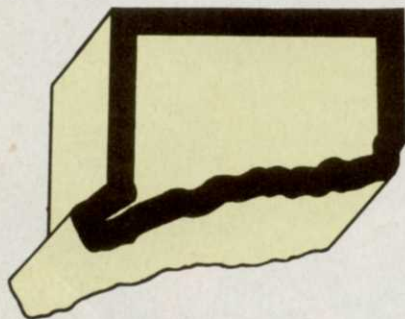


## LEGISLATION

### Sign-posting, licensing laws in the books

Recent legislation in three states will have an effect on how pesticides are applied. The states—Connecticut, Maryland and Kansas—have restricted pesticide application in different ways. Here is a brief rundown on new laws facing pesticide applicators in those states:



#### Connecticut

Anyone who sprays pesticides for non-agricultural purposes—including homeowners—will have to post warning signs. The law, passed by the state legislature in May, is expected to take effect in 1990.

The law is probably the first in the country to be jointly supported by industry and environmental groups. "The parties have agreed on everything involving the posting," says Don Kiley, executive director of the Professional Pesticide Users of Connecticut.

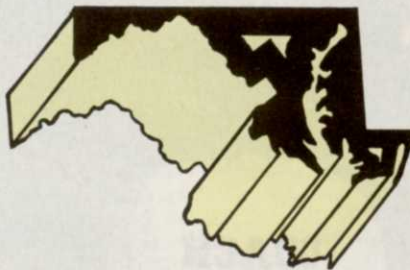
Specific regulations are to be completed by the Department of Environmental Protection by Oct. 1, 1989.

Kiley says industry and environ-

mentalists have agreed that 4x5-inch signs should be posted at conspicuous points of entry, with black letters on a yellow background reading: "Pesticide Application."

The name and phone number of the company or person doing the application would be on the back of the sign, and the property owner would be responsible for removing it after 24 hours.

The two groups also agreed that a registry of individuals who wish to be notified prior to applications should be established by the state. Pesticide applicators who spray abutting properties would then be responsible for notifying these individuals one day in advance. Applicators would be excused in the event of an emergency application.



#### Maryland

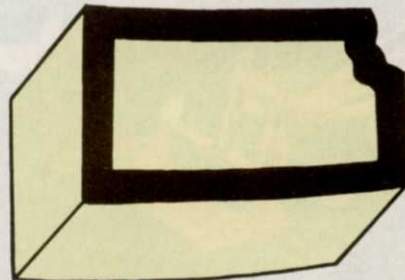
Mandatory sign posting, approved by the state legislature last year, will begin some time in July or August. The specific requirements were being finalized at the time this magazine went to press.

The requirements as they stand are

almost identical to those in Massachusetts: LCOs must post 4x5-inch yellow signs with the image of a person walking with a dog, with black letters reading: "Pesticide Application, Keep Off."

One difference is that the customer is instructed to remove the sign after 48 hours, not 72 hours as in Massachusetts, says Mary Ellen Setting, an entomologist with the Maryland Department of Agriculture. The back of the sign must have the applicator's company and phone number.

Many companies began voluntary compliance this spring, Setting says. The law covers all commercial and government lawn and ornamental applications.



#### Kansas

All who apply lawn care chemicals commercially for one year after Jan. 1, 1989 will have to be licensed. The legislature recently passed the requirement with the support of the Professional Lawn Care Association of Mid-America, according to Dave Murphy, association president.

Applicators will work their first year as registered technicians; they will receive verifiable training by a certified applicator. After one year, they will have to pass a test administered by the Department of Agriculture.

Kansas is one of a handful of states to require mandatory training of all lawn care applicators. The Professional Lawn Care Association of Mid-America is lobbying for a similar bill in Missouri.

Only handlers of materials in the "restricted-use" category, designated by the Environmental Protection Agency, require certification or supervision under the Federal Fungicide, Insecticide and Rodenticide Act.

Most lawn care chemicals do not fall under this category.

—Lawn Care Industry

## PESTICIDES

### It's official: Daconil innocent

On May 9, nearly five years after the fact, Daconil fungicide was cleared of any complications in the death of Navy Lt. George Prior.

Judge Paul S. Sheridan, Circuit Court of Arlington County, Va., dismissed the \$16 million lawsuit against Diamond Shamrock and the Army/Navy Country Club for the death. The suit was filed by Prior's widow, Liza, who claimed Prior died as a result of Daconil exposure.

"We're pleased with the judgment in this case as it relates to our product, Daconil 2787," says Ed Sabala, mana-



#### Daconil

ger of corporate communications for Fermenta Plant Protection, which presently manufactures Daconil.

Prior, 30, died in September of 1982 of toxic epidermal necrolysis (TEN), a rapidly progressive and often fatal disease, 14 days after playing golf on the

*continued on page 11*



**PRIOR** from page 8

Army/Navy Country Club golf course. The course had been sprayed with Daconil.

The case has been repeatedly touted by anti-pesticide activists as proof that lawn pesticides are dangerous.

"We've just been beaten up by it so many times in the media," says Steve Hardymon, spokesman for ChemLawn Services, Columbus, Ohio. "We're just happy to have it behind us."

Adds Jim Wilkinson, executive director of the Pesticide Public Policy Foundation: "This is just one thorn out of our sides. Wherever we go, they're (activists) always referring to it."

Greg Richards was working for a lawn care company in Washington, D.C., where Prior lived, in 1983 when the suit was filed. Richards, now product manager at Lesco Inc., remembers that the suit was featured prominently in local media.

Customers, understandably concerned, would ask them if they used Daconil, Richards says.

"It just takes a tool away from some of these environmentalists who have been pounding away at it for years and years," Richards says. "The case was used as a reference against all pesticides."

"There is no question in my mind that Daconil was in no way related to Lt. Prior's death," notes Robert Arthur, the lead defense attorney. He summarized the two sides' arguments.

For the plaintiffs, Dr. Lord said he determined, through infrared photography, that Daconil was present on Prior's golf balls, clubs and shoes, as well as the golf course. He said Prior had been plagued by unusual health complaints after playing on the course.

Arthur says two other doctors supported Dr. Lord's conclusions but offered no investigation of their own: Dr. Kenneth Chase, an internal medicine specialist, and toxicologist Ruth Shearer, Ph.D.

Two of the defense witnesses took issue with Dr. Lord's method of determining Daconil was present on the grass at the time Prior played.

Samuel Goward, Ph.D., an expert in infrared photography, said the quality of the photography was too poor to determine any type of chemical was present. Keith Flohr, a chemist, said the fluorescence revealed in Dr. Lord's photos could not be known to be that of Daconil, but healthy grass.

## ACADEMIA

# Students and city cooperate on training with industry reps

A number of turf and tree care companies joined forces with Paul Smith's College last summer to educate urban tree management students, while also beautifying the streets and parks of Plattsburgh, N.Y.

The program was developed by college urban tree management coordinator Grove Katzman and teaching assistant Harry Pearsall. Under the program, industry representatives provided a wide variety of demonstrations and lectures to the students, who then practiced what they learned in the real-life laboratory of this northeastern New York municipality.

James Fenstermacher of ChemLawn, Malcolm Johnson of the S.V. Moffett Co. and Dave de Sousa of the F.A. Bartlett Tree Expert Co. conducted seminars and field training. Also lending a hand was Dave Armstrong of the Niagara Mohawk Power Corp.

"Everybody benefits," believes Katzman. "It's a hands-on training exercise that allows our students to gain practical experience while being involved in a very positive project."

Practical demonstrations were held at the Plattsburgh municipal beach, Bailey Avenue and West End parks and a local golf course.

"This is something that's never

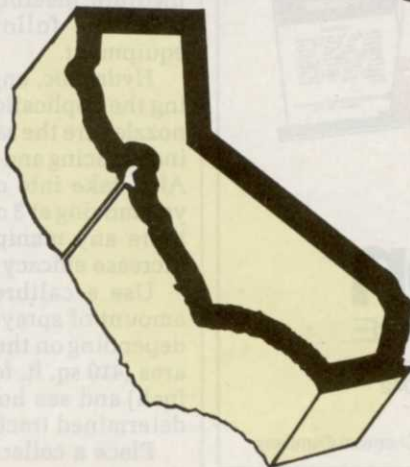


**Jim Fenstermacher of ChemLawn points out weed problems to UTM students in Bailey Avenue Park. Photo by D. Czuprynski.**

been done before," Katzman continues. "It's new and it's different. Although a tremendous number of problems are involved, there is also a great opportunity here to really accomplish something."

## LEGISLATION

# Landscape board puts halt to threatening legislation



California landscapers certainly can't control the amount of water that falls from the sky. But when government attempts to restrict their business, they move.

California is in the grip of its worst drought since 1977 (see "News/Trends"). Consequently, the East Bay Municipal Utility District (EBMUD) in the San Francisco area announced plans to impose stringent water control measures to minimize the crisis. EBMUD's proposal included water rationing programs and a ban on all landscaping projects until the rains return. Period.

*continued on page 12*



The idea of waiting until winter to resume work, however, didn't sit well with the state's highly-organized landscape industry. Instead, they joined forces and were able to head off many of the strong actions EBMUD was considering.

The architect of the industry's counter-offensive is Chet Sarsfield, owner of Irrigation Technical Services of Lafayette, Calif. He is an active member of several state organizations, including the California Landscape Contractors Association (CLCA), American Society of Irrigation Consultants (ASIC), American Society of Landscape Architects (ASLA) and the Northern California Turfgrass Council (NCTC).

"When the problem came about (early March) we just got together and talked about it," says Sarsfield. "Several of us volunteered our time, called together some meetings and decided to do something about it."

Representatives from the Northern California Landscape Architects, California Association of Nurserymen, Northern California Gardeners Federation, Irrigation Association, and sod growers also are on the board.

The 15-member group, dubbed the Green Industry Landscape Advisory Board, went to work. Armed with a five-hour presentation that covered everything from an overview of the impact of EBMUD's proposed solution to a lesson in irrigation and landscape design, the group was able to get EBMUD to back away from its early, severe proposals to adopt a more compromising position.

California landscapers, instead of being banned from working or at least paying ferocious water rates, will instead be using water-tolerant plant materials and postpone the laying or planting of turf until the drought subsides. In addition, EBMUD announced its intention to use the board as an advisory group available for consultation on a continuing basis.

Sarsfield says that in addition to serving EBMUD, the group will undertake a campaign to educate water companies, nurseries, even homeowners throughout the area about proper irrigation and water use.

"I think this group is unique in this country," adds Sarsfield, "and successful too."

#### MAINTENANCE

### Calibrating equipment increases profitability for Landscapers

Calibrating spreaders, sprayers and other instruments you use to distribute pesticides and fertilizers will increase your profitability, says Bruce Augustin, Ph.D. at Lesco, Inc., Rocky River, Ohio.

Landscape managers at the Turfgrass and Landscape Institute meeting in Anaheim recently heard Augustin offer the following advice on calibrating various equipment.

**Hydraulic, engine-powered sprayers.** Before determining the application rate of these devices, make sure all its nozzles are the same type, find out if they feature 10- or 20-inch spacing and if they are all at the same specified height. Also, take into consideration your spraying pattern: are you moving at 3 or 4 miles per hour during application; are there any manipulations of the sprayer you can use to increase efficacy or safety?

Use a calibrated measuring cup to determine the amount of sprayed material you're going to apply. Then, depending on the spacing of the nozzles, measure a course area (410 sq. ft. for 20-inch spaced nozzles and 205 for 10-inch) and see how long it takes to travel that length at a determined tractor speed.

Place a collection cup beneath one sprayer nozzle for the same amount of seconds it would take to cover the



## DURSBAN\* sends pests packing.

It's one of America's leading turf insecticides —and Lebanon has it!

Your green, green grass is prime real estate to chinch bugs, sod webworms, billbugs and other unwanted insect guests.

But their lease will be up when you use Lebanon's line of DURSBAN products. And your turf will look better, too!

#### Keep pests on the move.

Lebanon Insect and Grub Control with DURSBAN gives efficient control of a broad range of soil and surface feeding insects on turf and ornamentals. Country Club 19-4-6 Fertilizer/Insect Control with DURSBAN gives you pest control plus the essential nutrients you need to grow thick beautiful turf.

Both of these easy-to-use granular DURSBAN formulations can be applied with any spreader. Just water-in according to directions and those troublesome pests will be sent on a permanent vacation.

#### Start making your turf prime real estate for you.

Call our Greenline today at 1-800-233-0628, in Pennsylvania call 717-273-1687, for more information on our complete line of premium quality fertilizers, combination products and straight chemical products.



# Lebanon

TOTAL TURF CARE

A division of Lebanon Chemical Corporation  
P.O. Box 180 • Lebanon, PA 17042

\* DURSBAN is a registered trademark of The Dow Chemical Company.

Circle No. 121 on Reader Inquiry Card



## CALIBRATION from page 12

above-mentioned distance. The number of ounces you collect are equal to the number of gallons you're applying per acre.

**Spray nozzles.** Measure a 1000-sq. ft. area (40×25 feet) and spray it with a known amount of water in the same manner you would spray in the field.

When the area is sprayed, you know your application rate per 1000 sq. ft. This allows you to adjust to the sprayer's walking speed to meet the desired application level.

Augustin also recommended using a new meter introduced by Great

Plains Industry that measures flow rate. It fits on a spray gun and gives a direct reading of gallons per minute.

"Many of these techniques apply across the board. They're very fundamental," said Augustin. "Your livelihood depends on efficient, economical application, and by properly calibrating sprayers and spreaders, you'll defi-



Augustin

nitely help control your costs and make yourself more profitable."

## DISEASES

### Isolating a 'new' patch disease

A number of years ago, a patch disease appeared on the turf scene that displayed all the classic characteristics of other patch diseases.

It would occur suddenly, producing distinct patches and rings in the turf. Turf crowns and roots were usually both involved with an ectotrophic fungi.

The disease's response to various fungicides differed, especially to sterile inhibitors such as Bayleton and Rubigan. The fungicides had an unpredictable, unexplainable effect.

This disease, though similar to fusarium blight, didn't match up, notes Gayle Worf, Ph.D., a turfgrass pathologist at the University of Wisconsin. In looking at the crown of the plant for its health, there was evidence of a dark ectotrophic fungus that was proven to be doing damage to the crown.

Diagnosis showed symptoms of the disease included an abundance of the dark fungi in the crown and root and elimination of other possible causes of the stressed appearance of the turf such as drought.

Researchers isolated the organism and worked to demonstrate its pathogenicity. The isolation separated the disease from summer patch and the new disease was named: necrotic ring spot.

Worf found that various cultural practices helped to control or enhance the disease. Higher fertility enhanced the disease though thatch had no effect.

He found that turfgrass varieties strongly affected the disease's onset and severity and recovery potential from disease. "Few if any varieties are completely resistant," Worf states, "but some are worse than others. Rye blends do very well."

## LEGISLATION

### ACA members urged to fight insurance plan

The American Cemetery Association (ACA) is urging its membership to fight proposed legislation that will require employers to cover their employees working 17½ hours per week or more under a comprehensive health benefits plan.

The bill, S. 1265, was introduced by

## Get a different view of mowing.



Start with Grazer's zero turning radius. See how quickly you maneuver around all ground obstacles for a smooth trim finish.

Check out the control console. Everything's easy to see, even easier to access.

Lift the out-front deck. One simple motion clears curbs and obstacles.

Tilt back the deck. Cleanout's a snap. So is servicing of blades and spindles.

Add in more Grazer advantages: PTO accessories, dual headlights, positive traction, vacuum grass catcher.

Shouldn't your view of mowing be from a Grazer? See your dealer to test drive any of Grazer's five commercial mowers or call us today.

# GRAZER

## Out front with an advantage.

Grazer Division, M & W Gear Co. • Route 47 South • Gibson City, IL 60936 • 217/784/2461

Circle No. 110 on Reader Inquiry Card



Senator Edward Kennedy (D-Mass.). It requires employers to pay about 80 percent of the cost of health premiums. This will cost employers \$27.1 billion a year, says the government, assuming coverage is purchased through indemnity rather than managed care plans.

The ACA is asking its members to send Mailgrams to their senators that state your opposition to the plan. Make your message short and to the point, refer specifically to S. 1265, and thank the senator for help in defeating the bill, says the ACA.

#### AWARDS

### Software, creator earn award nominations

"Slice," a computer system developed for the landscape and nursery industry, and its creator, Gary Thornton, have been nominated to receive awards from the International Data Base Management Association.

Thornton, president of Thornton Computer Management Systems in Cincinnati, is nominated to receive the Association's Technical Achievement Award while "Slice" is one of four programs nominated for the

"Most Innovative" category.

Nominations were made at the third annual Pro-Gramme Awards Presentation in Anaheim, Calif.

#### INSECTS

### Brazilian fly tackles mole crickets

A red-eyed Brazilian fly was recently released in a Florida pasture in an attempt to control spreading mole cricket damage. The effort was reported by Tom Walker, Ph.D., entomologist with the mole cricket control project at the University of Florida's Institute of Food and Agricultural Sciences in Gainesville.

About the size of house fly, *Euphioptrex depleta* comes to the mating call of mole crickets and lays her living larvae on or near the singer. The larvae then burrow into the male and mate.

"Ten days later, the mole cricket is dead," says Walker. "The larvae come out, pupate and start all over."

Exotic mole crickets, whose tunnels brown-out golf courses, lawns and commercial turf operations, came from South America, probably in the sand ballast of ships. "The flies belong

to a group of 20 fly species that only parasitize crickets, mole crickets and katydids," adds Walker. "Mole crickets are not that abundant in Brazil. This is one of the organisms that keep them in line."

#### RESEARCH

### Biological amendment shows promise in studies AT MSU

Studies conducted at Michigan State University in 1987 showed that monthly applications of Bio Control from KLM Bio Systems reduced "disease expression" of necrotic ring spot and summer patch on Kentucky bluegrass and annual bluegrass.

Necrotic ring spot reduction was significant after three or four applications, according to research conducted by graduate student Brad Melvin and plant pathologist Joe Vargas, Ph.D.

Studies on test plots at the Hancock Turfgrass Research Station in East Lansing also showed the plant growth hormones and microbes in Bio Control reduced thatch in Kentucky bluegrass compared to untreated check plots. The pathogens of both diseases

## Move water the easy way . . . with an Otterbine® Floating Portable Pump

Just throw it in and start it! These self-priming pumps with built in strainers are made for quick starts and smooth running. Drain water from: ditches, sand bunkers, swimming pools, holding ponds — any flooded area! Irrigates and much more.

**DEPENDABLE:** Four stroke Briggs & Stratton engine means years of trouble free service.

**PORTABLE:** Can be operated by just 1 person.

**EASY TO USE:** No mixing of gas and oil, can be operated in just 3 inches of water.

**HIGH VOLUME:** Delivers pumping power WHEN and WHERE you need it!

**Set it and forget it — the Otterbine Floating Portable Pump**

For more information call or write:



R.D. 2, P.O. Box 217  
Emmaus, PA 18049  
USA  
(215) 965-6018



Circle No. 104 on Reader Inquiry Card

# SHORT CUTS

studied are known to survive in thatch.

## CORRECTION

### Chart, captions were reversed

In the May issue of *LANDSCAPE MANAGEMENT*, two captions and two colors on a disease control chart were reversed.

In the article "Diseases of Cool-Season Turf," which began on page 48, the disease identified as necrotic ring spot was actually take-all patch and vice versa.

Colors in the disease calendar on page 50 were also reversed. The chart is reproduced correctly on page 58 of this issue.

The magazine regrets any inconvenience to author Noel Jackson, Ph.D., or any of its readers.

## INDUSTRY

### Monsanto buys 'Clipper' TGR

Monsanto Agricultural Co. has made an agreement with ICI Americas whereby it gains exclusive U.S. distribution rights to ICI's Clipper tree growth regulator.

The regulator extends tree trimming cycles so that electric utility companies can trim less often.

Clipper is injected through small holes drilled into tree trunks. It slows the growth of a variety of deciduous and broadleaf evergreen trees without adversely affecting flowering.

## RESEARCH

### ASPA doles out \$6,800 for research

The American Sod Producers Association (ASPA) reported distributing \$6,800 in grants to four researchers who are assessing the environmental impact of turfgrass and sod.

ASPA grants went to Thomas L. Watschke, Ph.D., Penn State University for his study *The Effects of Turfgrass Establishment on Water Quality*; J.B. Beard, Ph.D., Texas A&M, *A Quantitative Assessment of the Benefits From Irrigated Turf on Environmental Cooling and Energy*; Henry T. Wilkinson, Ph.D., University of Illinois, *The Use of Pseudomonas Flourescens to Increase the Efficiency of Water Absorption by Bluegrass*; and A. Martin Petrovic, Ph.D., Cornell University, *Effects of Turfgrass Management on Ground Water Quality and Water Use*.

*continued on page 28*

**THE RIGHT STUFF...**Pilot Field, the new home of the Class AAA Boston Bisons minor league baseball team, is made of the right stuff. That is, real grass. Bison president **Robert E. Rich Jr.** notes: "When we conceived the initial design for Pilot Field, we made sure of two very important details. We wanted the sun to shine on our fans, and our players to play on natural grass." The field, sodded last fall, contains a mixture of Victa, Bristol and Merit Kentucky bluegrasses with 10 percent Pennfine perennial rye. The field's irrigation system was designed by Toro Irrigation and installed by the John W. Danforth Co. Others involved in completing the field were **George Terzian** of Star Landscaping, **Jim Hornung** of Elber's Landscaping and **Gerald Rothenberger** of Cowper Management. Also, Comiskey Park's **Roger Bossard** served as a consultant.

**PUSHING SOD...**The American Sod Producers Association has updated its publication "Guideline Specifications to Turfgrass Sodding." It is divided into five sections: subsoil preparation; topsoil material; fertilizer, pH correction materials and final soil preparation; sod materials and transplanting; and maintenance. For more information, contact the ASPA at 1855-A Hicks Rd., Rolling Meadows, IL 60008; (312) 705-9898.

**BARK WITH BITE...**The National Bark & Soil Producers Association has just released the 1988 issue of its Bark & Soil Product Index. The index lists major suppliers of 14 different bark and soil products (from mulch and nuggets to professional soil mixes, peat and potting soil) and another 30 industry service suppliers. It is available free of charge to landscape contractors, nurserymen, garden centers, landscape architects and other businesses. For your copy, write the NBSPA, 13542 Union Village Circle, Clifton, VA 22024 or call (703) 830-5367.

**YOU, THE CEO...**The Associated Landscape Contractors of America has released the seventh in its series of in-depth reports about the industry entitled "Leadership in the Landscape Industry: the Changing, Challenging Role of the Chief Executive Officer." The report examines the CEO's role, explores his position in an evolving business and details his relationship with middle management. The report's cost is \$5 for non-ALCA members and \$3 for members. Write: Publications Dept., ALCA, 405 N. Washington St., Falls Church, VA 22046.

**THE BEST COURSE?...**Superintendent **Mike McBride** received nothing but compliments from touring pros for the shape he had Muirfield Village Golf Club in for the Memorial Tournament May 23-29. **Greg Norman** said the Dublin, Ohio course was "perfect." Tournament host and participant **Jack Nicklaus**, who developed the course, also praised his superintendent. However, he had to enjoy the course from the CBS broadcast booth on Saturday and Sunday. He missed the cut.



## Danger of ATVs require caution

All terrain vehicles (ATVs) may present a risk of severe injury or death in certain circumstances, warns Tommy Valco, an agricultural safety engineer with the Texas Agricultural Extension Service.

Valco says the Consumer Product Safety Commission recently sounded a safety alert concerning these vehicles, saying that more than 900 people, including many children, have died in accidents associated with ATVs since 1982; many people have become paralyzed or suffered severe internal injuries as a result of accidents associated with ATVs; and thousands of people are treated in hospital emergency rooms every month for injuries received while riding an ATV.

"You and your employees should be aware that an ATV is not a toy and may be dangerous to operate," says Valco. "An ATV handles differently from other vehicles and can roll over on the rider or violently throw them without warning. Even hitting a small rock, bump or hole at low speed can upset it."

Because of the grim statistics, Valco adds, the U.S. government has filed a lawsuit against all manufacturers and distributors of ATVs asking the court to declare the vehicles hazardous and that additional regulations to protect ATV riders be established.

### INSECTS

## Monitoring flowers can save you money

Nurserymen who monitor their flowers for pests may reap substantial cost savings, says Harvey A. Yoshida, a doctoral student at the University of California, Riverside (UCR).

Monitoring enables flower growers to detect, evaluate and record pest populations and trends, Yoshida says. He reminds landscape managers that even small numbers of some pests can ruin the aesthetics of many floricultural crops.

Monitoring also enables growers to evaluate the effectiveness of their pest control programs, not to mention save the nursery money by enabling nurserymen to determine when and at what levels insecticides should be used.

Yoshida recommends combining visual walk-throughs with the use of an insect trap system, such as blacklight traps, pheromone traps, and yellow sticky traps, in order to make good management decisions about pest control.

Where to place the traps depends on the type of pest present, but, in general, Yoshida recommends one blacklight trap per 5,000 sq. ft.; one pheromone trap and one yellow sticky trap per 10,000 sq. ft.

**Table 3.**

Quality ratings of the top three cultivars of perennial ryegrass, fine fescue and Kentucky bluegrass cultivars in the evaluation trial, 1982-85.

Cultivar	1981 Variety Trial						
	4 Year Turf Quality Ratings						
	May	June	July	Aug	Sept	Oct	Ave
<b>Perennial Ryegrass</b>							
Repell	5.6	6.0	4.7	5.3	5.6	5.6	5.5
Yorktown II	5.2	5.4	4.6	5.3	5.7	5.9	5.4
Prelude	5.7	5.8	4.7	5.4	5.9	5.8	5.6
						<b>Overall Ave:</b>	5.5
<b>Fine Fescue</b>							
Reliant	6.5	7.2	5.7	6.9	7.2	7.1	6.8
Waldina	6.6	7.6	6.0	7.3	7.4	7.2	7.0
Jamestown	5.4	6.5	5.0	6.1	6.6	6.5	6.0
						<b>Overall Ave:</b>	6.6
<b>Kentucky Bluegrass</b>							
Mystic	4.4	6.1	5.2	6.4	5.7	5.5	5.6
Ram I	4.0	5.6	4.8	6.1	5.7	5.3	5.3
Baron	3.3	5.0	4.4	5.3	5.5	5.9	4.9
						<b>Overall Ave:</b>	5.3

\*Turf Quality Ratings: 9 = best quality  
1 = bare ground or dead turf

least five years during which time performance data are obtained. The grasses are mowed at a 1 1/2-inch height, watered as required and weeds and insects are controlled. Fertilizer is applied to provide about three lbs. of N/1000 sq. ft. annually. All plots are observed and rated for quality during the first 10 days of each month throughout the growing season, April through November.

For the purpose of comparing quality of the fine fescues with Kentucky bluegrasses and perennial ryegrasses, records of larger trials established in 1978, 1980, 1981 were checked. The five-year monthly and seasonal averages of quality ratings for the three cultivars of each species that exhibited the highest quality throughout the five-year period were recorded.

The data retrieved are presented in Tables 1, 2 and 3. It should seem obvious why we are so high on the fine fescues. In all three trials, the quality ratings of the fine fescues are considerably above those of perennial ryegrass and Kentucky bluegrass.

With the introduction of improved fine fescue varieties, this has generally been the case. Although early improvements were primarily among chewings cultivars, hard fescues started to make their presence known in the early 1970s and excellent varieties of both are currently being marketed.

The 1985 progress report of the National Fine Leaf Fescue Test (established in 1983) clearly shows the fine turf potential of hard fescues. There

are 47 entries in this test. The 1985 report includes data from 19 locations nationally. One sheeps, 14 creeping and spreading, nine hard and 21 chewings cultivars are compared. Performance scores averaged during the second year of the trial (1985) showed seven hard, one sheep and two chewings fescues among the top 10 cultivars.

Although creeping red fescue has great potential and value and is widely used successfully, markedly improved varieties have yet to be developed. Considerable work is under way to provide improved varieties of this grass.

Each species of fine fescue has distinct characteristics, attributes and adaptations. Some of them now contain an endophyte which apparently provides biological control of certain surface-feeding insects. There is also variation in disease resistance and shade tolerance. Certain varieties will tolerate closer mowing than others. Because of this variability, it may be advantageous to use blends of fine fescues for certain uses.

Where very close mowing is required, as on overseeded greens or golf course fairways, chewings and hard fescue would perform best. In higher cut areas such as roadsides or golf course roughs, creeping red fescue would be the species of choice.

At a time when we are more environmentally aware and are attempting to reduce dependence on fertilizer, pesticides and water, the fine fescues have much to offer. **LM**