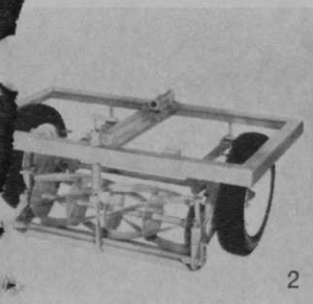


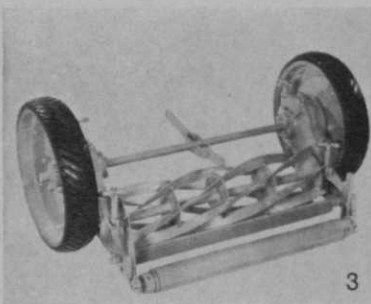


## 1. THE GANG YOU PUSH AROUND

If you want a perfectly smooth finish without wheel marks or streaks of uncut grass, front mowing is what you need. Here's the Jacobsen F-10 Mowing Tractor pushing 7 mowing units. The operator has full visibility of each unit at all times. F-10 as shown can mow up to 60 acres per 8 hour day.



2



3

## 2. MEET THE COST-CUTTING GANG

This is the Jacobsen Blitzer. It is very ruggedly built to take abuse and pounding while mowing rough grass at high speed. Articulated frame design permits each gang to hug ground contours. Large diameter reel gathers in tall grass. Can be pulled by any tractor with draw-bar hitch.

## 3. HERE'S THE GANG FOR SMOOTH TURF

If you have large, smooth turf areas, the Jacobsen Fairway Gang is what you need. Fairway Gangs will put a fine lawn look on golf courses, parks, schools, estates, institutional and industrial grounds. Very efficient with low maintenance costs. Fully articulated frame, travels over rolling, uneven ground without scalping or skipping.

## 4. A SPECIAL GANG FOR FINE TURF

If you have big tracts of short, close, fine grass you need a high frequency mower, the Jacobsen 10-blade Fairway Gang. Jacobsen developed this gang just for golf courses with super fine fairway grass. Articulated frame design.

## 5. THIS GANG CAN REALLY MOVE

The Ram Lift Ranger is a dependable unit to maintain a fast mowing schedule when there's travel from job to job. Usable with any tractor having SAE remote ram hydraulic system. Hydraulic system raises units for travel.

## 6. THE GANG FOR 3-POINT HITCH

If your tractor has a 3-point hydraulic lift, the Jacobsen 3-point lift assembly will give you a low cost mowing unit. Use it with either Fairway or Blitzer units. It's fast and efficient for estates, parks, institutions and highways.

# JACOBSEN®

...better turf care ideas

JACOBSEN MANUFACTURING COMPANY • RACINE, WISCONSIN 53403

For more information circle number 277 on card



5



6

## BEARD

*Continued from page 29*

L. J. Zanoni, L. F. Michelson, W. G. Colby and M. Drake. 1969. *Agronomy Journal*. 61:195-198. (from the Department of Plant and Soil Sciences, University of Massachusetts, Amherst, Mass. 01002).

Field investigations were con-

ducted to study the affect of fertilization and season of the year on the carbohydrate levels in tissues of four turfgrasses. Merion Kentucky bluegrass was maintained at a 1.5 inch cutting height whereas Pennncross creeping bentgrass, Astoria colonial bentgrass and Kingston velvet bentgrass were maintained at a maximum cutting height of 0.5 inch. Two

levels of nitrogen and potassium were maintained. The lower level was not fertilized during the growing season whereas the high level represented a fertilization program which attempted to maintain an optimum level of nitrogen and potassium for the particular species involved. Tissue samples were collected at two week intervals and analyses made of the total soluble carbohydrate and total fructose content. Soil temperatures were recorded at a two-inch depth.

Carbohydrate reserves were reported highest in the stem and leaf sheath tissues. The application of nitrogen fertilizer resulted in a decrease in the total soluble carbohydrate level. Potassium fertilizer did not affect the level of total soluble carbohydrates. Merion Kentucky bluegrass cut at 1.5 inch contained substantially higher levels of total soluble carbohydrates than the close cut bentgrasses. Among the bentgrasses, the total soluble carbohydrate level was lowest in Astoria colonial bentgrass and slightly higher in the Kingston velvet bentgrass with Pennncross creeping bentgrass possessing the highest level.

Definite seasonal fluctuations in total soluble carbohydrates were observed among all turfgrass species and fertility treatments. Substantial carbohydrate increases were evident during the fall.

An insulating affect associated with the amount of vegetative cover is evident from the temperature measurements. Highest extremes in temperature occurred on the bare soil plots whereas the greatest insulating affect from the vegetative cover was evident under Merion Kentucky bluegrass cut at 1.5 inches. The insulating affect of the shorter cut bentgrasses was intermediate between the bare soil and the high cut Merion Kentucky bluegrass.

*Comments:* The level of reserve or storage carbohydrates in turfgrass tissues is one of the better physiological indicators of the

*Continued on page 34*



## If Powerscreened topdressing is better, why does it cost less?

Speed is the answer. If you're topdressing with tediously hand-screened material, you're probably paying an extra five dollars a yard for a dressing that still brings complaints from golfers. Sticks and stones may hurt your reputation, and clog up your spreader, besides.

Golf course Superintendents who've gone over to Royer Powerscreening are reporting a real drop in cost of this

important maintenance item. Simple arithmetic tells you that a Royer Powerscreen, making payments on itself at five dollars (or more) a yard, can bring almost immediate relief to the maintenance budget bind.

Let a Royer distributor show you that what goes up *can* come down... meaning, of course, the high cost of topdressing. And he'll show you how a Royer Powerscreen can be put to work on short notice, and work efficiently for an hour or a day at a speed you wouldn't have believed.

## ROYER

ROYER FOUNDRY & MACHINE CO.  
171 Pringle St., Kingston, Pa. 18704

For more information circle number 167 on card



# NEW FROM DU PONT



## TERSAN<sup>®</sup>

Snow Mold  
Pythium

# SP

TURF FUNGICIDE

ACTIVE INGREDIENT:

Chloroneb (1,4-dichloro-2,5-dimethoxybenzene) 85%

INERT INGREDIENTS 15%

USDA Reg. No. 352-344

U.S. Pat. 3,265,564

**CAUTION!** Keep out of reach of children.  
MAY IRRITATE EYES, NOSE, THROAT, AND SKIN.  
Avoid breathing dust or spray mist.  
Avoid contact with skin, eyes, and clothing.

**GENERAL INFORMATION**—Du Pont "Tersan" SP Turf Fungicide is recommended for the treatment of turfgrasses for the control of snow mold (Typhula) and Pythium blight.

Do not re-use container; bury when empty. Do not graze or feed clippings from treated areas to livestock.

**NET 3 LBS.**

E. I. DU PONT DE NEMOURS & COMPANY (INC.)  
INDUSTRIAL AND BIOCHEMICALS DEPT., WILMINGTON, DELAWARE

## For Control of Pythium

Check these advantages

- ☐ **EFFECTIVE CONTROL**  
(thoroughly tested at universities)
- ☐ **LOW COST**  
(about \$1.20 per thousand square feet)
- ☐ **NON-MERCURIAL**

For control of Pythium Blight, spray "Tersan" SP at rate of 4 oz. per 1,000 square feet mixed in 3 to 5 gallons of water. Apply during periods of high temperature and humidity—favorable to the development of disease. Repeat in 5 to 7 days if these conditions persist.



## TURF PRODUCTS

With any chemical, follow labeling instructions and warnings carefully.

For more information circle number 177 on card



## BEARD

*Continued from page 32*

overall vigor and recuperative potential of the plant. Certain cultural factors can definitely influence the level of reserve carbohydrates. For example, in this study the Merion Kentucky bluegrass contained substantially higher carbohydrate reserves than the creeping bentgrasses. A considerable portion of this differential is due to the higher cutting height of Merion (1.5 inch) compared to the closely cut bentgrass (0.5 inch). The greater the amount of leaf area retained, the higher the level of carbohydrate reserves which can be maintained. Similarly, judicious, controlled nitrogen fertilization is important in maintaining a higher level of carbohydrate reserves. Nitrogen stimulates shoot growth which, in turn, tends to deplete the amount of carbohydrate reserves stored primarily in the stem tissues. Exces-

sively high total seasonal applications or excessively high amounts of nitrogen applied in any one single application should be avoided.

A distinct seasonal variation in carbohydrate reserves was evident in all species studied. This variation should be recognized by any professional turfman in the timing of cultural practices. The use of cultural practices which place additional stress on the carbohydrate reserve level of the turfgrass plant should be avoided when these reserves are minimal.

Finally, the effect of the amount of above ground vegetation on the variation in surface soil temperatures is evident in this study. It is the temperature in the surface one to two inches of soil that is most critical in terms of temperature stress because the vital meristematic tissues of the stems and nodes are located in this region. Higher cutting heights which maintain a greater amount

of vegetation will serve a vital function in insulating against temperature extremes. Many turfmen have probably observed that bentgrass putting greens maintained at 0.25 inch will freeze much earlier in the winter than the higher cut, adjacent aprons. This differential affect is due to the insulating value of the turfgrass vegetation. □

### Other papers of interest:

1. *Annual bluegrass* (*Poa annua*) — *A common grass and weed.*

R. E. Engel. 1970. Proceedings of Rutgers University Three Day Turf Courses. pp. 51-52. (from the Department of Soils and Crops, Rutgers University, New Brunswick, N. J.).

2. *A review of recent turfgrass research in Southern California.*

V. B. Youngner. 1969. California Turfgrass Culture. 19(1):6-7. (from the Department of Agronomy, University of California at Riverside, Riverside, Calif. 92502).

# The grass with the built-in tee!

Windsor, the improved variety of Kentucky bluegrass, grows as if its object in life were to hold a golf ball. You don't have to dig for the ball, whether the turf is cut 1" on a fairway or 1/2" on a collar. Spreads vigorously, repairs itself rapidly. For technical data write Scotts, Golf Course Division, Marysville, Ohio 43040.



by Fred V. Grau

## ANSWERS TO TURF QUESTIONS

### People problems

This was the subject of my lecture on March 12th before the First International Panorama of Golf held at Palm Springs, Calif. This brief review is intended to cause each reader to think, "How many of my problems really are turf problems and how many of my problems are caused by people?"

A superintendent starts a calcium arsenate program to control *Poa annua*. The membership had not been warned as to the potential. Heat and humidity took the *Poa* out faster than anticipated. A crash program, with the assistance of a consultant, put the course in shape with the help of new grasses and a revised fertilizer program. Most of this situation had to do with people although it was called a turf problem. Essentially the problem was concerned with errors in judgment at several points.

Many recommendations for a fertilizer program have fallen on deaf ears because the material was considered as "too expensive." The real problem was failure to understand the principles of the product involved.

When a superintendent investigates prowlers at night on the course and is beaten to death with

golf clubs, we have a real problem and it isn't turf.

A new driver is mowing fairways and is tearing up the turf because a wheel came off. He didn't lose the wheel—he had it in the toolbox.

A chairman is tearing his hair because they can't control the "dollarspot." They had sod webworms. Was that a turf problem? Both can be controlled; identification comes first.

A borrowed farm sprayer had some Atrazine left in the tank. The greens that were sprayed out of this equipment were killed. A turf problem? No—a people problem, an error in judgment.

Uncertified "Penncross" bent was planted on new greens. It cost less than Certified. The turf was unsatisfactory. Penncross got a bad name. The trouble was that something other than Penncross was planted. This was not a turf problem.

A chairman decided to build the greens his way using layers of soil, cinders and horse manure. The bent roots penetrated less than one inch. In the nursery on unmodified native sandy loam soil the bent roots were 18 inches deep. Theirs was not a turf problem.

Everyone who has visited golf courses over a period of years could tell of many more such instances. Let's do some sorting out of causes and consequences. In many cases we will find that people are responsible for most of our so-called turf problems.

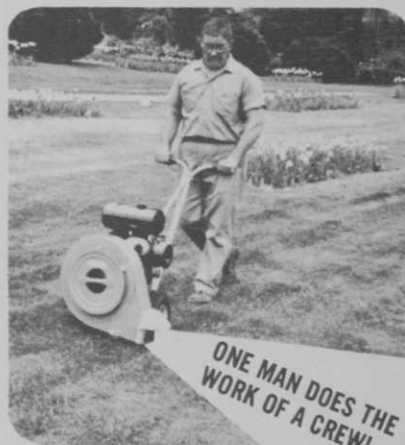
*Q.—We are on a UF-potash program on our fairways (phosphorus is very high). Our complaint is that we don't get a "quick green" in the spring. What can you suggest?*

(Maryland)

*A.—First, you haven't been on the program long enough to achieve the desirable carryover which will give you the early greening you want. Second, I am not at all sure that this early green is what is best for the turf. Yes, you could apply*

(Continued on page 38)

## GREATEST LABOR-SAVER IN ALL OUTDOORS



**Lo-Blo, the Air-Broom**

Fastest, easiest way to lick the problem of leaves, litter, trash, refuse, debris, twigs, clippings. We now make 8 models to fit every need . . . sold nationally. Send for literature and name of your nearest dealer/distributor.

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ATWATER, OHIO 44201 • Ph. 216/947-2344

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## ITALIAN TWO-TONE GOLF GLOVE



From the hands of world-famous Italian glovemakers to the hands of American golfers comes the latest look in golf gloves. Snap-back design in thin, tough and tacky capeskin. Highlighted with leather contrasting piping and Par-Mate emblem. Snap-off ball maker.

In 12 color combinations. Men's Sizes S-M-ML-L-XL, also Cadet Sizes in lefts only. Ladies' Sizes S-M-L. Lefts, Rights and Pairs. \$5.00

Write for Latest Catalog  
AT PRO SHOPS ONLY or write to

**PAR-MATE®**

10 West 33rd St., New York, N.Y. 10001

For more information circle number 244 on card



**Maybe your  
Poa annua  
won't brown  
out. Maybe the  
summer will  
be a cool one.  
Maybe you'll  
be lucky.  
Maybe.**

# **Balan stops Poa annua.**

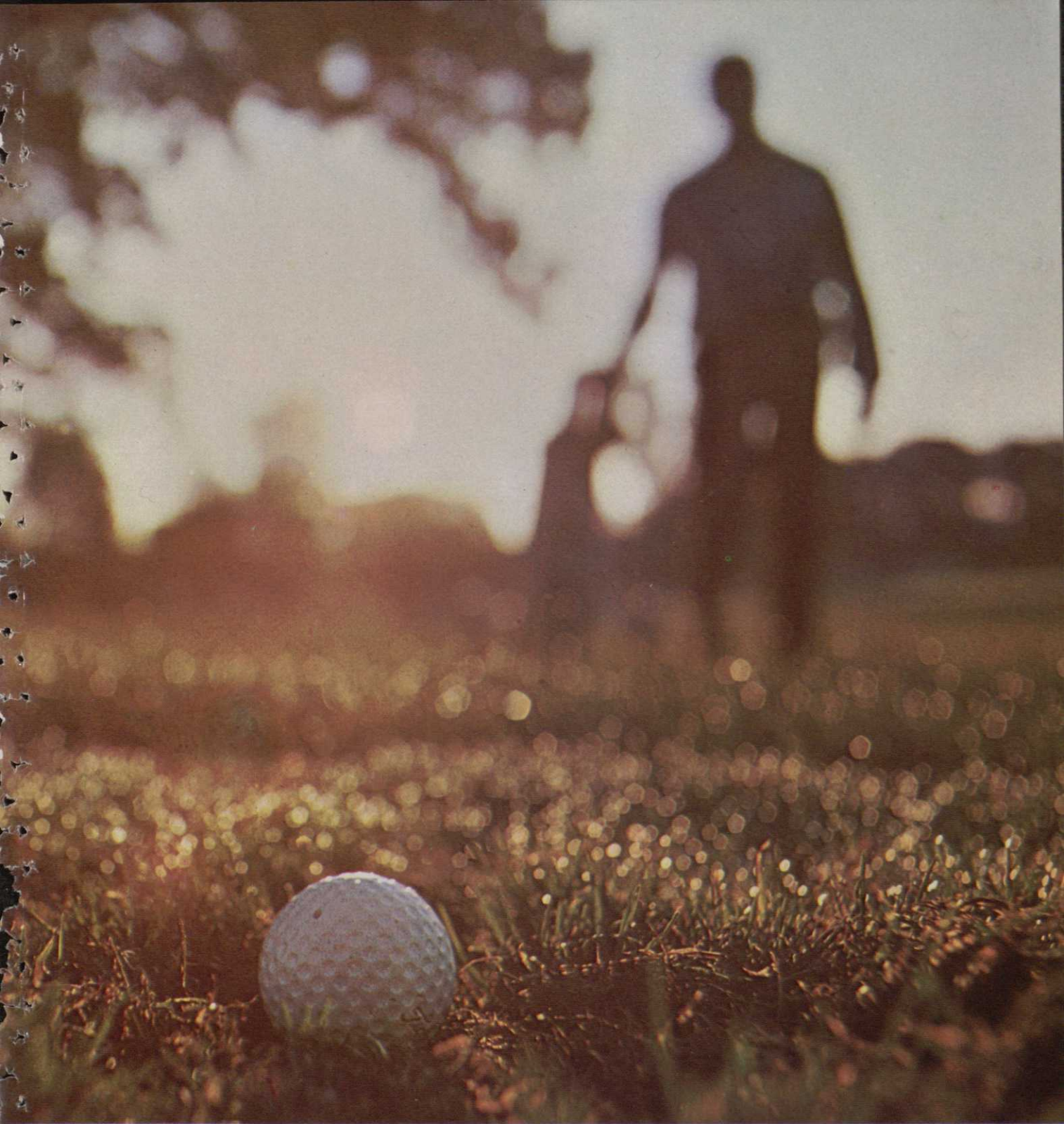
**Keeps Poa annua seeds from  
germinating while good turf  
fills in. And no maybes.**



Maybe Dr. Jekyll won't turn into Mr. Hyde this summer. But why gamble when you've got the surest answer yet to controlling Poa annua (annual bluegrass)?

Balan granular not only stops Poa annua, but most other annual weed-grass problems. Crabgrass, goosegrass (crowfoot or silver crabgrass), watergrass (barnyardgrass)—all stopped economically and dependably with a high degree of safety.





ELANCO PRODUCTS COMPANY A division of Eli Lilly and Company Indianapolis, Ind. 46206, U.S.A.

WHAT'S BALAN GOT THAT OTHERS LACK? The unique quality of being waterproof. Many herbicides are highly water-soluble. But not Balan. It clings to soil particles in the weed-germinating area. Resists the leaching effect of heavy rains and repeated irrigations. Stays put for months, before breaking down gradually and naturally to avoid harmful residue build-up.

To begin phasing out Poa, apply Balan before the next crop sprouts.

By killing Poa annua seeds as they germinate, you will steadily reduce the stand while allowing desirable grasses to fill in. Balan won't affect your good turf. In fact, good turf will be stronger without Poa annua competition.

Balan is formulated to make a golf superintendent's life a lot easier. And priced to make his budget a lot easier to stay within. See your distributor now.

**Balan™**



Balan™ Elanco  
(Balan™—benefin, Elanco)

Goes all out...  
all over... all season.

## GRAU

Continued from page 35

soluble N to achieve early green, but then you may have much more grass than you want a little later. With a good bluegrass turf it is best to work along with nature and not force this "early green" at the expense of quality turf the rest of the season.

Q.—When you first came to California we showed you kikuyugrass and asked, "How can we get rid of this pest?" You asked a few questions about its ability to stand drought, its fertilizer and water requirements. Then you asked, "Why would you want to get rid of it?" Now, with good management, kikuyugrass is one of our best fairway turfs, needing no irri-

gation and no fertilization. My question is, "Do you still feel that we can live with this grass when it is managed?"

(California)

A.—Yes, especially now that we have heavy power equipment to keep the turf eminently playable. We do need to know how to control its spread into bunkers and greens.

Q.—We have been told that we are foolish to buy organic fertilizers (ureaform and natural organics) when the soluble nitrogen materials cost so much less per unit of plant food. We like the organics but we also are concerned with economics. Can you give us a guide?

(North Carolina)

A.—Inorganic (soluble) forms of nitrogen are more easily misused and, when improperly understood and applied, they are capable of causing considerable damage. I've seen so much evidence of ignorance concerning soluble forms of N that I've swung heavily toward the side of the safer fertilizers. A good UF, for example, can be misused rather badly and still will not markedly upset the equilibrium. True, the organics cost more per unit. The safety, the reduction in numbers of applications, the more uniform growth—all help to compensate for the differential. One bit of evidence of the value of the slow-release materials in spite of the cost is in the home-owner fertilizers. Nearly all of them now contain significant amounts of the safer materials that last longer.

Q.—I have been asked to use certain growth regulators along ditch banks and around trees on our golf course. Materials suggested are Maleic hydrazide, Gibberellic acid, Cycocel, B-Nine and Phosphon. Should these be applied in spring before growth is over 2 1/2 inches? Do you consider them economical?

(Canada)

(Continued on page 42)

**Tear out this ad and save it!**

# MEMO TO: GOLF COURSE SUPERINTENDENTS

FROM:

**Warren's TURF NURSERIES**

WE HAVE THE CORRECT GRASS FOR EACH LOCATION AND EVERY USE AT WARREN NURSERIES ACROSS THE NATION, FROM NEW YORK TO CALIFORNIA.

Following is a schedule of the types, strains and species of grasses produced at the various Warren Nurseries (see code for the growing location).

## NURSERY CODE Growing Areas of Warren's Fine Lawn and Golf Course Grasses

Illinois.....	IL	California.....	C
Wisconsin.....	W	Minnesota.....	M
Indiana.....	IN	Nebraska.....	NE
New York.....	N	Kansas.....	K
Ohio.....	O	Missouri.....	MO

**NOTE: A word about Warren's Grass developments and discoveries**

**WARREN'S® A-20 BLUEGRASS** rated highest in disease resistance by leading universities engaged in turf grass research. It greens up sooner in the spring and stays green longer in the fall. Recovers from injury sooner, takes a short cut

TYPE STRAIN OR SPECIES	NURSERIES WHERE GROWN (see code below)									
Warren's A-20 Bluegrass.....	IL	W	IN	N	O	M	NE	K		
Warren's A-34 Bluegrass.....	IL	W	IN	N	O	C	M	NE	MO	
Warren's A-10 Bluegrass.....	IL	W	IN	N	O					
Warren's Blue Grass Blend.....	IL	W	IN	N	O					
Merion Blue Grass.....	IL	W	IN	N	O					
Meyer (Z-52) Zoysia Grass.....	IL	IN	N							
Creeping Bent Grass Sod & Stolons										
Toronto (C-15) & Cohansy (C-7)	IL	W	IN	N						
Pennecross (Sod only).....						C				
Nimisola (Stolons only).....						O				
Pennpar (Sod & Stolons).....	IL	W	IN	N	O					
Warren's Low-Cut Bluegrass Blend C										
Warren's Hi-Cut Bluegrass Blend C										
Bermuda Grass Sod & Stolons										
Tifgreen, Tifway, Santa Anna.....	IL	W	IN	N	O	C				
Hiway Sod.....	IL	W	IN	N	O	C				

**WARREN'S® A-34 BLUEGRASS** is tolerant of up to 65% of the daylight hours in shade. It is a vigorous grower and can be mowed down to 1/2 inch in open or slightly shaded areas.

**WARREN'S® A-10 BLUEGRASS** is excellent in hot humid areas where bluegrass usually has trouble. It is a vigorous grower. It is fine-leaved and the color is a beautiful dark green.

Write for address of nearest nursery or franchise grower of Warren Grasses or look in your yellow pages

Keep the grass you plant on your tees, fairways or greens healthy and green with **WARREN'S LAWN FOOD** used to produce the finest in lawn and golf course grasses at less cost.

(The world's largest, most experienced and one of the oldest growers of fine lawn grasses)

**HOME NURSERY  
AND RESEARCH FACILITY**  
8400 West 111th St., Palos Park, Illinois  
PHONE: (312) 974-3000



**WARREN'S  
TURF NURSERIES**

**SAVE this ad TODAY** as it will run a few times only

For more information circle number 261 on card



# Water, water, everywhere...



## but not a step you take!

Vari-Time® central control from TORO lets you change starting times and repeat cycles on all 18 greens and fairways without stepping on the course. And if necessary, you may override the automatic system for on-the-spot control at each field satellite.

And your TORO system can be programmed or reprogrammed instantly to optimize performance. If, for example, you want 15 minutes of watering a night, you can program three 5-minute cycles. This eliminates run-off, avoids puddling. So you save water. And have higher quality turf.

Water-saving gear-driven sprinklers rotate at normal speed in overlapping areas, but

automatically slow to half-speed in areas covered by only one sprinkler. So again, watering is uniformly applied.

With turf maintenance costs climbing higher and higher every year, labor savings alone would justify a much more expensive system. So isn't it great that a TORO centrally controlled Vari-Time system costs just 1 to 3% more than conventional zone control?

Call your nearest TORO distributor (in the Yellow Pages) for all the cost-saving facts.

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**Automatic Turf Sprinkler Systems**

Or write: Toro Mfg. Corp., Moist  
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# Cure

