

# TOTAL TURF CARE IS HERE!

## Get a full course of protection against weeds and disease.

### Dacthal®

Start your Total Turf Care this year with Dacthal W-75 herbicide. Or use the convenient 5 percent granular form if you like.

Dacthal gets the jump on most annual grasses and broadleaf weeds. This preemergence herbicide prevents weeds as they germinate. Crabgrass and *Poa annua* don't have a chance. Yet, Dacthal is a truly selective herbicide that will not affect established grass. It's even safe for new grass when used according to label directions.

Just one application in early spring will control weeds for a full season. In the case of *Poa annua*, another application in late summer keeps this late germinating pest out of sight.

Don't worry about residue build-up either. Dacthal degrades in one season; it's not persistent in the soil.

### Dacamine®

For those areas where broadleaf weeds are a problem, use Dacamine Turf herbicide to sustain your Total Turf Care. Postemergent Dacamine kills dandelion, plantain, poison ivy and most other broadleaf weeds.

Dacamine is a special form of 2,4-D, non-volatile, yet very effective. It combines the weed-killing power of an ester with the safety of an amine. So Dacamine stays put—kills the weeds you spray it on but won't vaporize and damage valuable plants nearby.

Dacamine is an oil soluble concentrate. This allows it to penetrate waxy leaves and move all the way to the roots—killing the whole plant.

### Daconil 2787®

Total Turf Care includes broad-spectrum disease control. Daconil 2787 is the one fungicide that solves most disease problems. Why use a group of fungicides to do what Daconil 2787 can do by itself?

Use Daconil 2787 to prevent or cure: Brown Patch, Copper Spot, Dollar Spot, Leaf Spot, Melting Out, Pink Snow Mold (in Washington and

Oregon only) and more. Many leading golf courses use Daconil 2787 in their disease prevention program.

Daconil 2787 has performed well on over 25 grass species and varieties. Excellent turf tolerance allows you to use it even in hot, humid weather.

Just mix Daconil 2787 with water and spray. You don't need a surfactant. It's compatible with many commonly-used pesticides. Follow label directions for exact usage.

### Daconate®

Round out your Total Turf Care with Daconate postemergence herbicide. Get those escape weeds that slipped by your preemerge. Daconate will effectively control crabgrass, chickweed, wood sorrel and other hard-to-kill weeds. It's economical, too.

Daconate is a ready-to-use arsonate liquid, pre-mixed with the right amount of surfactant for maximum coverage and control. Since it is an organic arsenic compound, it does not have the more toxic properties of inorganic arsenic compounds, such as calcium or lead arsenate. For best results, spray Daconate during warm weather when weeds are actively growing.

### FREE!

Get this Total Turf Care dial to help you solve many turf problems. Just a twist of the wrist helps you identify a problem and select a treatment. Send the coupon today for your Total Turf Care dial. Always remember to follow the label directions when using any chemical.



### Be Diamond Sure!

Agricultural Chemicals Division  
Diamond Shamrock Chemical Company  
300 Union Commerce Building  
Cleveland, Ohio 44115

Gentlemen: Please send me \_\_\_\_\_  
Total Turf Care dials.

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**Diamond Shamrock  
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# Sulfur for Turfgrass

By Dr. FRED V. GRAU  
President, Grasslyn, Inc.  
College Park, Md.

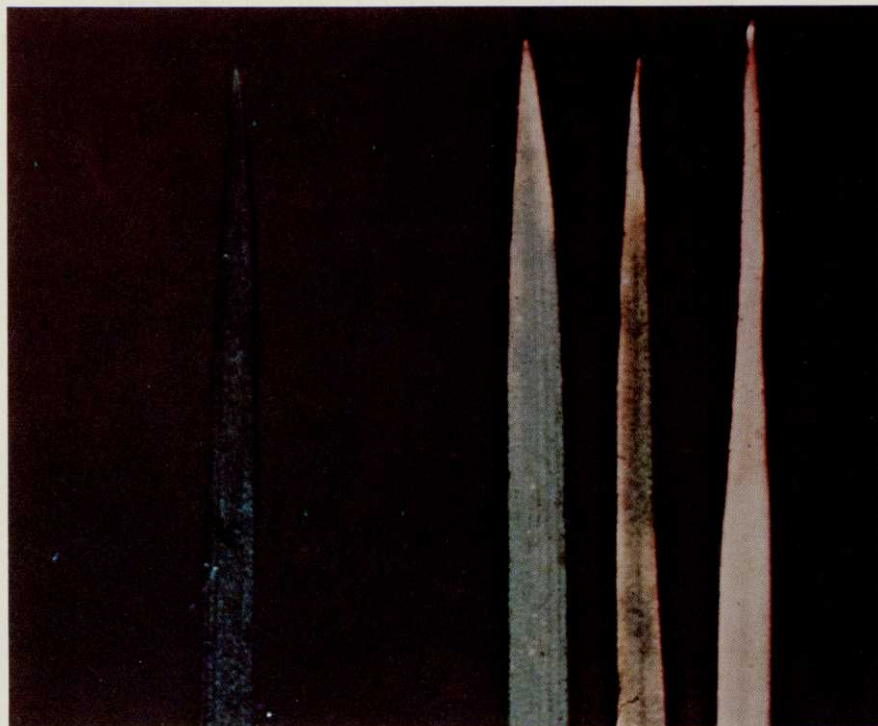
**T**HE principal components of most turfgrass fertilizers are nitrogen phosphorus and potash, N-P-K. Over a period of time, the phosphorus content has been lowered gradually in deference to the tendency for this element to accumulate in the soil. Excess phosphorus is associated with an increase in *Poa annua* and with a nullifying effect on arsenic, which is a helpful chemical in reducing *Poa* populations.

On the other hand, the nitrogen content of mixed turfgrass fertilizers has been increased quite dramatically. Ureaforms have permitted this increase without increasing the chances of ugly burns. Fewer applications during a season are necessary due to the insolubility and the long-lasting effect of ureaform formulations.

During this period of developing fertilizers with higher nitrogen and lower phosphorus content, we have seen a growing recognition of the need for more potash in the mixes. The merits of adequate potash include greater winter hardiness, improved resistance to diseases, and imparting stiffness to grass blades, among others.

The need for potash seems to be closely associated with the quantity of nitrogen used. For maintenance, the quantity of potash needed usually is about one-half to two-

Right: Seaside bentgrass exhibiting a sulfur deficiency.  
Above: Sulfur deficiency in Merion Kentucky bluegrass.



thirds that of nitrogen. Where potash levels are low to very low, a 1:1 ratio may be used until balance is restored.

In developing a 16-4-12 fertilizer, for example, the general practice is to use potassium chloride, the less expensive form of potash, unless there have been specifications that require another potash carrier.

What are the other choices and why would they be specified? The first and most obvious alternate

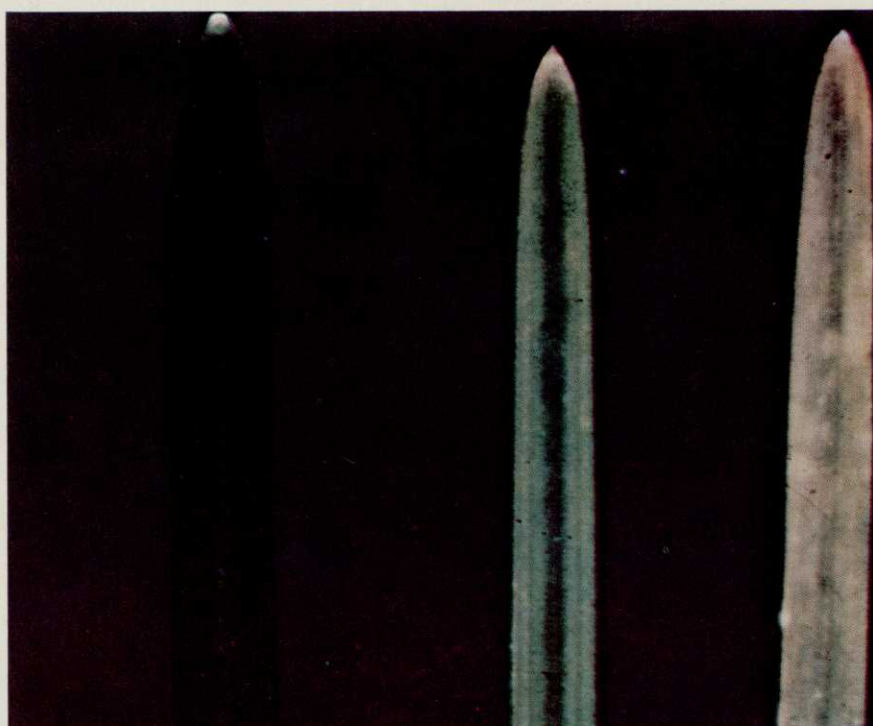
choice of a potash carrier would be potassium sulfate.

First, let us look at the nutrient content of the two materials.

	N-P-K-S
Potassium chloride	0-0-60-0
Potassium sulfate	0-0-53-18

Sulfur is the added ingredient.

The natural presence of sulfur in potassium sulfate makes this material a logical choice to supply potash  
(continued on page 48)







# TURF NOTES

SPRING, 1972

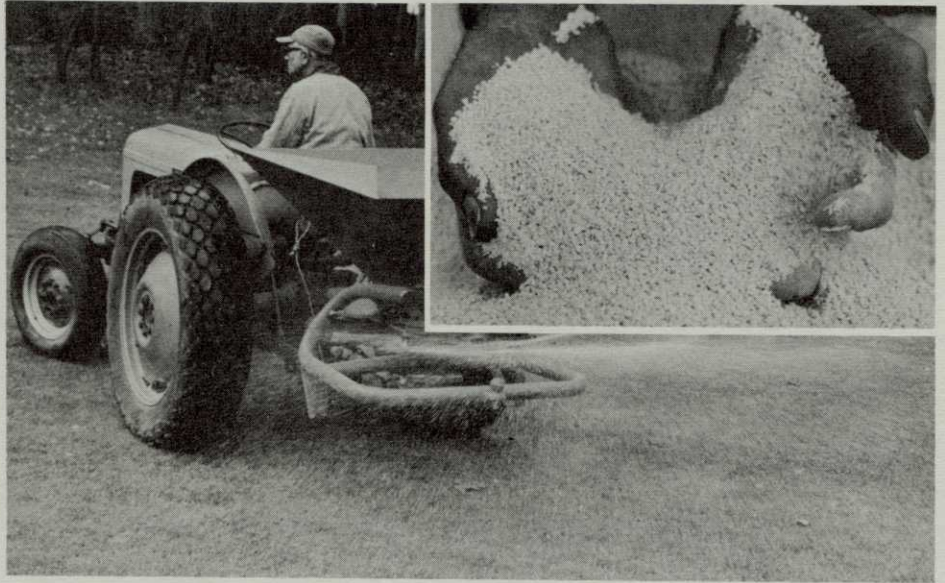
## SPECIFY NITROGEN BY POUNDS OF N... NOT PRICE PER TON... ASK FOR **NITROFORM® 38-0-0**

Nitrogen derived from Nitroform® ureaform is one of today's best buys in any turf program. It doesn't matter how you look at it—pounds of available nitrogen per dollar, storage and handling costs, labor to apply, type of spreader, benefit of steady feeding, ease of use—Nitroform measures up.

Organic in behavior, Nitroform releases its nitrogen slowly through the action of soil organisms. Thus, it provides the slow-release, nonleaching, and nonburning benefits of the organics.

And Nitroform also overcomes the disadvantages of conventional organics. Low nitrogen organics are bulky to handle, and as much as half of the low nitrogen may never become available for plant growth. The odor is offensive to the applicator and the golfer, and it takes continuing applications to get enough nitrogen in the soil.

Produced under stringent manufacturing conditions, Nitroform guarantees 38% nitrogen and provides predictable performance. It is a nondusting chip for uniform coverage in all types of spreaders. Since it is clean and odorless, blue



*Clean blue particles of Nitroform nitrogen are shown inside the spreader, and giving uniform coverage on a fairway.*

Nitroform is easy and pleasant to handle and store. Its blue color shows the applicator where he has been. And very important, as few as two annual applications can supply the nitrogen needed by fairways and tees.

Nitroform is available from leading turf specialty suppliers in the Hercules bag or in the supplier's

own bag. **JUST BE SURE TO ASK YOUR SUPPLIER FOR NITROFORM 38-0-0.** It's the same dependable product whether in his bag or the Hercules bag.

When you need a balanced fertilizer, ask for the brand that carries a Blue Chip® fertilizer tag, to guarantee you at least 50% Nitroform nitrogen.

USE THIS COUPON to request the Nitroform program recommended for your area and the booklet that helps you compare the costs of organic nitrogen products.



• • COMPLETE COUPON AND MAIL • NO POSTAGE REQUIRED • •

- Please send Turf Notes Number 101-1 giving the Nitroform program for my area.
- Please send information on Azak for pre-emergent crabgrass control.
- Please send the booklet that shows how to compare the costs of Nitroform and conventional organics.

(PLEASE TYPE OR PRINT)

• Name \_\_\_\_\_

• Title \_\_\_\_\_

• Company \_\_\_\_\_

• Address \_\_\_\_\_

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• \_\_\_\_\_

• \_\_\_\_\_ Zip \_\_\_\_\_



**POWDER BLUE™** is the same 38-0-0 long-lasting nitrogen, but in sprayable form. The ideal companion product for the nondusting chips, Powder Blue is for use on close-knit turf areas. The tiny particles rinse readily into dense turf and cannot be picked up by mowers or lawn sweepers.

Powder Blue can also be used in drop spreaders for dry application, where the finer particle is needed to penetrate turf like Bermuda. It contributes the same advantages as the chip of the blue Nitroform. It's the only organic nitrogen available for spray application, with high nitrogen content for fewer applications.

**NITROFORM  
APPLICATION RATES**

Requirements of Nitrogen per 1,000 sq. ft. per season	Pounds of Nitroform required	
	Per M	Per A
2 lb.	5.0	230
4 lb.	10.5	465
6 lb.	15.8	700
8 lb.	21.0	930
10 lb.	26.5	1160
12 lb.	31.8	1390
14 lb.	37.0	1620
16 lb.	42.5	1850
18 lb.	47.8	2080
20 lb.	53.0	2310
22 lb.	58.5	2540
24 lb.	63.8	2770

# AZAK® SEASON AHEAD!

Turf authorities all agree on one thing—the best time to eliminate crabgrass is pre-emerge. It's been proved that Azak® is a low-cost, effective pre-emergent crabgrass control. Azak doesn't leach out or evaporate so it can be applied anytime ahead of crabgrass germination. It remains effective throughout the germination period.

Azak is a wettable powder that disperses readily in water for use in conventional spray equipment. One 12½ pound bag will control crabgrass on one acre (43,560 square feet). It's economical, has no odor, is used on most established turf, extremely low in toxicity to warm-blooded animals and is compatible with most fertilizers and pesticides.

*Note: Azak is not recommended for use on newly seeded turf—use only on established turf areas.*

## HOW DO YOU KEEP OUT CRABGRASS?

After you prevent crabgrass with Azak, the best way to keep it out is to adequately fertilize the desirable grasses. Crowd out crabgrass and weeds by feeding turf properly with Nitroform. It will thicken up and is a good way to ensure that you won't have crabgrass next season.

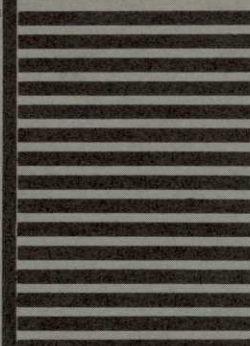
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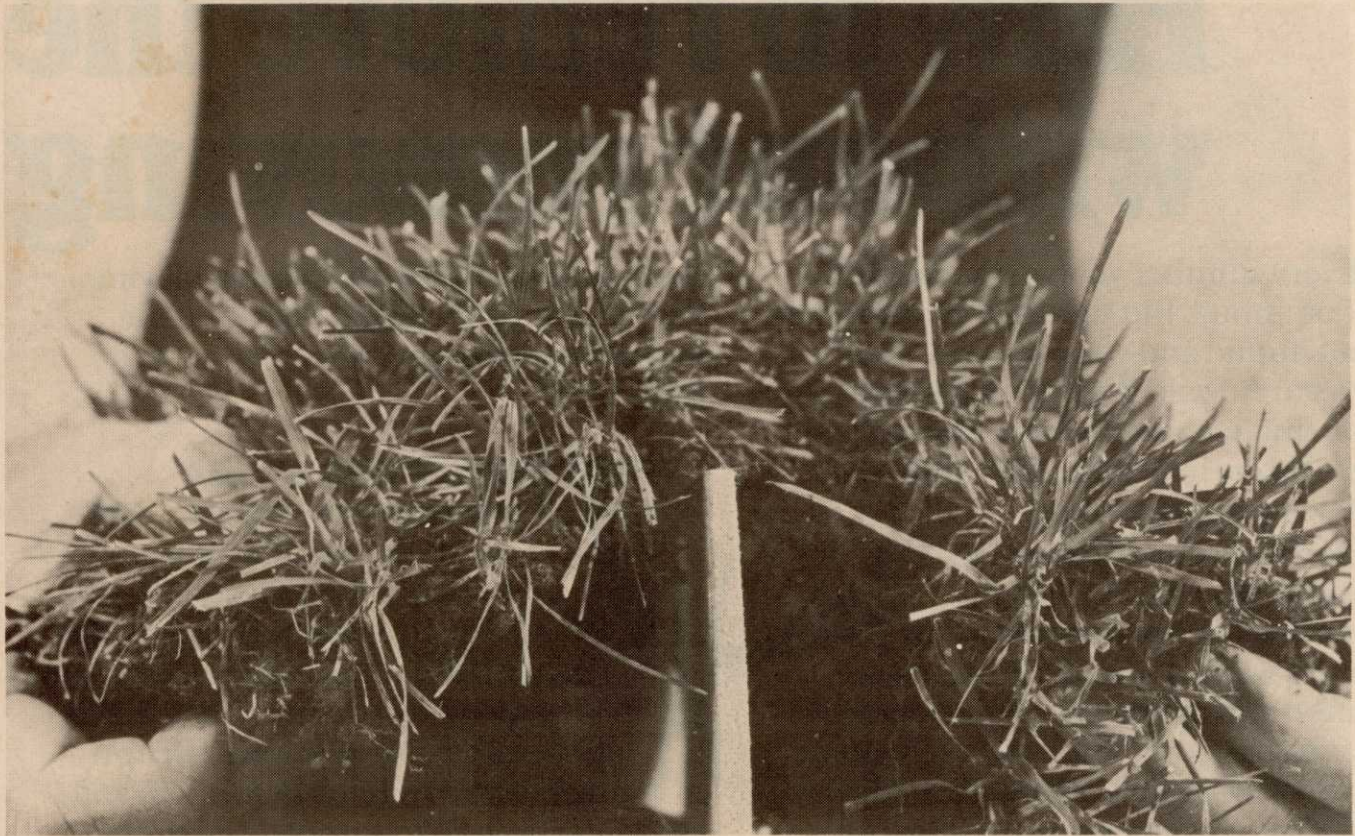
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The rugged nature of young Baron sod.

# BULLISH ON BARON

By PETER LOFT and  
JOHN MORRISSEY  
Lofts Pedigreed Seed, Inc.  
Bound Brook, N.J.

**A** TIDAL wave of new bluegrasses for tailored turf is sweeping the country's golf courses, sports locations and prestigious lawns. There are many reasons why.

Sod growers are switching to seed that germinates fast, has good seedling vigor and exhibits early, robust rhizoming. On the other side of the table, golf superintendents, landscapers and commercial turf specialists are demanding more from seed varieties than ever before.

Performance and economy rate big among these people. Contrast heavy use of a turf area with maintenance and it is easy to see why superintendents want a turf grass that performs under a variety of growing conditions. Superintendents figure that to make an average to good return on investment, a turf area must undergo extensive use for an extended period of time. And this area must resist disease, stand up under close mowing and be

hardy enough to overcome winter-kill.

This is asking a lot of traditional bluegrass varieties, but the newer varieties can take many of these demands in stride.

One new bluegrass seed variety that exhibits these traits is Baron. It was developed in Arnhem, Holland — the parent clone originated with the Barenbrug turf breeders and checks out as a highly apomictic

true-to-type pure line.

Baron has consistently been rated superior in seed field trials both in the United States and Europe. Its appearance on the American turf scene has brought interest from sodmen, turf specialists, and superintendents alike. Why? The answer lies in the distinctive features developed in this grass.

Baron is a fast germinating seed that produces a relatively broad blade foliage. It is low growing with shortened sheaths, but exhibits excellent rhizome production. Sod farmers find it weaves into a tenacious sod quickly. Many report that germination and root development exceeds other varieties by many days.

In germination tests of 100 seeds, 85 percent of the Baron seeds germinated in 14 days compared to only 19 percent for the Merion variety.

Reports on other aspects of this new bluegrass have been compiled from a number of university tests. Here are a few: Dr. Kenyon T.

*(continued on page 33)*

## DISTINCTIVE FEATURES OF BARON BLUEGRASS

- \*Relatively broad blade foliage
- \*Low growing with shortened sheaths
- \*Longer growing season
- \*Prolific rhizome production
- \*Quick seed germination
- \*Good seeding vigor
- \*Certified clean seed, free of Poa annua and bentgrass



# How to remove the without removing

Every summer you've tried to hold your Poa annua. But suddenly it's unusually hot and humid and your fairways and greens start to wilt. Big brown patches crop up. You find your Poa annua infested with disease. You're in trouble. You could lose your fairways and greens.

Don't say it can't happen to you. It can. Because no matter how careful you are, no matter how much you water to avoid wilt, no matter how often and lightly you fertilize to avoid stress, one day your "failure grass" is going to fail. So why gamble and try to hold your Poa annua? Why not get rid of it before it fails?

How do you do it? How do you keep

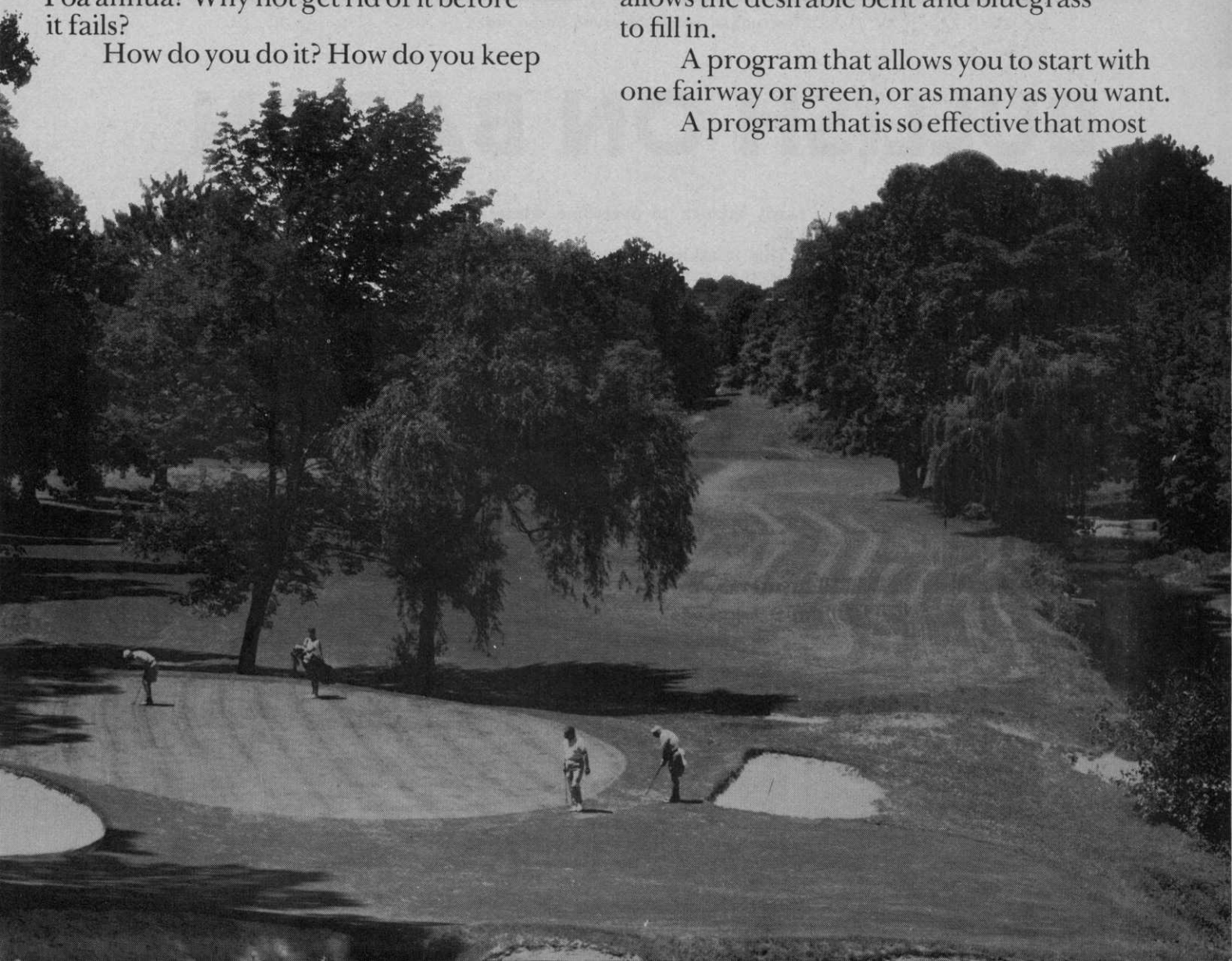
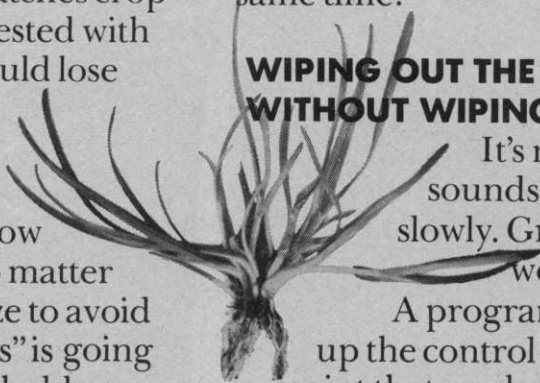
the course beautiful, the players playing, the Poa annua on the way out, and the desirable grasses on the way in, all at the same time?

## **WIPING OUT THE POA ANNUA WITHOUT WIPING OUT THE COURSE**

It's not as difficult as it sounds. Not if you do the job slowly. Gradually. With a simple, well thought out program.

A program that precisely builds up the control level in your soil to a point that weakens the Poa annua and allows the desirable bent and bluegrass to fill in.

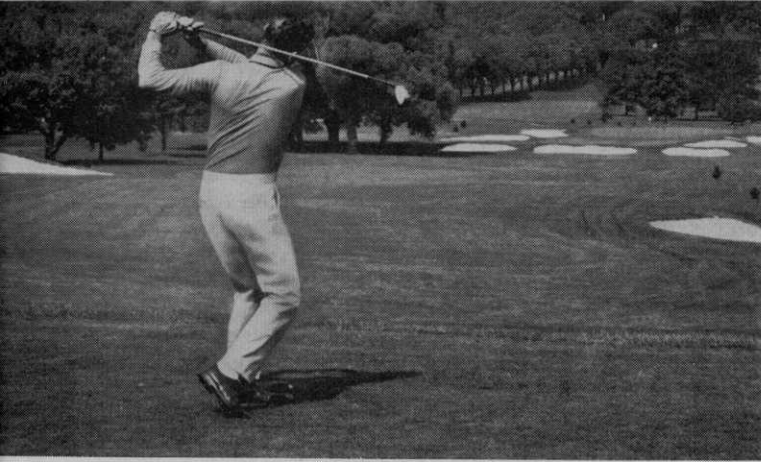
A program that allows you to start with one fairway or green, or as many as you want. A program that is so effective that most



# Poa annua the golfers

of your players won't even know that the course is being treated.

A program that even improves play by inhibiting the uneven, unsightly Poa annua seed heads.



A program that will work because it's already worked on many other courses.

A program that, in the final analysis, doesn't have to cost you an arm and a leg.

## A SUCCESSFUL TESTED PROGRAM FOR THE GRADUAL REMOVAL OF POA ANNUA

This tested 6-point program is successfully eliminating the Poa annua at Greenbrier, National Cash Register Country Club and hundreds of other courses. It can do the same for you.

1. Drain low areas: Improve drainage of fairways with trenching and vertical slitting.
2. Correct soil acidity: Apply lime to greens or fairways if under a pH of 6.
3. Aerate, thatch or spike the grounds and eliminate phosphorous in your fertilizer program. Make room for new growth. Bring up some soil, get seed against soil. Overseed often.
4. Apply from 4 to 6 pounds of Chip-Cal Granular per 1,000 square feet on fairways, or 2 to 4 pounds on greens. Apply in the spring and fall. Vary application rates

according to the percentage of Poa annua, available phosphate, pH and soil type.

5. Achieve Poa annua control: Light sandy soils low in phosphorus require less Chip-Cal to reach control.

6. Maintain control: Use 2 to 4 pounds of Chip-Cal per 1,000 square feet, either in the spring or fall. If Poa annua is dying too fast, use a liquid phosphate as a check valve.

Note: Chip-Cal Granular has been specially formulated for your Poa annua restriction program. It's granulated on a vermiculite base. Which helps give you a more uniform application and a more gradual release when you're building up your soil's control level. Chip-Cal also prevents crabgrass, goose grass, and controls soil insects and chickweed.

## 14 OTHER CHIPCO TURF PRODUCTS THAT TAKE CARE OF EVERYTHING FROM KNOTWEED TO SNOW MOLD

In addition to Chip-Cal Granular to control Poa annua, we have the most complete line of products to help you with your other turf problems.

For example, in the spring, Chipco Turf Herbicide MCPP controls clover and knotweed on greens and fairways. And in the summer, Chipco Microgreen improves your turf's health and vigor. Used in the fall and winter, Chipco Rho-Mold will prevent unsightly and destructive snow mold.

## WANT TO KNOW MORE ABOUT POA ANNUA AND OTHER TURF PROBLEMS? WRITE US

We'll send you back everything you need to know.

Address: Chipco Turf Products Mgr., Rhodia, Inc., Chipman Division, Dept. GS, Box 2009, New Brunswick, New Jersey, 08903.





# Turf Pest Control And The Environment

**R**OGER N. MUIR, pest control foreman at the University of California at Los Angeles, walks a tight-rope between responsible turf-insect control and a growing barrage of questioning from students and others with a concern for the environment.

Muir, who is responsible for both indoor and outdoor insect control at UCLA, is charged with care of the 51 acres of campus turfgrass.

"We can't spray the grass without being questioned," says Muir. "People come up and want to know what we're applying. We're under great scrutiny and, frankly, I'm glad we are. Concern for the environment is healthy and the questioning is a good sign."

Muir, whose six-man staff works under Frank Schacht, UCLA's senior superintendent of grounds, falls into the "concerned" category himself.

"Handling insecticides is a serious business," he says. "Materials have to be chosen carefully, applications must be made only when necessary and then in a precise, careful manner."

In the past Muir has used chlorinated hydrocarbon insecticides (such as DDT) and materials that contained arsenic, strychnine or mercury. Then along came the carbamates and the organic phosphate materials that do a percise job, but don't persist in the environment. He switched to these. Currently his major insecticide is Diazinon.

A turf spraying program is one that requires periodic maintenance programmed against a known budget and available manpower. Muir says that he does not operate this way. "We have neither the staff nor the money for a preventive program," he explains. "When problems develop, we spray."

And problems do develop. Last July, a serious cutworm infestation hit the campus Sculpture Gardens.

"We made two applications of Diazinon, two weeks apart, and con-

trolled it nicely," Muir reports. "The year before, we had bad cutworm problems in the same place. We tried four applications of chlordane, but still didn't get control.

"The cutworm works at, or below, the crown of the grass," he explains. "A cutworm attack results in a general browning out of Bermuda — and 90 percent of our grass is common Bermuda, the rest being hybrid Bermuda or dichondra."

Muir has been at UCLA ten years. Six years ago, he received permission to test his staff for cholinesterase levels, an indication of toxicity buildup in the blood. These blood tests are made annually and on new

employees when they are hired. "We have never had a level that wasn't normal," Muir says. "Everyone on our staff is a licensed pest control operator. "We won't hire anyone who isn't."

Muir uses Diazinon 4E, an emulsifiable solution which can be used effectively indoors or outdoors. Turfgrass applications are made with a 50-gallon spray rig and a hand wand.

Another Southern Californian who has found the answer to turfgrass insect problems is Joe C. Judd, golf maintenance supervisor for the 12 golf courses of the City of Los Angeles. Judd cares for 144 bent-

*(continued on page 62)*



Rich Eichner, (L) superintendent at Lakeside Golf Course in North Hollywood, Calif., supervises an application of Diazinon 50W, a wettable powder insecticide. Manning the spray rig on Lakeside's 16th green is Eichner assistant Joe Palacios.



# Now "zero-in" on gypsy moth and other tree defoliating worms!

**HIGH POTENCY PERFORMANCE** Thuricide® bacterial insecticide offers professional tree men a unique and effective weapon in their war against worms. Brings sure death to gypsy moth larvae, spring & fall cankerworm, fall webworm, oak moth larvae, tent caterpillar, red hump caterpillar. Packs more kill power (International Units of Potency) than any other insecticide of its type. Yet Thuricide does not affect man, birds, bees, pets or wildlife!

**UNIQUE TARGET ACTION** Thuricide's naturally-occurring active ingredient (*Bacillus thuringiensis*) must be eaten to be effective. Even then, it kills only specific target worms by destroying the digestive system. Feeding stops almost immediately after ingestion. So don't worry if you see some worms around after spraying. They're not eating. They're starving to death! There is no toxic risk from drift or residue. And Thuricide will not burn leaves.

**PROVED THROUGH USE** Thuricide is no Johnny-come-lately product. Eight years of use on over 2,000,000 acres of food crops have made it the number one name in biological insect control. Extensive tests on forests, shade trees and ornamentals have proved outstandingly successful. The label lists specific registrations and rates. Write Crop Aid Products, International Minerals & Chemical Corporation, P. O. Box 192, Libertyville, Illinois 60048.

## Thuricide® BACTERIAL INSECTICIDE



**Sure... Clean... Selective!**







**GREAT NECK** Long Island Public School turf program (see *Large-Scale Turf Maintenance, Care and Cost*, from **WEEDS TREES and TURF**, November, 1971) includes an intensive cultural turf program (1) Program mowing to cover all areas on the average of once a week in growing seasons; (2) Aerifying at least once a year, preferably in the fall; (3) Lime annually using a ton per acre, or as soil tests indicate; (4) Rainfall, averaging 40 inches per year, provides moisture except for newly seeded areas; (5) Fertilizing at least once a year, with an average of 3 lbs. of nitrogen per 1,000

sq. ft., and (6) Weed control only in special areas, since good grass stands prevent weed seeds from germinating.

Success of the fertilization program can be attributed to the fact that 75% of the nitrogen in a 20-6-4 fertilizer is Nitroform, a slow-release non-leaching organic. Continued survival of the thick turf indicates that it is getting adequate nourishment all year around, possible only with ureaform on a single application basis. During this 13-year long ureaform program, the turf has continually benefitted with a buildup of residual nitrogen.

## Nursery Official Reports on Green Survival Concept

"The whole Green Survival idea is very rapidly becoming the major marketing approach for the nursery industry here in this country and in several other places around the world," says an official from the American Association of Nurserymen.

The Green Survival concept underscores the nursery industry's total involvement in the environmental situation, says Richard Hutton, public relations chairman for AAN. It stresses actions possible by any individual to protect and improve his environment, and emphasizes the ecological importance of the green growing plant life provided through the nursery industry.

The idea has been picked up and adapted by groups in several foreign countries. Nursery association leaders in England, Germany, and France, have requested marketing kits for their study and distribution.

Industry people in those countries are already using the Green Survival approach in their public communications.

Across our own border in Canada, use of the Green Survival Program is becoming as widespread as in the U.S.A. Green Survival materials have been translated into the French language for use in the province of Quebec, and an outdoor advertising program has been introduced there to assist in spreading the message.

Here in this country, the Florida Cooperative Extension Service has employed the Green Survival concept in a 3-month series of television programs. A Milwaukee area Junior Chamber of Commerce featured a "Green Survival Week" during which they sold flowering crabapple trees as a fund-raising activity. A number of banking institutions have cooperated with their local nurseries in offering live plants as a new customer bonus—emphasizing the "Green Survival" idea in the projects.

A senior high school in Coral Gables, Florida is using the Green Survival publication as one of the textbooks for its course in Ecology. The instructor of the course has prepared a work-sheet for students based on material in that booklet.

"The case studies could go on and on," Hutton says. "The point is, this idea has captured the imagination of the public here in America and elsewhere because it has one answer for the environmental concerns which are on almost everyone's mind.

The Green Survival marketing kit is developed around a small publication prepared for public distribution. "**It Depends On You**" contains more than half a hundred simple steps any person can take to act on his interest in environmental improvement. While the booklet is a general guide to ecological betterment, more than half the points covered have a direct tie-in to the nursery industry's products and services.