

tion of urf safety.

Turf Safety

When used as directed, pendimethalin products have proven to be safe on a variety of cool and warm season grasses, including:

Cool Season Grasses	Warm Season Grasses
Kentucky Bluegrass	Bermudagrass
Perennial Ryegrass	Zoysiagrass
Fine Fescue	Bahiagrass
Tall Fescue	St. Augustinegrass
Creeping Bentgrass*	Centipedegrass

* For use on Creeping Bentgrass maintained at 1/2" or taller.

Root Effects and Turf Quality/Density

Research studies conducted since 1984 show that pendimethalin, when used according to label directions, does not reduce root growth on cool and warm season grasses compared to other preemergent herbicides. And university studies have shown that turf quality, turf density and sod strength are equal to or better than other preemergent herbicides tested. Turfgrasses show excellent tolerance to applications of pendimethalin even at the higher labeled rates (3.0 lbs. A.I./Acre).

Seeding/Reseeding

The practice of seeding cool season grasses is an integral component of almost every turf manager's program. In the North, seeding may be done to renovate worn tee boxes or to increase turf density on fairways, roughs or lawns. In the South, ryegrass overseeding is

a common practice used to enhance the winter appearance and playability of golf courses and other turf areas. When selecting a preemergent herbicide, it is important to understand the effect that the herbicide residual may have on your seeding/overseeding program.

Product	Rate (Lbs. A.I./Acre)	Seeding Interval (Months)	
		Drill	Broadcast
Dimension	0.50	3*	3*
Barricade	0.33-0.50	3-4**	4-6**
Barricade	0.50-1.00	6-8**	8-12**
Barricade	1.00-1.50	9-12**	12-18**
Pendimethalin	3.0	4***	4***

* Label states that seeding within three months of application may inhibit establishment of desirable turfgrass.

** From RegalKade 37 label directions. RegalKade is a product of Regal Chemical Company.

*** Label states to delay seeding four months following application.

NOTE: Barricade 65WG label states: Do not apply to spring seeded turf or newly set sod until the following year.

Pendimethalin's favorable combination of chemical and physical properties allows for season-long weed control and yet still offers the flexibility for safe, successful seeding/overseeding programs.

For more information about SCOTTS pendimethalin products, contact your Scott Tech Rep. Or call 1-800-543-0006.



The O.M. Scott & Sons Company Marysville, Ohio 43041

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TREATING WARM-SEASON TURF FOR INSECTS

PEST	SUGGESTED PESTICIDE	TIMING	APPLICATION
Mole Crickets	Crusade 5G Mocap 10G* Oftanol 2 Oftanol 5G Orthene turf, tree and ornamental spray Pageant DF Triumph 4E*** Turcam 2.5G Dursban bait	In large turf areas, map and make note of tunnelling (egg-laying) activity during spring months for treatment after nymphs hatch. Middle to late June after most nymphs have hatched and are still small is the optimum time for pesticide application. Spring treatment is optional. Orthene may reduce adult tunnelling somewhat. It is more important to keep damaged areas packed down and grass roots in contact with the soil. Irrigate and fertilize as recommended for grass variety.	Irrigate before treatment if turf is not moist. Treat as late in the afternoon as is practical. Follow label for post-treatment irrigation directions.
Sod webworms	<i>Bacillus thuringiensis</i> Crusade 5G Diazinon 4E** Dursban Pageant DF Proxol Orthene Tempo 2 Triumph 4E*** Turcam	In Florida, the major species is the tropical sod webworm. Populations usually do not build up until June in south Florida, July in central, and August in north Florida.	Delay mowing and irrigation for 24 hours after treatment.
Spittlebugs	Diazinon 4E** Dursban	Control is usually more successful when most of the population is in the adult stage. Usually June and August in Florida. Damage usually begins in shaded areas.	Mow and dispose of clippings before applying a pesticide. Irrigation several hours before treatment will improve control.
Chinch bugs	Crusade 5G Diazinon 4E** Dursban Oftanol Orthene Pageant DF Tempo 2 Triumph 4E***	Replace turf with resistant variety. More of a problem in dry weather. Monitor St. Augustinegrass weekly, concentrating on sunny areas. Treat when damage begins to appear.	Apply additional spray volume if thatch is present. In limited experiments, granules appear to be more effective in heavily-thatched turf.
Grubs	Crusade 5G Diazinon 4E** Proxol Mocap 10G* Oftanol Sevin Triumph 4E*** Turcam 2.5G	Early June is probably the optimum time for most species.	Keep the soil moist for several days before treatment to encourage the grubs to come close to the soil surface. Apply as late in the p.m. as possible and irrigate before the insecticide dries on the grass blades.
Billbugs	Crusade 5G Diazinon 4E** Proxol Mocal 10G* Oftanol Sevin Triumph 4E*** Turcam 2.5G	Most effective control is obtained in late spring or early summer.	Same as for grubs.
Ground pearls	None have been found to be effective.	When approved fertilization, irrigation, mowing and nematode management practices are followed, grass will usually not be obviously affected.	
Fire ants	Amdro bait Logic bait Dursban Orthene	Treat only when soil surface temperatures are between 60-80 degrees F. Do not apply during the heat of the day.	Irrigate before application. Use one bait and follow with Dursban or Orthene in 5-7 days. Be sure baits are fresh.

*Mocap 10G is labelled for commercial turf only (golf courses, sod farms).

**Diazinon is not labeled for use on golf courses or sod farms.

***Triumph 4E is restricted to certain soil types and several application techniques must be followed. It is labeled for use on lawns, sod farms and golf courses (only tees, greens and aprons). A maximum of one application per year is permitted for the higher surface insect rate and a maximum of two applications per year at least 60 days apart for the lower surface insect rate.

Source: Dr. Don Short

Behold Per



pendimethalin.

Imagine a world without weeds. Immaculate expanses of flawless turf, bathed in glorious shades of green.

Behold. This is the world of pendimethalin.

Developed by American Cyanamid, pendimethalin is the most widely used preemergent turf herbicide. With very good reason. Pendimethalin has been shown to provide consistent, long-lasting weed control while demonstrating excellent tolerance to cool- and warm-season turfgrasses. And it's labeled for numerous ornamentals as well.

Because of its unique properties and residual activity, pendimethalin controls a broad spectrum of germinating grassy and broad-leaf weeds *all season long*.

Yet, all this control is available at a surprisingly economical cost. Exclusively at Lesco and O.M. Scott.



Go ahead, imagine a world without weeds. And behold the beauty of pendimethalin.



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Agricultural Products Division
Vegetation and Pest Control Department
Wayne, NJ 07470
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Pendimethalin

For a sight to behold.

Always read and follow label directions carefully.

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The Choice For Preemergent Control.

PRE-M® with Pendimethalin.

Turf managers keep choosing LESCO PRE-M® 60 DG preemergent herbicide because it's cost effective.

They know from experience it gives them control over most major annual grassy weeds plus a variety of the most troublesome germinating broadleaf weeds.

PRE-M controls crabgrass, annual bluegrass, foxtail, goosegrass, barnyardgrass and fall panicum. And it's effective on these tough-to-control broadleaf weeds: oxalis, spurge, common and mouseear chickweed, henbit, evening primrose and hop clover.



LESCO PRE-M contains pendimethalin, a proven performer for broad-spectrum weed control, including both early and late germinating weeds.

Labeled for use on most northern and southern turfgrasses, PRE-M's water-dispersible formula can be tank mixed with most fertilizers and pesticides.

Contact your LESCO Sales Representative or visit your nearest LESCO Service Center. Or, call **(800) 321-5325**. In Cleveland, call **(216) 333-9250**.



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LESCO, Inc.
20005 Lake Road
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Warm Insect from page 34

of mole crickets, other soil insects and nematodes in large turf areas.

The benefits are obvious: (1) lower rates; (2) reduced risk to human and animal exposure; (3) less odor; (4) reduced run-off and drift; (5) minimal ultra-violet degradation; (6) less pesticide bound up in thatch; (7) greater exposure to the pests; and (8) longer residual activity.

Liquids are injected at up to 2,000 psi, depending on soil type, as pesticides are forced 1/8 to 1-1/2 inches into the soil. In Florida, we conducted mole cricket field tests on golf courses, injecting at 1,200 psi and getting 1/2- to 3/4-inch penetration on bermudagrass fairways.

Excellent results were obtained with Dursban at 2 lbs. Ai/A compared to poor control at higher rates when surface-applied with a conventional boom sprayer.

On home lawns, we have experimented with the Nemajet, a hand-held injection device that was used several years ago to inject nematocides. Excellent mole cricket control was obtained with only 100 to 150 psi at the nozzle. It is somewhat more time-consuming than a hand gun, but control is much better and the same benefits are realized as with the larger machines. Landscape managers should seriously consider this method of application on small turf areas for control of mole crickets, grubs and billbugs.

Probably the most common equipment for sub-surface granular application on large turf areas is the Dol Overseeder, originally developed for seeding small grain and grass. The seeder puts the insecticide 1/2-inch below the soil surface where the mole crickets are active. There is no dust, and little—if any—odor. Several insecticides now include label directions for sub-surface applications, including Dursban, Turcam and Mocap.

—The author is professor and extension entomologist for the Department of Entomology and Nematology, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Fla.

New insecticides

■ At least two new insecticides are hitting your distributor's shelves this year: Merit from Miles, Inc., and Mainstay 2G from Lesco, Inc.

Merit (test code NTN-33893) features totally new chemistry, according to Jim Dotson, Miles' turf and ornamental research product manager. Its common name is imidacloprid, a member of the chloronicotinyl group of chemicals. Merit, which will carry a label for soil insects, has shown to be very effective against white grub species. According to Dotson, it may also have "outstanding potential for mole cricket control."

When Merit's label becomes EPA approved, it will be available on a limited basis.

Mainstay is a 2% formulation of fonofos, which is also the active ingredient in Crusade. It is labelled for use on mole crickets, grubs, chinch bugs, billbugs, sod webworms, fire ants and other turf pests. Lesco is now taking orders for Mainstay.

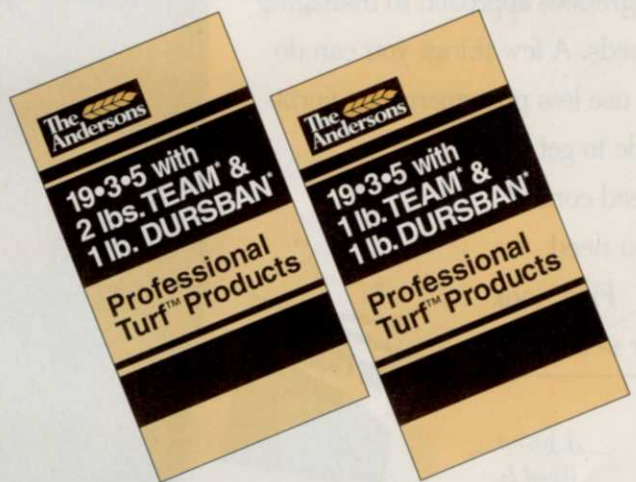
New formulations of other insecticides include a Dylox 6.2 from Miles and a dry flowable (DF) formulation of DowElanco's Pageant.

—Jerry Roche

Q: We've got good news for turf, bad news for bugs and worse news for weeds. Which would you like first?

NO JOKE!

A: How about all three at the same time?



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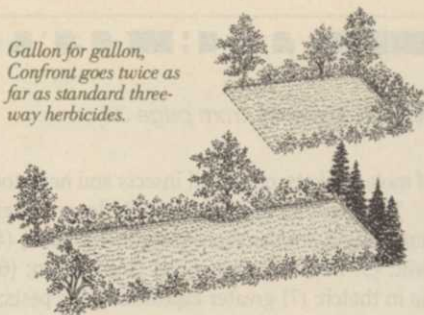
The thing we're trying to help you avoid is overkill. Because if you can control weeds, isn't that enough?

So here's a less

EPA), and you'll get very good results. It sounds simple, but it's one of the most effective ways to use less herbicide.

Also, calibrate your equipment frequently, and use the correct

Gallon for gallon, Confront goes twice as far as standard three-way herbicides.



At last. A herbicide as like eradicate, eliminate

aggressive approach to managing weeds. A few things you can do to use less postemergence herbicide to get the weed control you need.

First, look for weedy areas

A Young
Weed Is
A Vulnerable
Weed.

The best time to apply your postemergence herbicide is early —when you first see weeds emerge. This is when weeds are the most vulnerable to herbicides. You'll get better results from your application, and you'll reduce the need for treating hardened weeds later.



before applying herbicide. That way, you can use spot treatments instead of broadcast applications (a practice recommended by the



rate of herbicide for the weed you want to control. You'll get better results from your application, and reduce the chances you'll have to re-apply.

And it's important to select a

postemergence herbicide that does the job the first time you apply it. For stubborn broadleaf weeds,

Careful scouting helps you get effective weed control using less herbicide.



herbicides often miss, giving you excellent results from your application. Confront® herbicide is also a good choice. Confront gets to the roots to keep weeds from coming back. It's very effective on

d that doesn't use words or destroy.

Turflon® herbicide is a good choice. It controls weeds other

clover. And perfect for turfgrass where you prefer a herbicide without dicamba, 2,4-D or MCPP.



Of course, there isn't room here to outline an entire weed control program. That's why we created The Turf Manager's Guide To Responsible Pest Management. It's 44 pages on the latest techniques for controlling weeds, insects and turf diseases.

For a free copy return the coupon, or call our toll-free number. After all, why use any more herbicide than it takes to do the job?

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Cool-season turf insect control

The wet summer of '92 suppressed much pest activity. But a normal weather pattern in July and August this year will bring the grubs back.



Billbug adult populations are reduced by *Beauvaria* spp., an entomopathogenic fungus.



The entomopathogenic fungus *Beauvaria*, was also effective against chinch bugs in the summer of 1992.

by Harry Niemczyk, Ph.D.

■ The summer of 1992 in the North Central states was the coolest, cloudiest, and—in some areas—the wettest on record. These weather factors had a major influence on suppressing damage from chinch bugs, billbugs and grubs.

The entomopathogenic fungus *Beauvaria*, which is especially ineffective under moist conditions, killed many chinch bugs. The cool temperatures and cloudy skies of July created a less-than-optimal condition for Japanese beetles to lay their eggs. Some egg laying did occur later in the summer, and caused infestations to appear in late September and October. In general, however, grub infestations and damage was down from previous years.

What effect will this have on damage potentials for 1993? If we have a normal summer, especially during July and August, do not expect much relief from grubs. Billbugs are ever present. Chinch bugs may be slow to recover after 1992, but keep in mind they have two generations each year to recover in most of the cool-season region.

What's new—Interest in and consumer demand for non-chemical controls

for insects remains high. While field evaluation of various agents continues, the results are not exactly "exciting." It is unlikely that any single agent will control damage from turfgrass insect pests as well as chemical insecticides do. It is more likely that their role, either singly or collectively, will be to act as suppressing agents to hold population levels below a threshold which would require the use of insecticides.

Insecticides: Miles, Inc. (formerly Mobay), has applied for conditional registration of a new insecticide, Merit (imidacloprid), a new, low-toxic, broad spectrum, systemic insecticide for control of grubs and some sucking insects. The results of field evaluations over the past three years have shown this material to be very effective against a broad range of grub species. If full registration is obtained as expected in the first half of 1993, full-scale marketing is expected in 1994.

O.M. Scott & Sons has announced registration of Turplex bio-insecticide to be sold to golf and other selected professional markets for control of cutworm, armyworm and sod webworm in turfgrasses. The active ingredient, azadirachtin, interferes with the normal development of the

insect (insect growth regulator—IGR) and is extracted from the seed of the neem tree, which originated in India and Burma. Test results at Ohio State University and other locations have shown that target pests die in three to 15 days after application, but that feeding usually ceases before mortality occurs.

IPM the one constant: Knowledge about the lifecycle of pests in any specific area and determining the need for treatment based on evaluation of populations at vulnerable periods during the insect's lifecycle, remains the key to successful control. The concept of IPM—intelligent plant management—depends upon this principle.

Seasonal occurrences of some of the cool-season insect pests in this region and some of the insecticides that may be effective in reducing damage from them are listed on page 52. No endorsement of products is intended, nor is criticism implied of those not mentioned here.

—Dr. Niemczyk is Professor Emeritus and Turfgrass Insect Research Coordinator at The Ohio State University's Agricultural Research & Development Center in Wooster, Ohio.