhouse to duplicate warm/hot springs.

"We've not really found any decline," he reports. "With a gradual warming trend, there seems to be no effect. That could be one reason why superintendents have such a hard time from year to year. One season the grass seems to die, the next it doesn't," said Sifers.

"Stomates could possibly tell us why some grasses use more water than others."

—Casnoff

The next phase of Sifers' experiment will be Carbon-14 testing to pinpoint at exactly what temperature spring root decline is halted. He'll also study the effect phosphate has on the vegetative establishment of grasses. Sifers has already found with stolons that phosphate at three pounds per thousand square feet gave the fastest establishment of grass. He will next test phosphate with sprigging and sodding.

Kisun Kim, a graduate student studying under Beard, completed a comparative evapotranspiration (ET) rate study of 11 warm season grasses under non-limiting (watered everyday) soil moisture and progressive water stress conditions.

Sam Sifers, Texas A&M, *College Station in the greenhouse with growing boxes that chart root growth, simulating conditions of the university's rhizotron.*

He found that, in general, tall fescues used more water and zoysia, bermuda, and buffalograss used less. There was a higher ET rate when the leaves were erect, shoot density was low and there was a high leaf area. St. Augustine and Adalayd had the highest evapotranspiration rate among warm season grasses. Emerald zoysia, buffalograss, centipedegrass and Tifgreen showed a low evapotranspiration rate. The conclusions of Kim's study were that zoysia species, centipedegrass and buffalograss can be recommended as prospective species when water saving is a high priority.

Those grasses which had a low vertical leaf extension rate, high shoot density, low leaf area and prostrate growth habit, had a low evapotranspiration rate. All grass species showed higher ET rates when maintained at their respective optimum nitrogen level and cutting heights, primarily due to the resultant, more rapid shoot growth.

Wallace Menn, an instructor in the A&M turf program, as part of Beard's overall turf water use research, did a four-year study of St. Augustine using Cutless and Embark growth regulators.

He sprayed the lysimeters with dif-