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Jerry Miller

Jerry Miller, Director of Engineering
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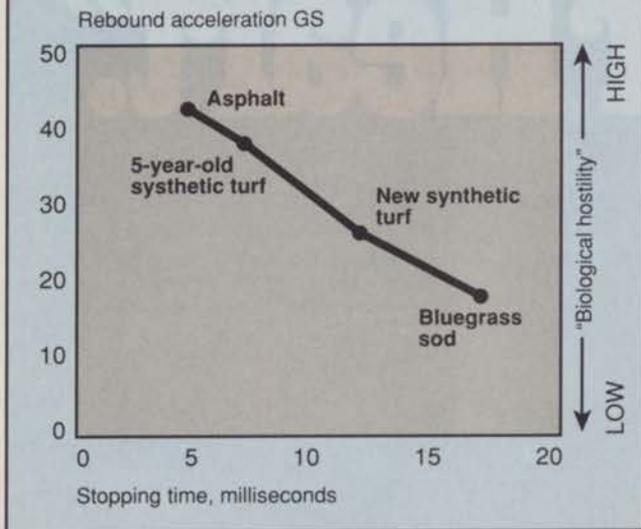
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IMPACT ABSORPTION OF SURFACES

Rebound acceleration and stopping time of a 16-pound indoor shot put on four surfaces, West Virginia University, 1974.



problems with the former is surface temperature.

"When the air temperature is 100 degrees (in sunlight), the temperature with synthetic turf is 140 to 160 degrees," he says, "while the temperature with natural grass is 95 degrees."

One of the more apparent problems with artificial turf is the beating bodies take. Kent Falb, trainer for the Detroit Lions, believes that the increased traction

number of athletes in the whirlpool, steam room and sauna, and I see an increased consumption of aspirin."

Though artificial-surface practice fields allow all-weather play and prepare players for games on artificial surfaces more efficiently, there are precautions.

"If practice is held on artificial grass," Falb says, "require players to wear sneakers, and ask the coach to cut down on practice time and practice intensity."

Beware ice

While many of the nation's artificial surfaces are in warmer climates, Toma thinks the synthetic fiber is more suited for northern climes.

"Where grass doesn't do good like in the transition zone or far north, you can put in artificial turf," he says. But Toma also warns, "you have to cover artificial turf for college or high school football games. You can push snow off it, but if you don't have a cover and get an ice storm, no way you're going to play in the snow. At Royals Stadium recently, we could've had a hockey game because the field froze over."

The biggest problem with artificial surfaces is installation technique, Toma firmly believes.

"I'm not against artificial turf, but I sure am against poor artificial turf installations," he emphasizes. "If you're going to pay one to two million dollars for an installation, it should be a pool table. I'm pleading with artificial turf companies to have better installations. A lot of times, they experiment with our money. Then you've got problems. I hate to say this, but in the past we have protected artificial turf companies from the public like we protect child molesters."

"They aren't going to try to improve unless somebody puts a finger on them. People not in the artificial turf business simply don't know what to look for."

The crew's the thing

Artificial or natural, the field is only as good as the maintenance crew, according to Toma.

"If you had a good natural grass field and you switched over to artificial turf, you'll have a good artificial field, if the installation is good. If you had a poor natural grass field and switched over to artificial turf and the installation was good, you would still have a bad field."

"Natural grass taught our kids pride, and they have pride in their artificial turf. If your people don't give a damn about the natural grass, they aren't going to give a damn about the artificial grass." **LM**

you're putting in artificial turf and then put in natural grass, you'd get all the money you'd want."

Kurtz concurs

Dr. Kent Kurtz of Cal Poly Pomona, an advisor to the Rose Bowl and L.A. Coliseum, says that "when you have too many teams and too many activities, artificial is the only answer. And it's silly to consider natural turf indoors. It's possible to grow grass inside, but it's limited to athletics and not for trade shows and all the other stuff."

Toma says part of the problem in dealing with athletic turf surfaces is lack of concern.

"Many times, our turf programs have to start with the stadium managers, athletic directors, coaches and owners," he notes. "Then, too, the only time they become concerned is when it's rainy and too wet, there are too many injuries, or the turf doesn't look good for the big game."

"The answer is to get them thinking and understanding our soil, turf and equipment problems."

Toma sees public perception as standing in the way of more natural turf fields.

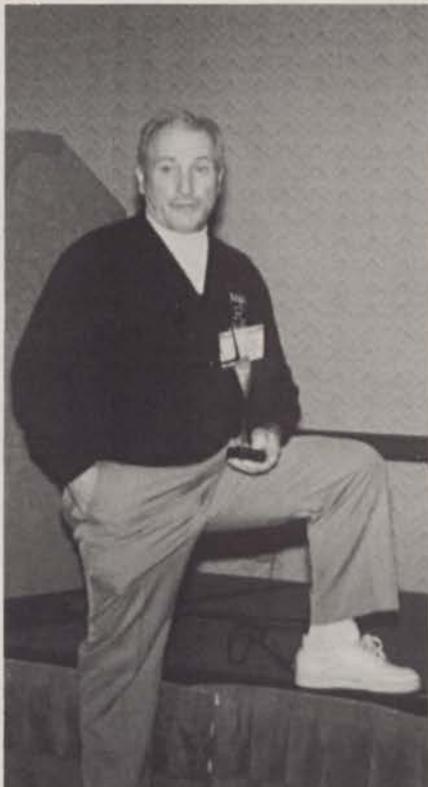
"People take natural turf for granted," he observes. "You see better fields in high school and college than you do in the pros nowadays. But if we can convince the public, natural grass will be back."

Hot stuff

Toma believes high-traffic fields are more suited to artificial turf, but that natural turf is the best alternative in most situations. One of the biggest

afforded by the carpet transmits more stress to ankles, knees, hips and backs.

"The injury rate and severity of injuries is about the same on either surface," says Falb. "But the big difference is a significant increase in general body soreness (on artificial). I look at the



Toma: "If your people don't give a damn about the natural grass, they aren't going to give a damn about the artificial grass."



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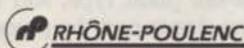
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Tensiometers can determine the point at which soil saturation, field capacity and permanent wilting occurs within a particular soil profile.

METER ADVANTAGES MEASURE UP

Accurate soil moisture readings require the technical advantage gained from a variety of measuring devices.

by Jim Ware

The time-honored method of probing the upper soil layer to determine soil moisture is a superficial one. It is also of little use when assessing the actual behavior of water in a growing medium.

Realizing that no standard method of irrigation exists for every landscape, the identity of specific moisture requirements can become a critical component of a total plant care program.

The proper amount and frequency of irrigation is at least as important as

the other limiting factors in a landscape maintenance program. Homeowners and commercial accounts alike are apt to design irrigation practices according to "off-the-cuff" intuition rather than by optimum soil moisture requirements.

Even in the same region and under identical climatic conditions, soil moisture requirements can vary greatly between plant type, soil textures, surface slopes and the physical aspects of the site.

Moisture indicators have existed

for years, mostly in agriculture and plant research. These devices can be useful in lawn and landscape maintenance as an aid to plant problem diagnosis or to promote more efficient irrigation techniques.

There are basically two types of moisture indicators: those that respond to changing soil moisture with a resulting change in electrical con-

Meters are invaluable for mapping soil.

ductivity, and those that actually simulate a plant's ability to extract water from soil.

Electrical moisture meters are easier to install and use; however, they can be affected by high levels of soluble salts in soil and cannot respond to very low moisture levels. Nevertheless, they are used to spot check for the presence or absence of soil moisture.

Using tensiometers

Tensiometers (also called suction meters or irrometers), reflect the actual difficulty or ease by which a plant extracts soil moisture. When suction is high, soil drying and plant stress are indicated. At lower suctions, plants can easily obtain the necessary moisture.

The point at which soil saturation, field capacity and permanent wilting points occur within a particular soil can be quantitatively determined with the aid of tensiometers.

Following an irrigation, moisture meters can be used to measure the effects of evaporation, drainage and plant use on soil moisture.

A primary benefit of moisture meters is their ability to indicate the rate a soil dries within a specific water regime and under a particular environmental condition.

Future irrigation

Not only is this valuable for immediate determinations, but it facilitates the understanding of future irrigation needs. By extrapolation of readings, you can project when irrigation will be required.

Aside from indicating moisture thresholds, moisture meters can be used to indicate chronic over-irrigations and the potential for root rots, soil oxygen deprivation and excessive irrigation costs.

For larger areas of turfgrass and landscaping, moisture meters are valuable for mapping soils and soil

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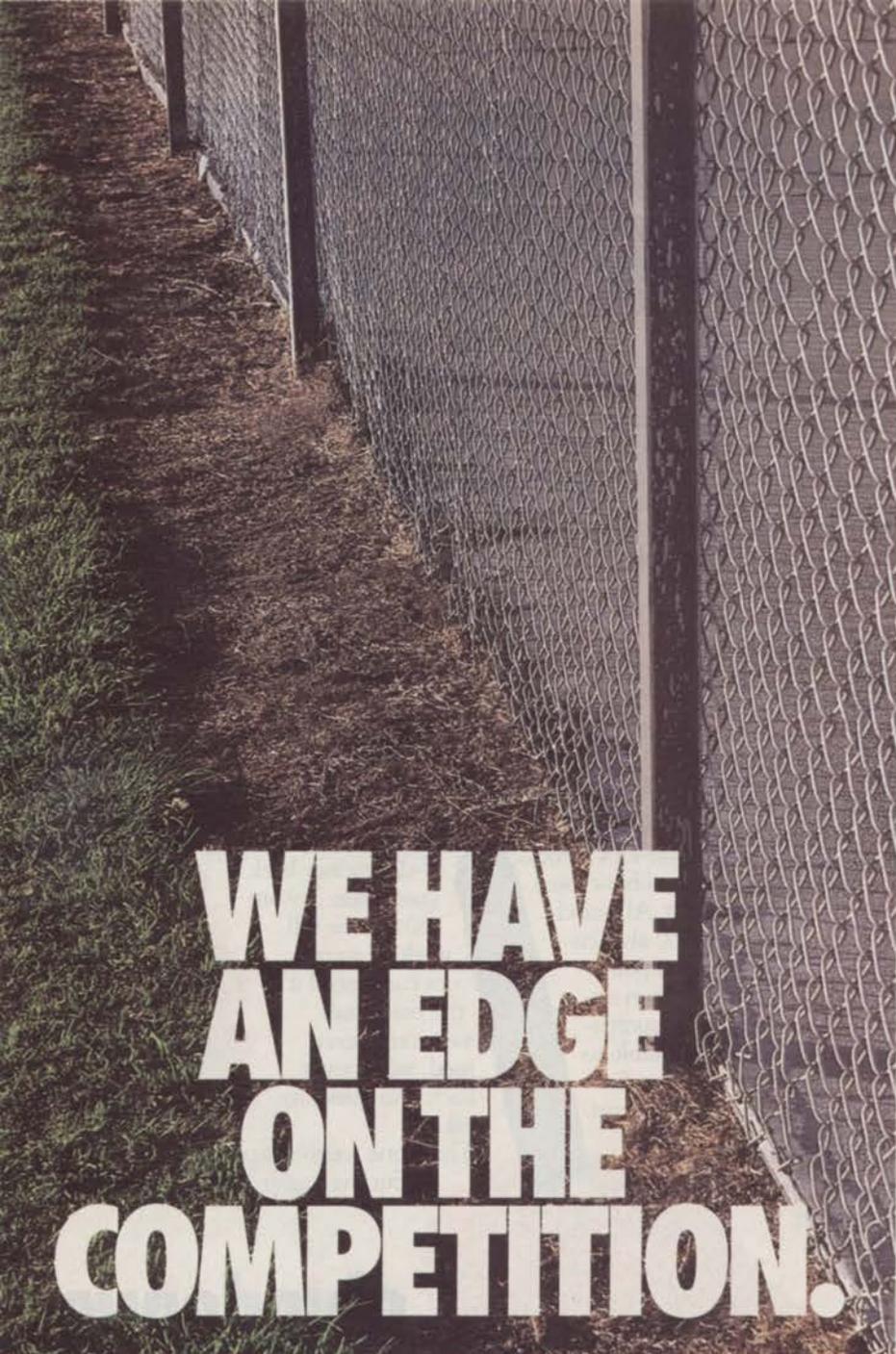
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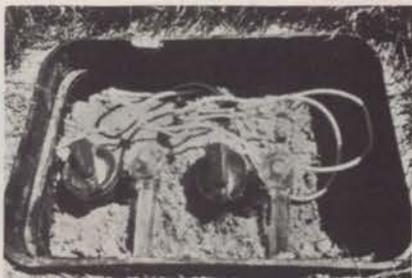
discrepancies as they pertain to moisture retention. Hot spots, slope variations and differences in plant demand can justify additional irrigation in order to maintain uniform turf development.

Landscape applications

Such information is useful when planning sprinkler system layouts and for determining the operation of a system as it would pertain to pattern distribution and cycle longevity and frequency.

Tensiometers are available in a variety of lengths and sizes to accommodate measurements in the rootzones of various plant species.

For deeper rooted trees and ornamentals, two meters placed in the upper and lower rootzones can monitor



Irrrometers are available in a variety of lengths and sizes. (Photos courtesy of Irrrometer Co., Riverside Cal.)

the zone of moisture control between the two measurement points and within the bulk of the root system's density. Except for very deeply rooted grasses, a single meter installation should suffice. It is also customary that meters be placed in areas that are more subject to rapid soil drying, such as sunny locations.

Plus and minus

The advantages of moisture meters are their diversity of uses, relatively low cost, portability and accuracy. A disadvantage is the need to frequently read and service tensiometers when measuring long-term moisture trends. Unattended meters are susceptible to theft or vandalism. However, the size of the account could justify this extra attention, and protective covers can be fashioned to protect above-ground components.

Considering the demand for higher plant quality—especially in light of increasing irrigation costs and the scarcity of water in some areas—using moisture measurements may well become a staple complement to lawn care operations of the future. **LM**

Jim Ware is a consulting agronomist based in Hobbs, New Mexico.

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IN-HOUSE AND PICTURE PERFECT

The Eastman Kodak landscaping team operates as a well-run business within a larger corporate structure.

by Terry McIver, associate editor

"Pretty as a picture" is an apt description of the grounds surrounding the Eastman Kodak headquarters in Rochester, N.Y.

That snapshot look was achieved through the dedication and professionalism of the company's 20-man landscape section. The section operates as an independent service within the company, to provide landscape consulting and design services, installation and maintenance for all Kodak properties in the Rochester area.

Cost-saving idea fruitful

According to section group leader Jim Voorhies, streamlining was begun two years ago when Kodak wanted to improve cost efficiency.

"The company wanted us to go through all the various service businesses within Kodak—such as landscaping, parking lot operations, mail delivery—to determine whether it would be more cost-effective to have the services performed by an outside

agency," recalls Voorhies. "We found this landscaping operation to be compatible with an outside contractor."

An in-house landscaping team is not a new concept, but Kodak wanted to be sure it was getting the best return by having the service done by a Kodak crew. Other sections in the company are thus charged for services performed.

"It's not like the money is leaving the company; it just moves within the company," explains Kevin Grapensteter, section supervisor of the landscape operation. Return on sales and assets are targeted for all available services, and the team has to bid on any new projects considered by upper management. "We have a slight advantage over an outside contractor," admits Grapensteter, "in that we don't have some costs such as advertising or equipment mortgages."

Regardless, the Kodak landscape section operates like any successful landscaping company. A thorough mission statement dictates that all

services be performed in a way that takes into consideration any neighborhood concerns or environmental impact, uses resources effectively and performs the work safely and efficiently.

Sharing the dollars

The Landscape Section had a 1989 operating budget of \$1.2 million, dispersed among seven lines of business: lawn maintenance; new installations and restorations; tree and shrub maintenance; bed maintenance; vegetation control; property management; and snow removal.

Of the seven businesses the Lawn Maintenance, Vegetation Control, Tree and Shrub Maintenance and New Installations divisions are the busiest.

Lawn Maintenance receives 47 percent of budgeted dollars to care for 216 acres. Those responsibilities include mowing, edging, thatching, rolling, aeration, fertilizing, chemical application, irrigation, litter pick-up

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and spring/fall clean-up.

Vegetation Control requires chemical application at stone, mulch and fence line areas, along with field and slope mowing of 500 acres. The New Installation business designs and selects plant material and installs all landscaping of new building sites associated with Kodak Park and the Kodak offices in downtown Rochester. The Tree and Shrub Maintenance division prunes, trims, fertilizes, irrigates and applies needed chemicals to 28,500 plants. Tree varieties include Austrian pines, maples, flowering crabtrees, locust trees, and

andorra junipers.

Equipment costs for the division were also lowered after it hired its own mechanic. "In the past," explains Grapensteter, "we had contracted a certain amount of dollars to the Kodak garage." But when it came to repairing either a truck needed in a hurry to transport Kodak products to a dealer or a piece of lawn equipment, business sense dictated that the lawn equipment repair be put on hold. "Now we don't have as much down time," says Grapensteter. The Kodak landscaping fleet includes two Howard mowers, a number of out-

front rotary mowers, and equipment from Cushman, Yazoo, Bobcat, Ford and John Deere.

Well trained, licensed crews

Voorhies says Kodak believes the growth and customer satisfaction of the landscape department is a direct result of career-oriented employees who are proud of their accomplishments:

- 60 percent have earned associate degrees;
- 80 percent have had previous landscaping experience;
- 85 percent are New York State licensed pesticide applicators.

All employees are versatile and trained to assist other sections within the department.

"The last six or seven people we've hired have had education in the (horticulture) field plus prior experience; some owned or still own nurseries," says Voorhies. "We have nine maintenance crews of two to five men each," explains Voorhies. "They report to fully equipped work stations, each with its own group leader. The group leaders are familiar with their designated area and have a good rapport with people they work with."

Good ideas get around

Each duty is organized independently along geographic lines. The layout requires group leaders to make decisions, prioritize work loads and use resources as conditions warrant.

An on-going cross-training program ensures maximum use of personnel and resources while developing experience for back-up personnel. Grapensteter says cross-training not only gives insight into how another area operates, "it introduces ideas from one area to the next. Therefore, a time- or money-saving idea can work its way through."

To maintain a quality workforce, cross-training is supplemented with safety seminars and alternate work hours for improved equipment use.

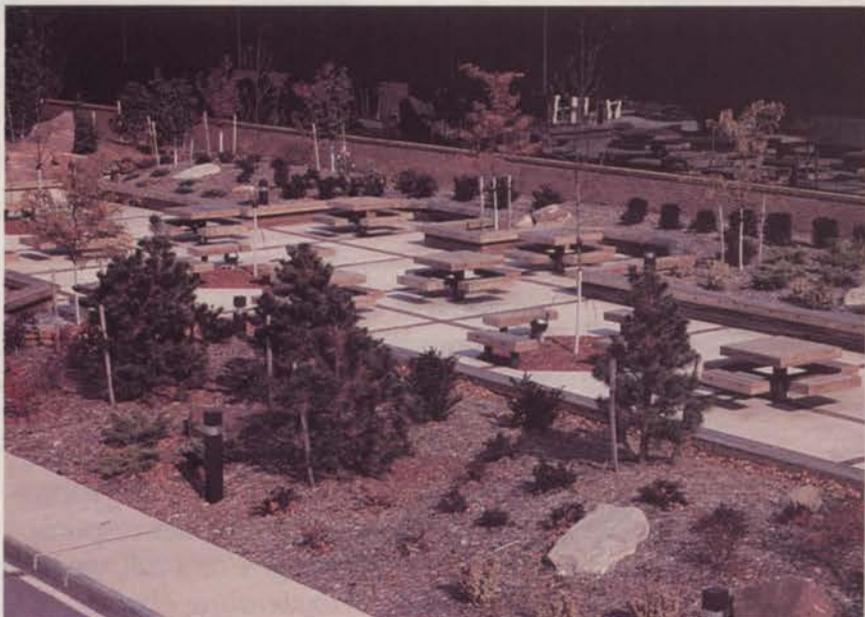
To increase productivity during the growing season, various activities are scheduled during winter months. Educational seminars and training sessions are conducted, group leaders meet, safety meetings are held. Winter is also a good time to prune trees and remove dead vegetation from along security fence lines.

Grapensteter says that to find good part-time help, the division visits local colleges to recruit horticulture students who are interested in working for Kodak during summer.

"If they can pick up some useful information during the summer and get paid for it at the same time," says Grapensteter, "we both win." **LM**



Flower beds adorn one of the original sections of Kodak park, making the old look new, neat and attractive.



The Kodak Landscape Section designed and installed this picnic area for workers' lunchtime breaks.