

# OFTANOL<sup>®</sup>

## One application controls white grubs from season-to-season.

There's only one insecticide that controls white grubs from season-to-season.

New OFTANOL insecticide from Mobay.

OFTANOL delivers unparalleled residual control of white grubs. In fact, you can expect one application of OFTANOL at the highest recommended rate to control white grubs until about the same time next year.

OFTANOL also offers these additional advantages compared to present white grub materials:

- OFTANOL does not require watering-in.
- OFTANOL does not tie-up in thatch.
- OFTANOL does not require critical application timing.

One application. Once a year. That's the OFTANOL one-shot advantage.



Mobay Chemical Corporation  
Agricultural Chemicals Division  
Specialty Chemicals Group  
Box 4913, Kansas City, MO 64120



OFTANOL 9%  
Granular Insecticide  
for insect control  
on turf grasses.  
FOR COMMERCIAL  
APPLICATOR USE  
ONLY.  
STOP - Read the label before use.  
CAUTION  
NET WEIGHT 40 POUNDS  
215 251

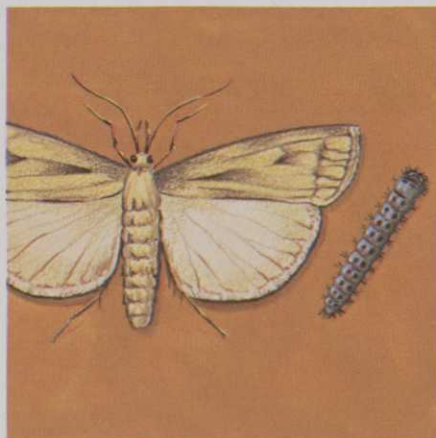
**New,  
one-shot  
white grub  
control.**

# OFTANOL also controls these major turf insects.

OFTANOL has been proven effective for control of sod webworm, Hyperodes weevil, billbugs and chinch bugs. Consult the product label for the proper timing for control of these pests.

New OFTANOL. For one-shot white grub control and in-season control of other pests. Available from many leading turf chemical suppliers.

The use of OFTANOL for turf pest control is registered in many states. Check with your state extension office for details.



SOD WEBWORM



BILLBUG



CHINCH BUG



HYPERODES WEEVIL



Möbäy Chemical Corporation  
Agricultural Chemicals Division  
Specialty Chemicals Group  
Box 4913, Kansas City, MO 64120

OFTANOL and BAYLETON are Reg. TM's of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen.

MAIL TO: Möbäy Chemical Corporation  
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Box 4913, Kansas City, MO 64120

Send the new OFTANOL Fact Sheet to:

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

What are your major turf pests? \_\_\_\_\_

What are your major turf diseases? \_\_\_\_\_

Who is your turf chemical distributor? \_\_\_\_\_

Yes, I would like to receive the ®BAYLETON Turf Fungicide Fact Sheet.

**FREE**  
OFTANOL  
Fact Sheet

To learn more about OFTANOL, just fill out this card and mail it today. We'll send you the all-new OFTANOL Fact Sheet by return mail.

8181



# A Real Success Story

## George Toma ranks Tee Time #1.



"Uniform growth and good color with less product—that's what I get from The Andersons' Tee Time products," says George Toma, Director of Fields and Landscaping for the Kansas City Chiefs. I've never found another line of fertilizer products that performs as well as Tee Time. And I've been maintaining grounds and fields for ball clubs for 30 years—including the preparation of natural and artificial fields for 15 Super Bowls.

"The landscaped areas surrounding Arrowhead Stadium get a lot of pedestrian traffic. Each day during the season our practice fields get six hours of the toughest wear you can imagine from approximately 120 football players. Even with the rugged wear of practice, there are very

few divots and those that do occur heal quickly. But, whatever the circumstances, I know when I use Tee Time products I'll get the first-class turf my job demands."

George has used a variety of Tee Time products in working with different grasses in a wide range of soil types under varying weather conditions, and he says, "In every case, they did a tremendous job. The line's so broad it's hard to imagine any situation that one of the formulations can't handle. The soil in our practice fields is clay and the drainage is very poor. Last year, with Tee Time products I got some fields in good condition in only six weeks. You'd expect a job like that to take much longer. Through-

out the season we had little rain and very high temperatures, but the grass really stood up. And, what's more, with Tee Time I was able to use only about half the amount required when using other fertilizer products."

The combination of available nitrogen, controlled release nitrogen, and sulfur in Tee Time products stimulates good color and sustains feeding without excessive growth. The high potash content helps the turf resist drought and disease, and establish a good root system, too.

"In turf care, the secret to success is using the right type of fertilizer; and in my book, Tee Time products are number one for a football field, a baseball diamond, a golf course, or any


area that gets a lot of hard wear," George concluded.

Try using The Andersons' Tee Time fertilizers as part of your overall program. Our distributors are qualified to assist you in determining which formulation best suits your needs. If your present supplier does not carry Tee Time products, call us toll-free or write and we'll give you the name of your nearest distributor. You'll be glad you did.

**the professional's partner**

**The Andersons**

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Maumee, Ohio 43537  
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800-472-3220  
Outside Ohio:  
800-537-3370



"The discovery of bacteria in 'Toronto' creeping bentgrass strongly suggests a solution."

## Mystery disease of Butler solved?

By David L. Roberts and Joseph M. Vargas, Jr.

The mystery disease of 'Toronto' creeping bentgrass (*Agrostis palustris* C-15) plagued the 1980 PGA tournament at the Butler National Golf Course in Oak Brook, Illinois. The elite creeping bentgrass withered away with no relief from common cultural or fungicide control practices. Symptoms and spread of the disease suggested an infectious, disease-causing organism was involved; however, investigators had difficulty diagnosing the problem. Tentatively, it was called red leaf spot, crown and root rot, low temperature Pythium or some soil disorder.

Annual bluegrass (*Poa annua*) and other cultivars of bentgrass did not appear to be affected by the disease (Fig. 1). When affected plants were observed closely in the early stages of disease in May and early June, the leaf tips were wilting from the tip back and appeared dark green, twisted and shriveled (Fig. 2). Initially, roots appeared white and in good health even after leaves had wilted. In some instances, internal

discoloration of roots and crowns was observed. Eventually the leaves turned brown, and crown and root regions begin to decompose. Similar symptoms were reported in at least 10 other golf clubs in the Chicago area in 1980 and in previous years. The disease seemed to be favored by rainy periods followed by cool nights and warm days.

Most reported turfgrass diseases are caused by fungi, however, pathogenic fungi could not be consistently isolated from diseased plants after numerous attempts.

With no easy answer in sight, samples were prepared for transmission electron microscopy (TEM). TEM enables small objects to be magnified as much as 300,000 times compared to the commonly used light microscope which magnifies objects 1,000 times their normal size. In a transmission electron microscope, a beam of electrons strikes an ultra-thin section of plant material and forms an image of fluorescent screen; this enables one to look very

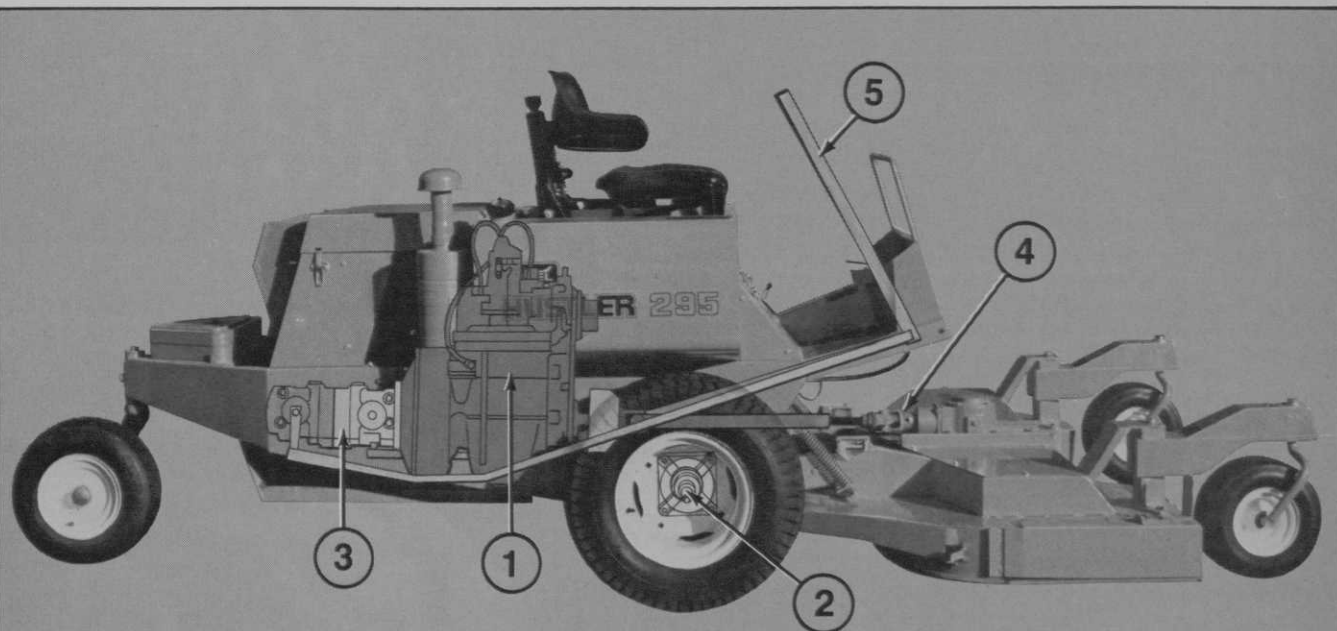
closely into the cells of plants.

When ultra-thin sections of diseased 'Toronto' bentgrass plants from Butler were observed with TEM, numerous rod-shaped bacteria were observed within the xylem vessels (Figs. 3 and 4). (Photomicrographs were prepared by Dr. Karen K. Baker and D. L. Roberts, Center for Electron Optics, Michigan State University, in June and July of 1980.) Bacteria are very small, unicellular microorganisms which may be beneficial or destructive. Certain kinds of bacteria cause diseases of other cultivated crops and diseases of humans such as cholera, typhoid fever and strep throat. The bentgrass bacteria measured approximately  $0.5 \times 1.5 \mu\text{m}$  (1 inch = 25,400  $\mu\text{m}$ ) and their outer walls appeared rippled (Fig. 5). The progressive wilt symptoms are easily explained because the bacteria had apparently infected the xylem of the plant's vascular system (where water and nutrients move from the root to the

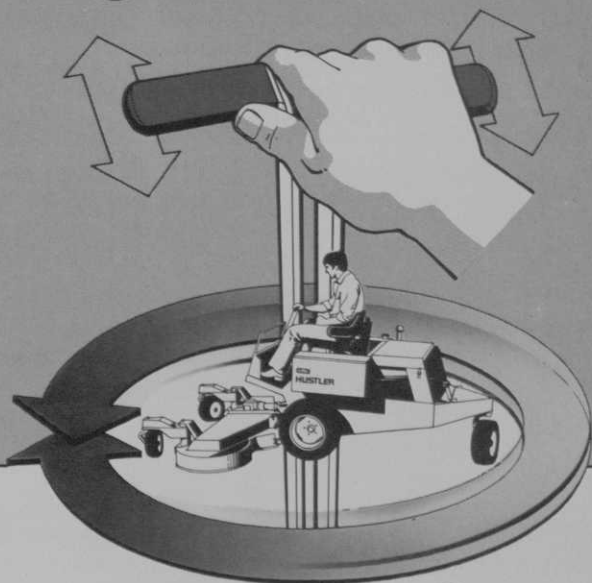
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# EXCEL HUSTLER

*Infinite maneuverability, simplicity & long life!*



- 1. Power options.** HUSTLER models have a power range from an 18 hp, 20 hp or 23 hp air-cooled gas engine; to a 25 hp liquid-cooled gas engine; to the 27.5 hp diesel engine for extra power & long life.
- 2. Individual Ross hydraulic motors** power each drive wheel independently.
- 3. Dual Sundstrand hydrostatic pumps.** Each pump operates one drive wheel motor. This counter-rotating capability of drive wheels allows true zero radius turning.
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**One...**the most important is maneuverability; because speed, direction and braking, with infinitely variable control, can be directed through each drive wheel.

**Two...**ease of operation is provided because one hand controls forward, reverse, turns, braking and ground speed. There's no footwork required.

**Three...**expensive, high maintenance items like gears, chains, steering linkage, clutches, pulleys and drive sprockets are eliminated.

**Four...**dual-hydrostatic pumps operate at one-half the PSI as single pump units, so pump life in HUSTLER units is many times longer.

Basically, anything you can do with a push mower, you can do with a HUSTLER...Infinite maneuverability controlled with the palm of your hand.

Find out more on HUSTLER productivity, long life, low maintenance. Five models and a complete line of attachments to choose from.

Call toll free 1-800-835-3260 or write for the name of your HUSTLER distributor and free literature.

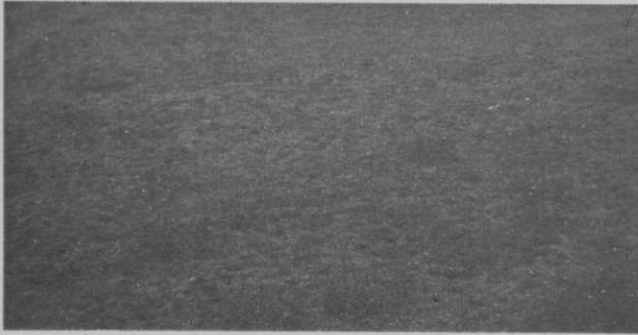
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control in the palm of one-hand!**

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**HUSTLER**  
Turf & Grounds Equipment



**Figure 1.** 'Toronto' green at Butler afflicted with Mystery disease. Note the dieback and thinning of C-15 while *Poa annua* and other cultivars of bentgrass appear unaffected.

'Toronto'  
creeping  
bentgrass

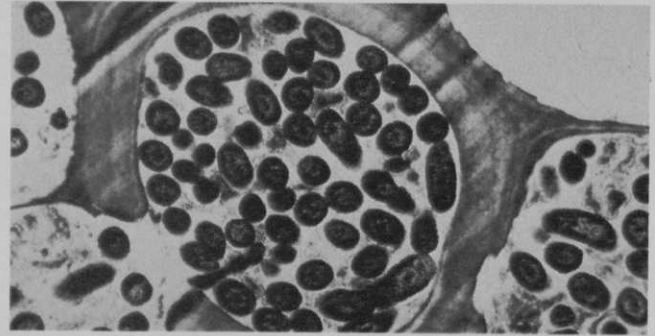
(*Agrostis  
palustris  
C-15*)



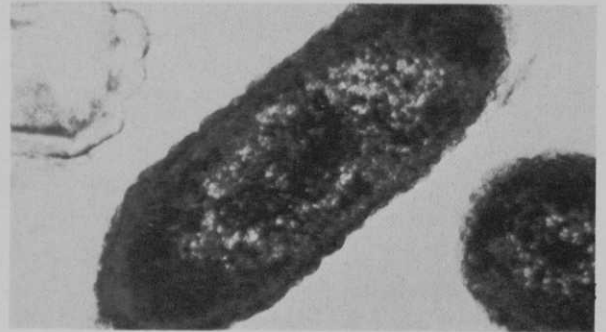
**Figure 2.** Single 'Toronto' creeping bentgrass plant with "green wilted" leaf tips. The wilt appears to be caused by bacteria clogging the xylem vessels and preventing water movement in the plant.



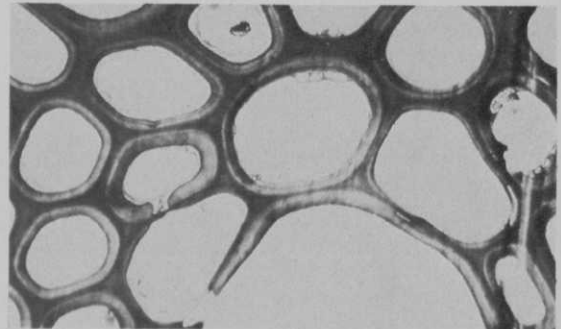
**Figure 3.** Leaf cross-section of 'Toronto' vascular tissue. Bacteria appear to be limited to xylem cells of the vascular system. Magnification approx. 6000X. (July, 1980)



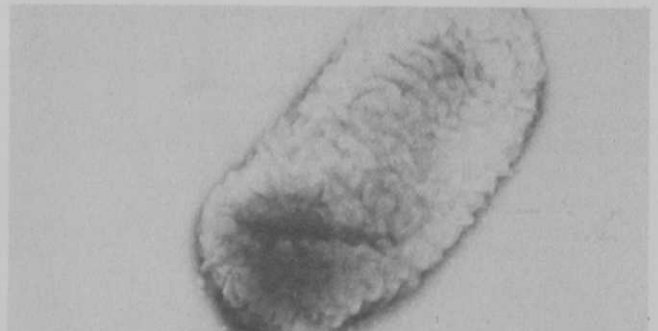
**Figure 4.** A 'Toronto' xylem cell in cross-section. Rod-shaped bacteria multiply to great numbers and probably inhibit upward movement of water and nutrients to leaves. Magnification approx. 8500X. (June, 1980)



**Figure 5.** Single bacterium in the xylem of creeping bentgrass. Bacteria possess a rippled cell wall and hence have been tentatively called rickettsia-like bacteria. Magnification approx. 60,000X. (July, 1980)



**Figure 6.** Cross-section of healthy 'Toronto' creeping bentgrass plant. No bacteria were found in the vascular system of symptomless 'Toronto' creeping bentgrass plants. Magnification approx. 3500X. (July, 1980)



**Figure 7.** Non-sectioned, whole bacterium with rippled cell wall. This bacterium has been isolated with high frequency from diseased 'Toronto' creeping bentgrass. Magnification approx. 60,000X. (September, 1980)

Continues on page 27



In 1976, research expenditures were increased from \$16,000.00 to \$18,500.00. Research projects supported are as follows:

- Thatch—Texas A&M University
- Sandy Soil Potash Reserves—University of Florida
- Chemical Soil Testing—Pennsylvania State University
- Turfgrass Rooting—Rutgers University
- Herbicide-Disease Relationships—Iowa State University
- Herbicide-Thatch Relationships—University of Illinois
- *Poa annua* Management Relationships—Washington State University.

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### SOME NOER FOUNDATION FIRSTS

- 1st to establish a Memorial Turfgrass Library.
- 1st to gain industry support for turfgrass research on a continuing basis.
- 1st to establish an investment fund from donations so research could be supported on a continuing basis.
- 1st to publish extra Master theses for research workers.

A total of 14 projects, conducted in 6 universities, have produced 8 advanced degrees in turfgrass-related fields.

For further expansion of these important projects your support is needed. Be a part of future research. Send your contribution to:

O. J. Noer Research Foundation, Inc.  
c/o Frank I. Shuman, Secretary-Treasurer  
Green Hill Road  
Lumberville, Pennsylvania 18933



## THE TROPHY TURF

### What Do Turf Experts Say About Pennant\* Ryegrass?

Universities and other organizations are continually testing new varieties of grasses under rigidly controlled conditions. Recognized experts objectively monitor these tests, and their findings are published as an aid to the grass seed industry and to consumers.

In a recent series of tests, PENNANT performed well even under low nitrogen conditions during the fall stress period, held its color as winter approached, and showed remarkable resistance to common lawn diseases. In both its warm and cool season ratings, PENNANT was tops. Where the need exists for a lawn that establishes quickly, PENNANT proved itself to be an ideal choice.

PENNANT also ranked high in overall turf performance. Its attractive, medium-high density, and fine leaf blades gave PENNANT a distinct edge over its competitors. Good mowing characteristics was another factor: its moderately dark-green color persisted through several summer mowings, and its blades were clean, not ragged.

So well did PENNANT perform in several of these independent turf trials, it was deservedly nicknamed "The Trophy Turf."

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\*Plant variety protection pending and anticipated

Higher prices are barely allowing most manufacturers to maintain existing profit margins.

## Speaking of mowers. . .

By **Ron Morris**

There are many behind-the-scene factors which determine why a purchaser for a golf course will buy a particular type of mower. You could say, yeah, well if he's going to mow greens with it, he's going to buy a greens mower. Right, but which brand and what options will he select? Then, the purchaser must weigh safety features, maintenance factors to include design and cost, and the reputation of the distributor for service. Each aspect that the purchaser makes a decision on will center on cost. Probably the biggest question is why have prices risen so rapidly in such a short period of time.

It was interesting to note an editorial in *The Georgia Turf-Grass News* which stated the price of one specialized piece of turf equipment went up from \$5,200 to \$8,500 in less than three years. That's a 68 percent increase. Will they price themselves out of the market? I don't think so, because it's happening to everyone in the market. We'll explore some of the things that have made cost rise so rapidly in the last few years, some of the things you can do to cope, and some of the manufacturer's philosophies behind their products.

### **Safety**

It is estimated that some 40 million homeowners are out mowing their lawns each weekend during the summer months. Figures for 1978 show that there were 160,000 accidents involving mowers. If you figure each person mows their yard about 16 times a year, you get an accident rate of .025 percent. That's one-fortieth of one percent. Quite a low rate, you would think.

But when the ones who do have the accident start suing, all hell breaks loose. Thousands of dollars in a single settlement make the front pages of newspapers and all of a sudden there is a major push for legislation to make mowers safer. The manufacturer must pay his people

to design the safety feature into his products and pass the cost on, so he can maintain a profit margin. His product liability insurance goes up. Again, he must pass it on. Then, there is the cost of the safety feature itself.

For sometime now, there has been talk of requiring (by the government) a blade brake on rotary push mowers which would stop the blade if the operator lets go of the handle, or a dead-man control which would shut off the engine. This feature could raise the price of a simple push mower by \$30 to \$70. It is tragic that someone should become severely injured through a mower accident, but do you penalize the 99.975 percent who use the product safely? Issues are beginning to turn away from the most benefit for the greatest number and look only at "worst case" examples.

If you could pass a law against two guys picking up a rotary mower and using it as a hedge trimmer, you know you would have to post a 24-hour guard to make sure they obeyed the law.

### **Maintenance**

Probably the most often ignored, but best maintenance advice anyone could give is to perform routine maintenance as outlined in the owner's manual. Most mechanics (not all) have an aversion to book work. But you can't place all the blame on the mechanic. There is often a lag in communications down the line from the manufacturer to the distributor to the customer and then to his mechanic.

Hydraulics are rapidly gaining acceptance in the golf course equipment market. They make the work easier, but there are hoses and seals and valve banks, a completely new arena for mechanics who have never worked with hydraulics before. Send them to training schools! Most hydraulic problems can be avoided if you keep the fluid clean and replace

it at recommended intervals. The fluid might look good, but it does break down with age. Hoses also. The rubber deteriorates, depending upon what you wash the unit with. Replace them at recommended intervals, even though they look good. There's generally a reason for every specification the manufacturer writes in the owner's manual.

Along these lines, *Golf Business* must make a retraction. Some months ago we printed in our *Idea File*, the use of dye to stain fluid so it would show up quickly if a leak developed as you were mowing. We still think the dye is a good idea, however, the particular dye recommended did not go completely into solution and remaining crystals act as grit, wearing at the system. Other forms of dyes are being investigated and we will keep you posted.

One thing to keep in mind, if you do use a dye: Don't become complacent about maintenance, thinking you'll be able to catch it by the color when it does occur. It might be a major break and empty the system on your green!

### **Keep it sharp**

Some people will backlap their mowers daily and others will backlap weekly. It's hard to tell which is sharper. However often you backlap to keep your mower sharp, it is essential to be redundant and say backlap often enough to keep it sharp. The person who waits to sharpen the mower until after little ridges begin to show up in the swath is getting a little sloppy. And he's going to have a larger reel replacement bill because the grinder has to take off so much metal to true the reels up.

To prevent nicks in the reel blades, it is important to reset them periodically without regard to the cut. Out of sight, out of mind. There is a tendency to think everything is all right, as long as the cut looks

*Continues on page 24*



# Futura Plus . . .



## ...Stars at Desert Inn

At the famous Desert Inn Country Club in Las Vegas, Superintendent Bob Stuczynski — pictured here with Ibsen Dow (left) of the Las Vegas Fertilizer Company — says *“Using a blend is the best way to insure success with winter overseeding. Futura Plus is really impressive with its quick establishment and its ability to produce dense, dark green turf. I’m especially pleased with its ability to persist in high traffic areas. Futura Plus will definitely play a role in maintaining our fine reputation here at Desert Inn Country Club.”*

Futura Plus contains three of the best turf-type perennial ryegrasses: Fiesta, Blazer and Dasher. Futura Plus has had extensive university testing and is now in use on golf courses, school grounds, parks, commercial sites and sod farms. Professional turf managers like Stuczynski, know good turf and demand the best. That’s why they have chosen Pickseed’s Futura Plus for winter overseeding or permanent turf.

# Futura plus™

Pickseed also produces

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KENTUCKY BLUEGRASSES

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Write 119 on reader service card

Cutting the poa population to 20 percent dramatically cut irrigation costs

## Success with one fairway leads to renovation of course

**B**attling infestations of *Poa annua* is not a unique problem for most golf course superintendents. But, renovating the entire course to help eliminate the weed is.

Dave Portz, Superintendent at Brookside Country Club in Macungie, Pa., did just that in 1979, (*Golf Business*, November, 1979) and claims to have not only minimized the poa population, but saved a considerable amount of time, money and labor to boot.

After five years of trying to curb "almost a 100 percent infestation of poa" on his golf course by conventional means, Portz started experimenting with the idea of renovating the existing turfgrass with an application of Roundup herbicide, and then overseeding immediately into the treated area. He began in 1978 by renovating a 14-foot strip on the 10th fairway, graduated to a renovation of the entire 13th fairway, and then renovated the entire course in the spring of 1979.

With a strong playing membership and a somewhat modest budget, Portz was mainly concerned with achieving enough of a population change to help cut irrigation, labor



**Golf cars** are allowed most of the time (above) because there's not much poa to further stress now. Dogleg at 18 fairway is shown at left.



Continues on page 25