

The Florida Green

SPRING 1987

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Hole No. 12, Bob Cat Course



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IMAGE[®]
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Only new IMAGE® herbicide effectively controls purple nutsedge in warm-season grasses. And LESCO sells IMAGE. To order or to learn more about this important new herbicide, call (800) 321-5325. We'll send you a free, fact-filled brochure. Or contact your LESCO sales representative.

LESCO

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The Florida Green

The Official Bulletin of the Florida Golf Course Superintendents Association

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ABOUT OUR COVER

Plantation Golf & Country Club is located on the lower Gulf Coast of Florida in Venice. Ed Fatica is Golf Course Manager.

DANIEL ZELAZEK

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Do your sand traps look more like the Sahara Desert?

If they do, then you need the Smithco Super Rake,[™] the most advanced sand trap raking system on the market today. The Super Rake features an exclusive adjustable hydraulic floating rake which actually follows the trap contours resulting in a perfectly raked trap everytime.

The Super Rake has a *3-wheel drive system with hydraulic motors on each wheel*. So you get all the power you need. And the unique attachments make sure you have the equipment you need to get every job done quickly, efficiently and economically. Attachments like an *independent cultivator, disc edger, front mounted plow and drag mat*. And for golf courses with less severe traps, the Smithco Easy Rider is an effective mechanical drive rake at an economical price. *Exclusive 2-year warranty*. No one offers a 2-year warranty except Smithco and DeBRA. It's just one more reason why you should consider the Smithco Super Rake.

So don't get trapped by inferior sand trap equipment. Get the Smithco Super Rake. And smooth out your wild deserts.



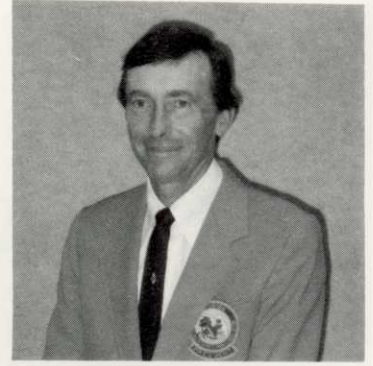
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President's Message



How many times a day do we hear someone say "there's a salesman here to see you?" It gets to the point where I believe 99% of the work force out there are sales people. We can't do without them, but I for one could do with a lot less of them.

In all honesty, and being fair to them, about fifty percent know their product, it's shortcomings, and it's advantages. These same people are pleasant, knowledgeable, and most of all courteous. Our major suppliers know that there are other products of equal value to their own out there, so they stress good personal relationships with the superintendents.

Unfortunately, as in any business, there are those whose ethics are questionable, both buyers and sellers. We have them in our business. A fertilizer business was shut down by the state for short-changing its customers. I'm sure there are superintendents who get free T.V. sets or microwave ovens etc. . . . All this does is short change the club and run the cost of the products they need up. You don't get something for nothing.

There is a fine line between a supplier showing their appreciation for business they have received, and buying business under the table.

I'm confident that our major suppliers, many of whom advertise in this publication, are first class all the way. They not only supply us with the products we need, but back them up with parts, service, and technical advice. ■

Reed LeFebvre

Diquat...The Versatile Herbicide



ORTHO Chevron Chemical Company
Agricultural Chemicals Division
575 Market Street
San Francisco, CA 94105
(415) 894-6219

Read entire label. Use strictly in accordance with precautionary statements and directions, and with applicable state and federal regulations.

X-77®—Reg. TM of Chevron Chemical Company and Chevron Corporation

ROUNDUP®—Reg. TM of Monsanto Company

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**ORTHO**

Diquat

FOR TRIMMING AND EDGING

Facts and Advantages

Diquat... Used for over 20 years (not classified as a restricted pesticide)

Diquat... Clay particles in soil deactivate Diquat on contact (no residual activity)

Diquat... A contact herbicide which gives rapid burndown within 24 to 48 hours

- not translocated into untreated plant tissue
- a broad spectrum herbicide for broadleaf and grassy weed control

Diquat... Highly cost-effective

DIQUAT VS. ROUNDUP®

	Rates/100 gal.	Cost/gal.	Application Cost/100 gal.
Diquat	1-2 qts.	\$60-\$65	\$15-\$30
Roundup	1-2 gals.	\$75-\$85	\$75-\$150

Both of the above products require surfactants for maximum effectiveness. ORTHO X-77® or a comparable nonionic surfactant is recommended for use with ORTHO Diquat Herbicide-H/A.

Diquat... Convenient to handle

- available in one gallon container
- easy to mix and apply
- compatible with most preemergence herbicides

Diquat... The Versatile Herbicide

- can be applied under a broad range of weather conditions: hot, cold, wet, dry
- reduces concern over rainfall following application
- control not tied to vigorous plant growth
- does not interrupt normal mowing frequency
- can also be used for aquatic weed control

NEW
TECHNICAL DATA
custom
formulated
fertilizer
50 LBS

SPECIAL FORMULATED IBDU FAIRWAY MIXES FOR FLORIDA TURFGRASS



A FULL GRANULAR BLEND, WITH A ONE TO ONE NITROGEN TO POTASSIUM RATIO. NITROGEN CONTAINS A COMBINATION OF SIX UNITS IBDU, 3.5 UNITS NITRATE NITROGEN AND 6.5 UNITS AMMONIACAL NITROGEN. THIS FAIRWAY GRADE CONTAINS MAGNESIUM, MANGANESE AND CHELATED IRON.

TOTAL NITROGEN (N) 16.00%
3.50% Nitrate Nitrogen
6.50% Ammoniacal Nitrogen
60% Water Sol. Org. Nit.
5.40% Water Insoluble Nitrogen
AVAILABLE PHOSPHORIC ACID (P₂O₅) 4.00%
SOLUBLE POTASH (K₂O) 16.00%
Chlorine no more than 11.35%
Derived from Isobutylidene DiUrea, Ammonium Nitrate, Sulphate of Ammonia, DiAmmonium Phosphate, Muriate of Potash, Sulphate of Potash Magnesia.

STATEMENT OF SECONDARY NUTRIENTS:
Total Magnesium (Mg) 2.40%
Water Sol. Magnesium (Mg) 2.40%
Manganese (Mn) 1.57%
Iron (Fe)06%
Derived from Sulphate of Potash, Magnesia, FTE 217, Chelated Iron.



A GRANULAR BLEND WITH A COMBINATION OF 5 UNITS IBDU, 5 UNITS SCU, 5 UNITS SULFATE OF AMMONIA, ALL SULFATE OF POTASH CONTAINING MAGNESIUM, MANGANESE, AND IRON. THIS MIXTURE HAS GIVEN EXCELLENT RESULTS IN TESTS CONDUCTED AT THE UNIVERSITY OF FLORIDA RESEARCH CENTER.

TOTAL NITROGEN (N) 15.00%
5.00% Ammoniacal Nitrogen
5.50% Water Sol. Org. Nit.
4.50% Water Insoluble Nit.
SOLUBLE POTASH (K₂O) 15.00%
Chlorine no more than 2.00%
Derived from Isobutylidene DiUrea, Sulphur Coated Urea, Sulphate of Ammonia, Sulphate of Potash and Sulphate of Potash Magnesia.
STATEMENT OF SECONDARY NUTRIENTS:
Total Magnesium (Mg) 1.20%
Water Sol. Mag (Mg) 1.20%
Manganese (Mn) 1.00%
Iron (Fe) 2.00%
Derived from Sulphate of Potash Magnesia, Manganese Sulphate, Iron Oxide.



A GRANULAR BLEND CONTAINING 4 UNITS IBDU, 9.5 UNITS SULFATE OF AMMONIA, GIVING 12.0 UNITS OF SULFUR (COMBINED). THIS MIXTURE HAS A FULL COMPLIMENT OF MINOR ELEMENTS INCLUDING IRON.

TOTAL NITROGEN (N) 16.00%
1.25% Nitrate Nitrogen
10.75% Ammoniacal Nitrogen
0.40% Water Sol. Org. Nitrogen
3.60% Water Insoluble Nitrogen
AVAILABLE PHOSPHORIC ACID (P₂O₅) 4.00%
SOLUBLE POTASH (K₂O) 8.00%
Chlorine no more than 5.00%
Derived from Ammonium Nitrate, Sulphate of Ammonia Isobutylidene DiUrea, Triple Superphosphate, Muriate of Potash and Sulphate of Potash Magnesia.
STATEMENT OF SECONDARY NUTRIENTS:
Total Magnesium (Mg) 1.16%
Water Sol. Magnesium (Mg) 1.16%
Manganese (Mn) 0.45%
Copper (Cu) 0.09%
Zinc (Zn) 0.08%
Boron (B) 0.03%
Iron (Fe) 1.24%
Sulfur (combined) (S) 12.00%
Derived from Sulphate of Ammonia, Sulphate of Potash Magnesia, Manganese Sulphate, Copper Sulphate, Zinc Sulphate Borate and Iron Oxide.

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NEW
TECHNICAL DATA
custom
formulated
fertilizer
50 LBS

PROFESSIONAL PRODUCTS for PROFESSIONAL TURFGRASS MANAGERS.



THE PROBLEM: Mole crickets and other turf insect pests are damaging turf.

THE SOLUTION: Par Ex Slow Release Fertilizer Plus Oftanol® For Southern Grasses 21-2-6.

GUARANTEED ANALYSIS

Reg. No. 735-5621

TOTAL NITROGEN (N)	21.00%
12.50% Ammoniacal Nitrogen	
*6.20% Water Soluble Nitrogen	
**2.30% Water Insoluble Nitrogen	
AVAILABLE PHOSPHORIC ACID (P ₂ O ₅)	2.00%
SOLUBLE POTASH (K ₂ O)	6.00%
Chlorine, not more than	6.00%

Statement of Secondary Nutrients:

Manganese (Mn)	0.80%
Iron (Fe)	0.05%

Derived from: Sulphur Coated Urea, Isobutylidene DiUrea, Sulphate of Ammonia, Diammonium Phosphate, Muriate of Potash, Iron Oxide and Manganese Sulphate.

*Includes 6.2% coated slow release urea nitrogen from sulphur coated urea.

**Includes 2.3% slow release nitrogen from IBDU.

*Controls mole crickets and other major turf insects such as sod webworm, hyperodes weevil, billbugs, chinch bugs & white grub larvae

PLUS

*Superior fertilizer product containing IBDU slow release nitrogen for sustained turfgrass growth, SCU and minor elements.

Insects

Mole Crickets
Sodwebworm larvae
Chinch Bugs

Amount

4-3/4 lb. per 1,000 sq. ft.

1. Rake area free of leaves.
2. Mow, if necessary, so granules reach soil surface.
3. Measure area to be treated and apply required amount uniformly, using a fertilizer spreader.
4. Water in promptly after application.

CUSTOM BLENDS

We formulate our products to satisfy the regional nutritional requirements of *your* turf. Many of these mixes contain our exclusive nitrogen source, IBDU.® We are now offering the best additives in our mixes: Ronstar,® Kerb,® Dursban,® Oftanol,® and others. Check with your local Par Ex Territory Manager.

*Ronstar - Trademark of Rhone-Poulenc, Inc.

*Kerb - Trademark of Rohm & Haas

*Oftanol - Trademark of Mobay Chemical Co.

*Dursban - Trademark of Dow Chemical Co.

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Do your hazards look more like the Everglades?

If they do, then you need the Smithco Runaway with the Lark™ Sprayer attachment. With the attachment in place, your Runaway can handle almost every turf spraying requirement in addition to being the *finest and most versatile turf maintenance truck available*.

The Runaway offers *hydraulic drive and one-pedal operation*. It's *single foot pedal* controls forward, reverse, neutral—even stop. There's *no clutch, no shifter, no brake pedal*. The Runaway's brake system is the engine itself. Lift the drive pedal and the wheels stop. Smoothly, surely and more effectively than any conventional disc or drum braking system. And its *powerful 20 or 24 horsepower air-cooled engine* lets you get from one maintenance job to another quickly.

So if your hazards are bugging you, you need the Smithco Runaway and the Lark Sprayer attachment.



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Letters to the Editor

Dear Dan:

Congratulations! You and your publication have been selected as winners in the 1986 GCSAA Affiliated Chapter Newsletter Editors Contest.

A release will be issued soon to affiliated chapters and news media giving official, public notification of the contest results. An article will be published in the January issue of Golf Course Management Magazine on the winning newsletters and the contest details.

We are hopeful that you will honor us with your acceptance of this award. It will be presented at the Newsletter Editors/PR Seminar during the 58th annual GCSAA International Golf Course Conference and Show in the Phoenix Civic Plaza.

The seminar will begin at 8 a.m. Wednesday, January 28, in room 28.

Your name will be announced, and you will be asked to stand and be recognized wherever you may be seated at the Conference and Show's Opening Session, which begins at 5:15 p.m. Thursday, January 29, in Symphony Hall.

If you are unable to attend the Conference and Show for any reason, please notify us well in advance so other arrangements can be made to present your award. Call Clay Loyd or Ann Neuschafer toll free at 1-800/472-7878.

You should be proud of your accomplishment. We look forward to your acceptance and hope you will be able to join us in Phoenix.

If you requested an evaluation of your newsletter by the judges, it will be along soon.

Sincerely,

Riley L. Stottern, CGCS
President

Stephen G. Cadenelli, CGCS
Chairman, GCSAA Communications/
Awards Committee

Dear Dan:

I was pleased to see "In Praise of Zoysia" imprint in FLORIDA GREEN. This grass has tremendous potential. I'll not live to see it fully realized. Thank you!

Enclosed please find the first paper on TURF ever given before the International Grasslands Congress. I attended the 4th in Europe in 1937. I tried to get funding to attend the 5th in New Zealand but failed. The 6th was convened in State College, PA at the PA State University in August 1952. That is where the enclosed paper was presented, published in the Proceedings, which are in my library.

At this Congress I exhibited a sod of the combination of Merion bluegrass and Meyer Zoysia. It was a sensation! This paper represents a bench mark in turfgrass history. It preceded the formation of the International Turfgrass Society. Few people have seen this paper few living had heard it and fewer still know it exists. Not that Penncross bent hadn't been named.

If you can use the paper fine! If not, it may make a good file stuffer.

My best to Irene,

Fred
Editors Note: See page 54
Dr. Fred Grau

Dear: Mr. Jones:

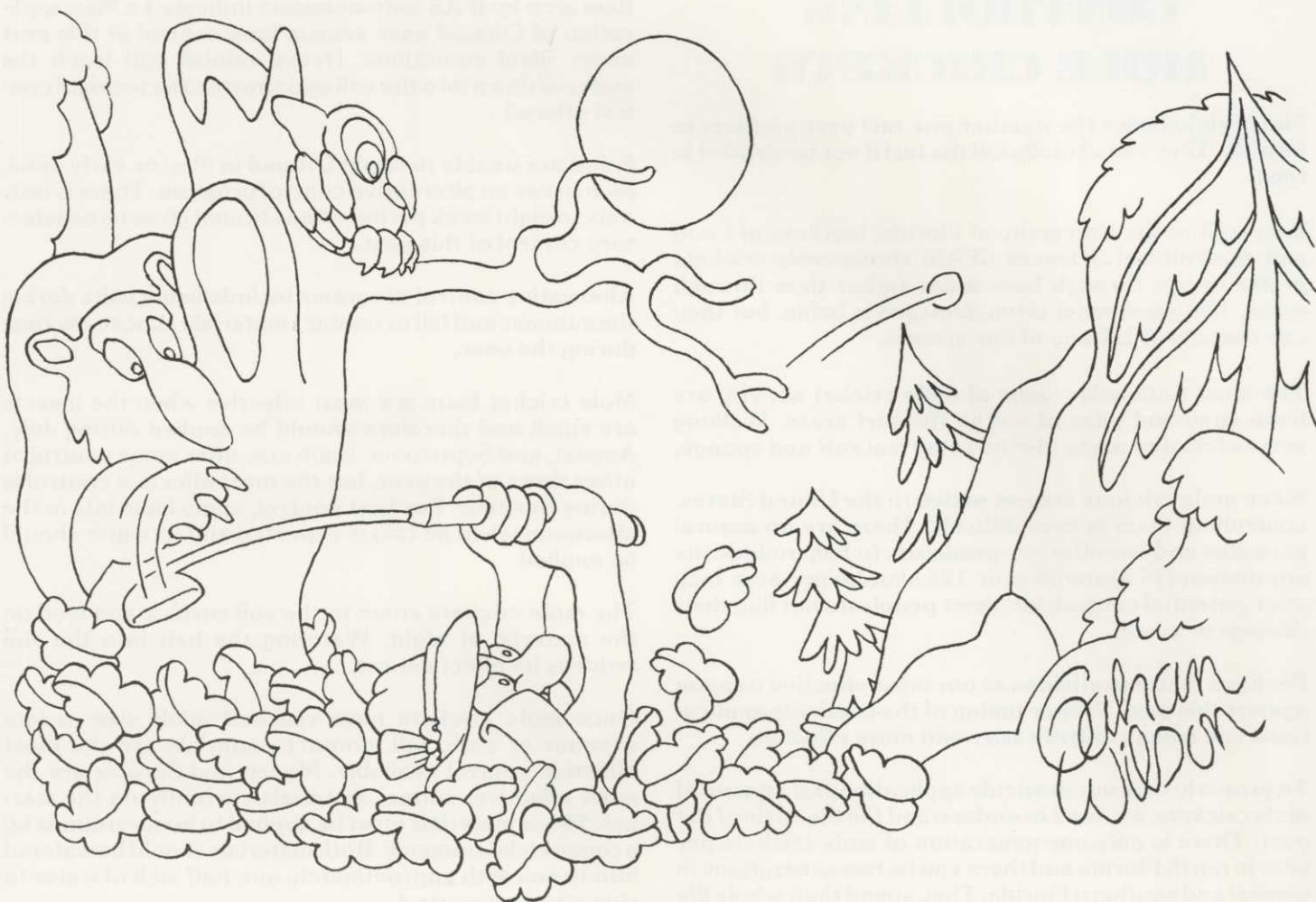
Thank you for your entry in the 1986 Harry C. Eckhoff Award competition honoring local and regional golf journalism.

The Florida Green will be submitted to our panel of judges who will select this year's winners sometime in early 1987.

Thank you again for your interest, and good luck!

Sincerely,

Sally Holihan
Communications



Does your golf course look more like the Black Forest?

If it does, then you need the powerful Turf Vac for vacuuming both fairways and pavement. Both exclusive models *vacuum up wet or dry clippings, leaves, trash—even cans and broken glass*—in paths as wide as 5' or 10'. And both machines are *low maintenance* and have *no brushes* to clean or wear out. In addition, each one has an *adjustable scoop* with a rubber apron to eliminate turf damage.

And for vacuuming up dirt cores left behind on your greens in the aerification process, you need the Turf Vac Coremaster. It also *vacuums up leaves and debris* quickly and completely. It features a *powerful 16 horsepower engine* and its hopper holds a total of 1½ cubic yards of dirt cores. It is *low maintenance* with an *adjustable scoop* and a rubber skirt on the bottom to prevent scuffing.

So if your fairways and greens can't see the forest for the trees, you need the Turf Vac and the Coremaster. Because clean and green looks a lot better than black.



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CONTROLLING MOLE CRICKETS

Mole crickets are the number one turf pest problem in Florida. They can actually kill the turf if not controlled in time.

Research at the University of Florida, Institute of Food and Agricultural Sciences (IFAS) shows mole crickets prefer to run through bare areas rather than through grass. The grass most often damaged is bahia, but they can damage or kill any of our grasses.

The most noticeable signs of mole cricket activity are fresh runs and piles of soil in the turf areas. Walking across infested areas, the turf may feel soft and spongy.

Since mole crickets are not native to the United States, controlling them is very difficult. There are no natural parasites and few effective predators to help reduce the population (75 armadillos or 125 skunks per acre may offer potential control, but most people do not like their damage or smell).

We have to use pesticides as our most effective weapon against this pest. Proper timing of the pesticide applications can make control easier and more effective.

To properly time our pesticide applications for control of mole crickets, we need to understand the life cycle of the pest. There is only one generation of mole crickets per year in north Florida and there can be two generations in central and southern Florida. They spend their whole life in the soil except for night time feeding on the surface and in the spring when mating and dispersal flights occur.

Mating and dispersal flights are occurring or will soon be occurring (depending on the area of the state). During these night time flights, these insects are attracted to lights. Lighted turf areas (even those lighted by street lights) are more likely to have mole cricket problems than those in dark areas.

Male mole crickets die after mating with a female. Most female mole crickets lay their eggs in late April and May in our area and then die. Some of the females will live and lay their eggs in late summer or early fall, but they are the exception, not the rule.

The eggs begin hatching in approximately two weeks to produce the next generation of this pest. We can reduce their damage by killing most of the young insects as they hatch.

The most effective control program for mole crickets is to apply Oftanol during May or early June. Oftanol may be commercially applied as a liquid or 5 percent granular material or as a 1.5 percent granular by homeowners.

Regardless of who applies the Oftanol, it should be watered into the soil immediately after applying it with

approximately one-half inch of water.

Research by IFAS entomologists indicated a May application of Oftanol gave season long control of this pest under ideal conditions. Heavy rainfall will leach the material down into the soil and shorten the residual control offered.

If you are unable to apply Oftanol in May or early June, plan to use an alternative control program. There is only a six to eight week period when Oftanol gives us satisfactory control of this pest.

Alternative control programs include using baits during the summer and fall or contact materials almost any time during the year.

Mole cricket baits are most effective when the insects are small and therefore should be applied during July, August, and September. Baits may offer some control at other times of the year, but the most effective control is during this time. For best control, apply baits late in the afternoon when no rain is expected and no water should be applied.

The mole crickets come to the soil surface and feed on the material at night. Watering the bait into the soil reduces its effectiveness.

Once mole crickets have reached adult size in late summer or early fall, contact materials are the most effective control available. Mocap and Sarolex are the most effective contact materials currently on the market. These materials must be applied to home grounds by a commercial company. Both materials should be watered into to soil with approximately one-half inch of water to give effective control.

Dr. Don Short, Extension Entomologist, has received many contacts concerning the use of Orthene for mole cricket control. He says the reports indicate it may be effective for short term control if applied at 3 to 5 pounds of active ingredient per acre. It should be applied to soil that is moist from rainfall or irrigation late in the afternoon. Orthene has a very short residual and should be used in combination with Oftanol in your control program.

With any of our contact materials (Oftanol, Mocap, Sarolex, or Orthene), we can increase the effectiveness of the pesticide if the soil is moist before application of the pesticide. The pesticides will penetrate into the soil better if it is moist and it is easier to water in after the application.

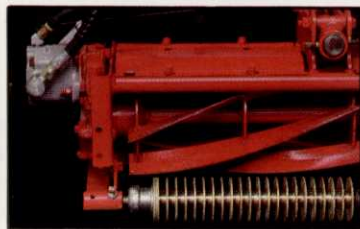
Remember, with any pesticide, read the entire label before applying the material and follow all label directions.

IFAS researchers are looking at several parasites that have been collected in South America where mole crickets are native. These include some nematodes and fungus diseases which attack mole crickets. We all should realize that our pesticides are just helping us buy some time until we can find effective, economical biological control of this pest. ■

from Florida Turf Digest, June 1986

We, the People of DeBRA...

We Keep Our Promises. Unlike some companies which have just recently entered the turf and industrial equipment field, DeBRA keeps its promises. When DeBRA promises to deliver equipment to you on a promised date at a promised time, we deliver.



Because we know you rely on the equipment you ordered to be there when you expect it. And DeBRA delivers.

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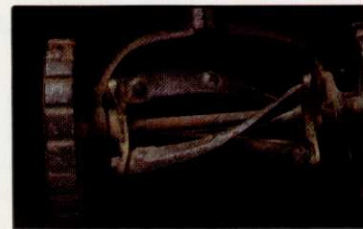
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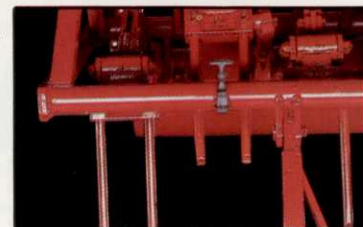
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AN EXPERT SPEAKS:

A Talk With A Horticulture Extension Agent

By: Cheryl Jones

Thomas Teets, a Horticulture Extension Agent with the Palm Beach County Extension Office of the University of Florida graciously gave up some time during his busy, busy day to talk about some of the problems faced by area golf course superintendents, and what is being done to try to solve them.

Q. What are the worst problems facing area golf courses?

A. Pine Tree Decline is probably the most serious problem we have on golf courses right now. It's caused by a couple of different things. One is now construction areas. What happens is heavy equipment runs over the roots of the pine trees. It compacts the soil badly. Pine trees have a very weak root system. If you do any compacting to the roots, you damage them badly, and the pine trees will either decline slowly, or the Pine Bark Beetles will attack it and it will die quite rapidly. We'll get back to Pine Bark Beetles.



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The other area where we see pine tree decline is the more classic areas on golf courses, where they irrigate a lot. Most of the water has a fairly high pH (8 or 8.5). Constant irrigation with this type of water causes the soil to become more alkaline. Pine trees normally grow in a low pH soil (acidic), and this reduces the efficiency of the trees. Then we see a lot of other deficiencies, particularly iron and manganese, which will cause the tree to yellow and slowly die. Sometimes in this situation the Pine Bark Beetle will attack and sometimes you don't see any Pine Bark Beetles - it will just slowly decline and die.

Q. Does a golf course encourage shallow rooting?

A. Excessive watering definitely causes shallow rooting because there's no real need for the tree to have really deep roots, because they have all that water constantly being put-on. High fertilization, particularly high nitrogen fertilizer, also is detrimental to the root system. It's a hard situation when the grass needs one thing and the tree needs something totally different.

Q. Is there any way around it?

A. What we're recommending is if you have a tree that's just starting to yellow, and it hasn't progressed too far, to apply sulphur around it every two or three months and stop watering the area. Concentrate the water on the fairways, tees, and greens, and in the rough where the pine trees are — just don't water it. Let the pine needles fall off and decompose on their own. Some golf courses have even gotten to the point where they just kill off those areas. They spray Round-Up to kill the grass and let the area go back to a natural state. The best thing you can do for a pine tree is NOTHING — don't water it don't fertilize it — maybe apply a little sulphur to it.

Q. Driving out towards Indiantown, we saw pine trees yellowing no where near golf courses and T.L.C. Why?

A. In those situations it's probably Pine Bark Beetles. The only thing you can really use if you catch a tree that's just about to get it is Lindane; it MIGHT help. You have to be very careful to spray up and down the entire tree and all the branches. It's a hit-and-miss proposition, and very expensive. But if it's a tree you've got to save — a backdrop to a green, for instance — you've almost got to do that.

Q. How long has this problem been around?

A. It's been going on for at least five or six years. But some golf courses are just getting old enough to notice it because it's a slow process. It usually shows up around the edges of the fairways first and progresses outward.

Q. What's another problem golf courses are faced with?

A. Lethal yellowing is a problem that we've had for years. The majority of palms that have been really

(continued on page 16)

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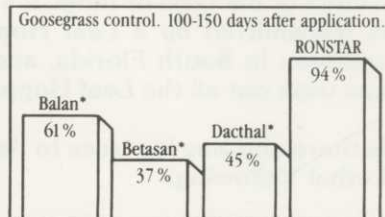


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(continued from page 14)

susceptible to it have been wiped out. There's still some around that haven't gotten it yet. The most susceptible were the Jamaican Tall Coconuts, and they're pretty well wiped out. What we recommend now is if golf courses do put coconut trees in, to use the Malayan Dwarfs, preferably the green variety. A new hybrid called Maypan is a cross between a Malayan Dwarf and a Panama Tall. It's a good tree — a more robust tree with good hybrid vigor. It's a little higher in stature than the Malayan Dwarf.

Another tree that's susceptible to lethal yellowing, and is still being planted is the Christmas Palm. It's fairly subtle when it dies — not a bright yellow like the Jamaican Tall; it just loses lower fronds until all you've got left is one spear sticking up. What we recommend that people replace these with is a Solitaire Palm. It grows a little bit taller, but is basically the same stature.

Q. Can you give me any background on lethal yellowing?

A. What they've found about lethal yellowing is it's a micro-plasma-like organism. It is not categorized as a virus or bacteria or fungi. It's closer to a virus, and is transmitted by a Leaf Hopper. They are fairly common in South Florida, and there's no way you can wipe out all the Leaf Hoppers.

Q. Is there any way for trees to develop a resistance to Lethal Yellowing?

A. A tree is either naturally resistant or it's not. There are some levels of resistance — certain trees like the Queen Palm is never reported as getting Lethal Yellowing. However, there are trees like the Jamaican Tall Coconuts that are extremely sensitive to it. Even the Canary Island Date Palm, commonly used on golf courses, is susceptible to Lethal Yellowing. If a golf course still has the Jamaican Talls, and they're still in fairly good shape, it is possible to inoculate those trees with an antibiotic. This will keep the symptoms from showing. The trees may have Lethal Yellowing, but as long as you use an antibiotic on a yearly basis it will forestall any symptoms from showing.

Another area where we're having problems is where people are planting Canary Island Date Palms. There are a lot of problems with Palm Weevils on the newly planted trees. What you need to do is, where you get the tree, inspect it carefully and make sure that it has been properly tied so the bud is not injured. Treat the tree with Lindane and copper when they're first planted, then periodically, once a month, for four to six months. It's important to thoroughly drench the bud of the tree. If the bud has been damaged at all the Palm Weevil will really attack it. Studies are currently being done by Robin Giblin-Davis in Fort Lauderdale to determine the efficacy of Oindane, Cygon, and Dursban against these weevils.

Q. A lot of worm damage was seen in Palm Beach County in '86. Why?

A. Worms were extraordinarily bad this past year . . . Loopers, Army Worms, Web Worms . . . any kind of caterpillar was bad this year. The reason they were so bad was it was warm and wet for such a long period of time, creating perfect conditions for them to reproduce. If golf courses sprayed, it rained and the spray got washed off. It was almost a losing proposition to try to control them. About the best thing to spray for them is BACILLUS THURINGIENSIS, contained in DIPEL and THURICIDE. It's a biological insecticide just for worms. Birds are about the only natural predator worms have, and this year they just couldn't come close to controlling them.

Q. How accessible is the Extension Agent to the golf course superintendent?

A. Very accessible — all they have to do is call the office. Our service is free. Aside from the 150 or so golf courses in Palm Beach County, we also field questions from homeowners. I also do the Master Gardener Training, a 50 hour horticultural course equivalent to a college horticulture class. The Parks Department falls within my responsibilities, from trees to ballfields, inspections and advice. There's one other urban horticulturist in the Extension Office (at the time of this interview) with a third hired to start working soon (by publication). The Palm Beach County office is open from 8:30 AM until 5:00 PM, five days a week, for any one in need of our services. ■

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100th RAIN BIRD MAXI® III SYSTEM INSTALLED

The installation of the MAXI® III System at Meadowbrook Golf Club in Gainesville, Fla. marks the shipment of the 100th unit of Rain Bird's state-of-the-art golf irrigation control system. The Meadowbrook system, which recently was put into operation, controls irrigation of the course's 86 acres.

"We wanted to use the minimum amount of water on the course, and the only way we could accomplish this was to use a MAXI System," explains Chuck Garrett of Florida Irrigation Supply, the Rain Bird Golf Distributor that supplied the irrigation equipment for the job. "Water use is becoming a critical issue in Florida so we wanted to use the absolute minimum amount of it, yet still maintain the course in beautiful, tournament-quality condition."

In addition to the MAXI, which runs 22 satellites on the golf course, the system has 400 pressure regulated Rain Bird rotors to keep the layout green and lush all year long. Steve Smyers, the course's golf architect, has designed a very challenging, championship caliber golf course. Superintendent Bob Baidy oversees maintenance of the course.

Meadowbrook Golf Club, which encompasses 155 acres, eventually will comprise a club house with pro shop and approximately 500 condominium units in addition to the golf course. The MAXI System also will be used to irrigate the condominium and common areas. Charles Hippleheuser of Irrigation Construction Management designed the golf course irrigation system. Moore Golf, one of the nation's top golf course builders, served as the project's contractor.

The sophisticated MAXI system permits scheduling of stations on a satellite stand-by module to operate in any sequence, at any time. "The MAXI was selected for the job because it offers optimum flexibility in programming watering schedules," Smyers explains. "We also had to take into consideration water and power usage as well as labor. I knew the MAXI was the right control system for the job."

The MAXI III uses an IBM Personal Computer to program and execute watering schedules. Additionally, the system can be used to operate a number of other necessary functions such as lighting and security. The control system, which is easy to program and operate, can reduce water and power consumption by up to 40 percent.

Other MAXI features include: no-delay repeats, controller or system water budgeting, variable repeats, telecommunications and sensor capabilities and moisture level indication. The system also can be programmed for special functions such as cooling, syringing and fertilization. ■

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Increase of Rabies In Wildlife Threatens Public Health

By: Barbara Bobzin

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GAINESVILLE — A recent increase in the spread of rabies in Florida wildlife poses a threat to public health, and efforts to control the disease in wildlife have been marginally effective at best, according to a scientist at the Institute of Food and Agricultural Sciences (IFAS) College of Veterinary Medicine.

Michael Burrridge, chairman of the IFAS department of infectious diseases reports that laboratory-confirmed cases of rabies in Florida wildlife increased by over 150 percent during the last decade.

"Over 85 percent of all laboratory-confirmed cases of rabies in the state are seen in wild animals," says Burrridge. "With Florida's rapid land development, more and more people and pets are placed in the midst of potentially rabid wild animals. In almost every case where a pet is infected with rabies, the source of virus was a wild animal. In the U.S., rabies virus is rarely spread between domestic animals," he says.

Attempts to control rabies in wildlife have centered on reduction of their populations by shooting, poisoning or trapping, and have met with marginal success. Research, notably in France and Canada, is exploring the potential of immunizing free-ranging wildlife, as an alternative to population reduction.

Although there have been no reported human cases of rabies in Florida since 1948, the virus is still considered a threat to public health. Each year in the U.S. 20,000 to 30,000 persons are treated for exposure to rabies, according to *Morbidity and Mortality Weekly Report*. Burrridge says that exposure typically results from animal bites, although handling sick wild or domestic animals can also result in exposure.

The risk of an exposed person developing rabies depends on many factors, such as infected animal's species or the location and severity of the bite. For example, rabid foxes have a higher concentration of the virus in their saliva than dogs, skunks grasp hold of their victim more tenaciously than dogs and a head bite is potentially more dangerous than a bite on a leg or arm.

In Florida, raccoons have contributed to this growing threat to animal and public health more than other species. "Raccoons in particular have adapted well to the state's increasingly urban environment," he says. "77 percent of all rabies cases in Florida in 1985 were seen in raccoons.

"Available data suggests that about 20 percent of the state's raccoon population has been infected with rabies," — Burrridge says, "Yet, raccoons are not as susceptible to rabies infection as some other species, such as cattle and foxes." ■

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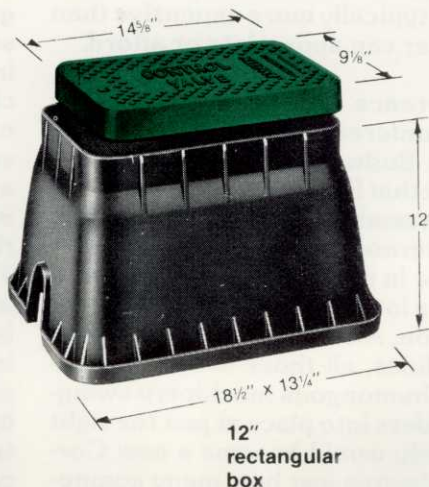
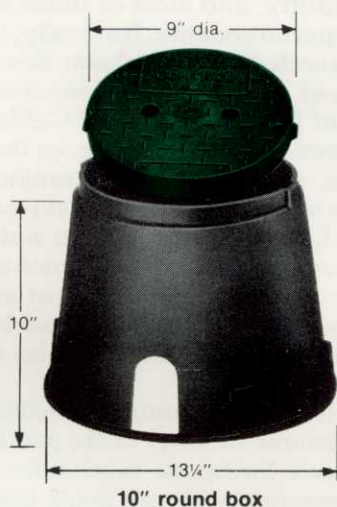
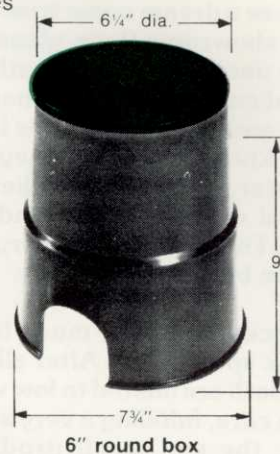
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By: Mike Bailey
The Falls Country Club

If I Could Only Afford A Corvette

As a youngster I was an enthusiastic car buff. October was a special time of year for me, especially October of 1963. That's right, in the fall of 1963 Chevrolet was unveiling the all new, redesigned Corvette Stingray. I can still remember traveling into town one evening with my parents and my brother to see a dream come true. There it was, in the middle of the showroom floor, gleaming in red with an appeal that was unmatched by any other car in the world! It was a type of car that seemed unattainable, ultra expensive, exotic and wow, by the time I would be old enough to drive, who knows how much they would cost. Twenty three years later, that \$5,000 sticker price would prove to be the steal of the century, and that's what this article is all about. The cost of machinery — is it really overpriced, or is it the buy of the century.

The golf course maintenance industry is much like the high priced market of exotic sports cars. After all, there are respective similarities. Both are limited to low volume production, hand built with care, fulfilling a very specific market need and thereby, the end result produces a piece of machinery that is typically more expensive than what the average consumer can appreciate or afford.

The 1980 GCSAA Conference and Show in St. Louis proved to be an exciting conference for me. No, it wasn't because of the fact that Budweiser is brewed in the Gateway Town, but rather that St. Louis was the home of the Chevrolet Corvette Assembly Plant. My brother and I toured the plant one afternoon and three hours later our comments were, "How in the world can G.M. afford to sell a Corvette for such a low price." We were in awe of such large scale production. After all, look at the sheer acreage of the plant facilities, all those overhead conveyors and belts and the humongous machinery swinging axles, engines and fenders into place at just the right moment for what ultimately would become a new Corvette. It is staggering to observe just how many components from who knows how many different suppliers must come together to actually create an automobile. Of all the thousands of jobs, I asked the plant manager, "What is considered the most prestigious job on the assembly line?" He quickly responded, "We have an elderly gentleman who bolts the last component on the car before it's driven off the assembly line, and that's the steering wheel." Just a few feet from the end of the line, the wheel goes on and off goes my dream car.

Now let's get back to reality and further explore this comparison to the turf industry. Upon my graduation from Eastern Kentucky University in 1977, Dr. Barkley, the Horticulture Department Chairman, asked if I would like to be the representing student to attend the Jacobsen Student Seminar? So, of course, there I was in Racine, Wisconsin, with 29 other graduating students from across the country spending a four day seminar studying engines and machinery and taking various tours of production and lectures. I guess I was expecting a little bit of a sales pitch but, to the contrary, I witnessed a strong, dedicated commitment to build quality. It was my first exposure to the real world of big business. Sure, there were deadlines to meet and sales quotas to surpass, however, there was also a sense of confidence in the employees with great respect for their employer. After touring the Jacobsen plant, I thought it would be neat to someday have the opportunity to tour the Toro plant.

Well, little did I realize, nine years later I would actually get such an opportunity. This past summer, Toro sponsored the first annual "Toro Turf Professional's Seminar" in Minneapolis, Minnesota. The meeting attendees included a customer from each Toro supplier within the country, and most of these individuals were golf course superintendents. Ironically, three of those students who attended the Jacobsen Seminar with me in '77 would meet again for the Toro Seminar. That's right, I found that Dennis Osborn of California and Gary Geottech of Texas were joining me, as the representative from Florida, in attending this seminar. I believe we have now become enough of businessmen and understand the industry well enough to not be overwhelmed by sales propaganda. However, once again, we were overwhelmed by employee commitment and dedication to manufacture a product that one can be proud of. Much like a golf course superintendent who takes pride in his course.

I still find it incomprehensible to make such a large commitment to large scale production. We are not talking about backyard mechanics who dream of fabricating some sort of home made lawnmower, but rather manufacturing turf equipment on the scale of a Ford or G.M. The cost of a tool and die machine alone can exceed \$40,000! And this machine is just one of several production procedures on the assembly line to manufacture

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(continued from page 22)

something that looks so simple to produce from a layman's point of view.

Perhaps the most impressive piece of machinery on the assembly line was at the Toro irrigation Assembly Plant in Riverside, California. (That's right, I also toured that facility while in Anaheim for the GCSAA Conference and Show in '81.) Within the plant, there was a discussion on the exorbitant expense of purchasing springs for the 600 series lawn sprinklers from a supplier. The results of a cost analysis showed that it would be more profitable to purchase a huge spring manufacturing apparatus at a cost of \$10,000 whereby springs could be manufactured in house. I witnessed a huge coil of metal being fed into the machine turning out those springs that I used to think were over priced and simple to make. It would seem a spring is worth only a few pennies. However, after being behind the scenes, think of how many springs must be sold to justify the initial outlay. No, I'm not naive either. When is the last time you've seen a McDonald's fold?

The point is, the next time you order a special diameter spring of a specific spring weight and tensile strength, you might appreciate such costs better.

How often have you echoed the frustrating comment of, "Why does that damn little pulley, bearing, or shaft cost so much?" when you know that part is not even worth half that price. I can sympathize with such thoughts, yet seldom do we consider the full view of the picture. What I'm talking about is the absorbed cost for engineering, research and development, marketing, production, inventory, shipping and finally... an ultimate decent profit for the manufacturer, distributor, and retailer.

If you or I were a stockholder you can bet we would like the best return possible or at least what the given market will bear. On the flip side of the coin, we the consumer like to see competition. And you can sure bet that's why we've seen new market entries in the last few years. Don't be fooled by the so-called smaller competition. I have also toured the Lesco Manufacturing Plant in Sebring, Florida. There too you will find those expensive tool and die machines fabricating components in much the same fashion as Toro and Jacobsen. There are respective differences between the manufacturers. Some might be owned and operated by a larger parent corporation, some might accept a smaller percentage of profit, some might operate with smaller overhead, while some are structured with privately owned and operated suppliers under a parent name. Within our lectures and discussions at the Toro Seminar, fellow superintendents from throughout the country voiced varied comments about their respective distributors. In the case of Toro, each distributor is privately owned and operated. They are not directly owned by the manufacturer. We superintendents have observed that some distributorships do not participate in nationally offered sales incentive programs, rebates, and discounted specials. If you are not satisfied with your distributor, they want to know about the problems. It truly is a two way street. I was intrigued to learn that each distributor is reviewed annually by the parent company much like a student taking an exam. Each distributor is reviewed for their stocked inventory

versus the manufacturers suggested inventory list, their shipping quotas, back order fill rates, customer satisfaction, and so on. It was acknowledged that some distributors do not operate up to standards and therefore distributors are sometimes terminated. However, this might not be such an easy task. A more competent distributor must follow, and that is not always easy to come by. Have you ever let an employee go for some relatively slight infraction and several weeks later wished you had that employee back. Well, imagine that magnitude for a national manufacturer. Just as much as there were complaints, there were also overwhelming compliments. The problem, however, is that we, the fortunate few who have attended such seminars, can appreciate the problems behind the scenes of manufacturers and perhaps are more understanding and patient. When you, or your mechanic, experience a major complaint such as a delayed back order, an incorrectly shipped part or warranty claim, don't just complain to your fellow superintendent. Instead, call the owner of your distributor and write a letter acknowledging your problem. Records show that those who talk but do nothing to correct the problems seldom see results. Companies cannot make profits unless they sell to satisfied customers.

I must say that I am very fortunate to have toured such facilities and I could just keep on writing about the many things that I have learned from these tours that I would like to share. However, here are a few helpful notes that might be interesting:

— It can take anywhere from two to five years to create a piece of equipment that ultimately reaches the hands of the consumer.

(continued on page 24)

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(continued from page 23)

— CAE, CAD, and CAM computers (computer aided engineering, design and manufacturing) are employed to design turf equipment just like the one you see on G.M. commercials. Everything from a lawn mower housing to a complex hydraulic pump can be simulated on the computer screen and actually be stress-tested to determine points of weakness or wear.

— Prototype machines are often fabricated in plastic in the research lab to analyze design features. (I might also point out, cameras are not allowed in these parts and only the mind can wonder what sort of new machine lurks under those canvas covers.)

— Engines are dyno-tested in the research lab where quite often suppliers' horsepower ratings fall short of design specs because legally the engine manufacturer can rate the horsepower without a muffler system, although the manufacturer will be required to sell the machinery with a muffler system.

— Government standards along with manufacturer specifications are tested for durability such as the tensile strength of a rotary blade and impact shatter tested, to determine safety standards for the operator.

— Welding computer robots can weld an entire mowing frame with over 60 welds quicker than the time it takes to unload and hook-up the next frame.

— Irrigation components are commonly molded in plastic because production cost would be exorbitant if pro-

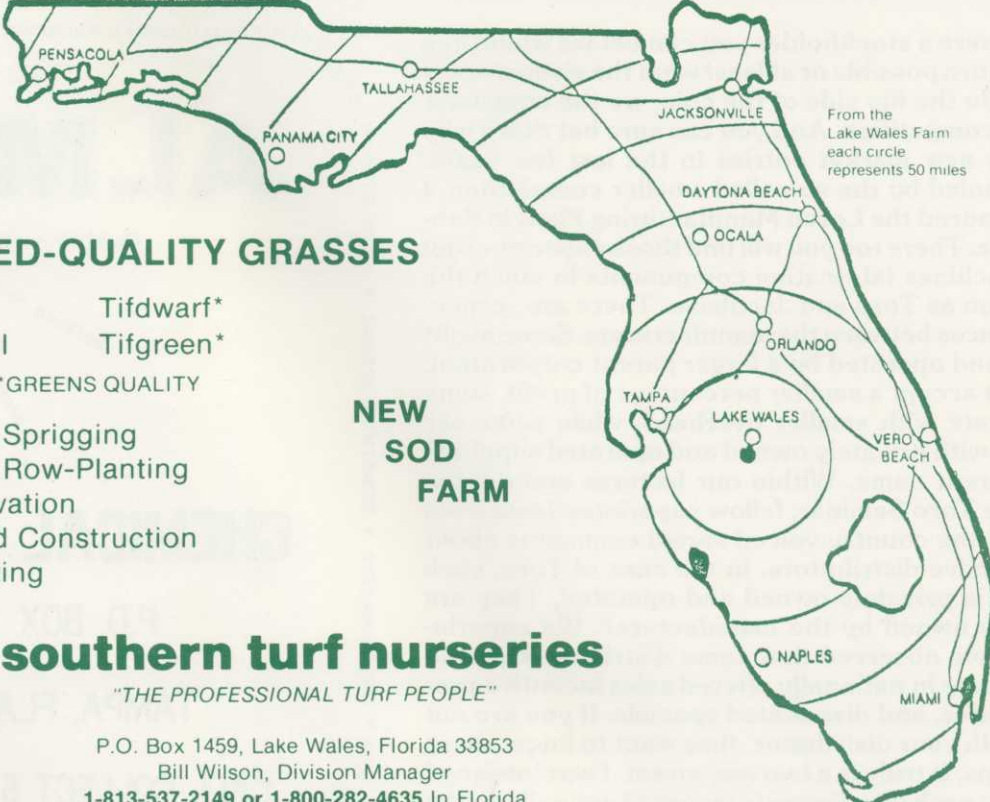
duced in metal. (And I used to think they made them in plastic so that they would break easier and need to be replaced more often.)

— The big manufacturers actually have warehouses stocking virtually every part ever needed for every machine to come off the assembly line over the past twenty years. (If you thought the part was back ordered because it was not made anymore, think again! Call your distributor!)

— With some manufacturers, if the part is not locally stocked, a "DOWN machine" emergency order can be placed directly to the factory daily, and the part will be shipped directly to your maintenance door. You, of course, must pay the shipping cost.

— Upon delivery of new equipment, ask the manufacturer for the "suggested inventory parts list" that your supplier has been advised to stock. (You just might want to stock the majority of those parts yourself as the factory tracks the purchase of parts to keep machines running and sooner or later you will need that part.)

And now for the inside spy scoop. I just read an article that G.M. will introduce, sometime next year, a low cost introductory Corvette for around \$20,000! To reduce the sticker base price such accessories as T-tops, ABS braking, 16" diameter wheels and the digital dashboard would be eliminated to create a stripped down version. Could this be the next buy of the century? Twenty years from now, you'll probably wish you had bought two. ■



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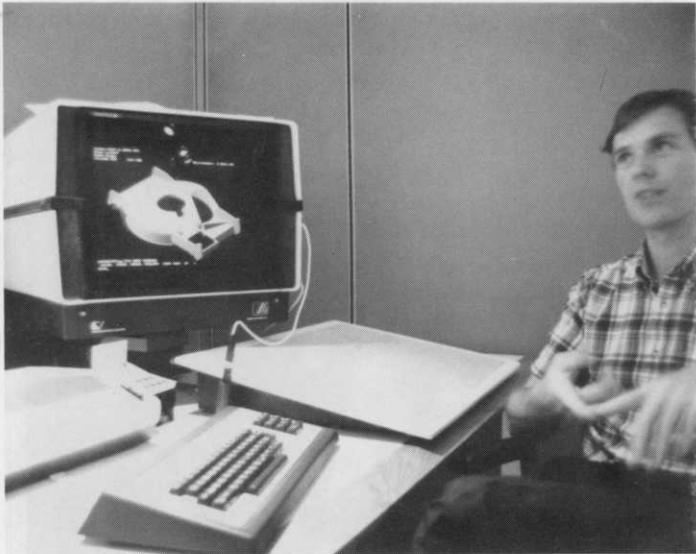
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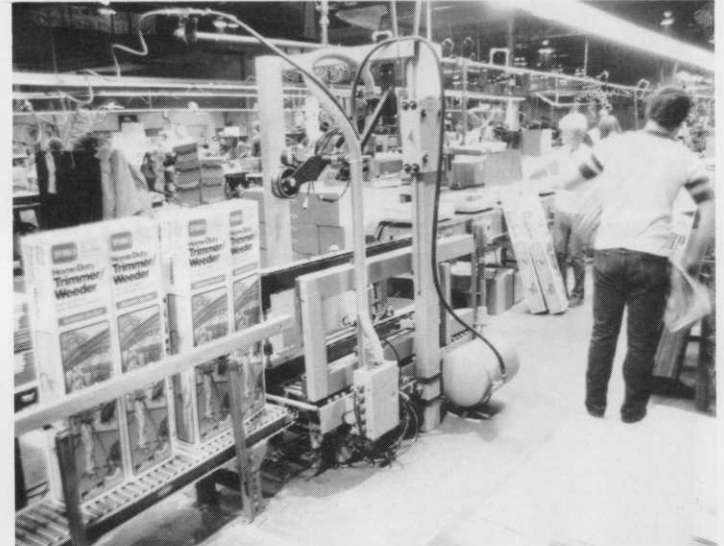
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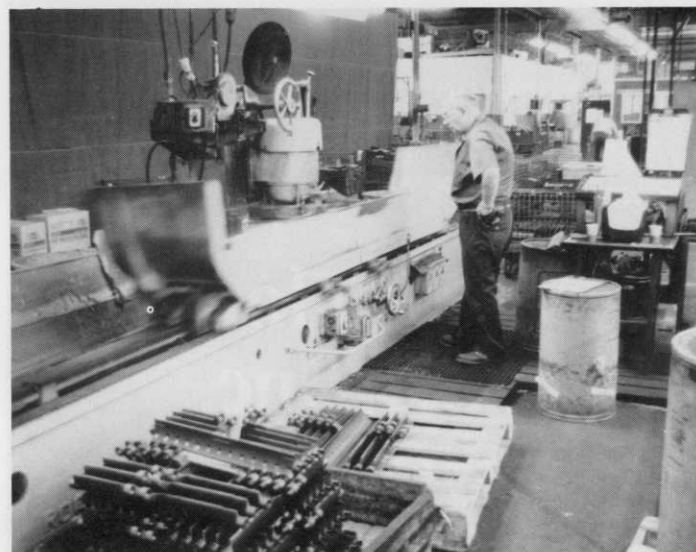
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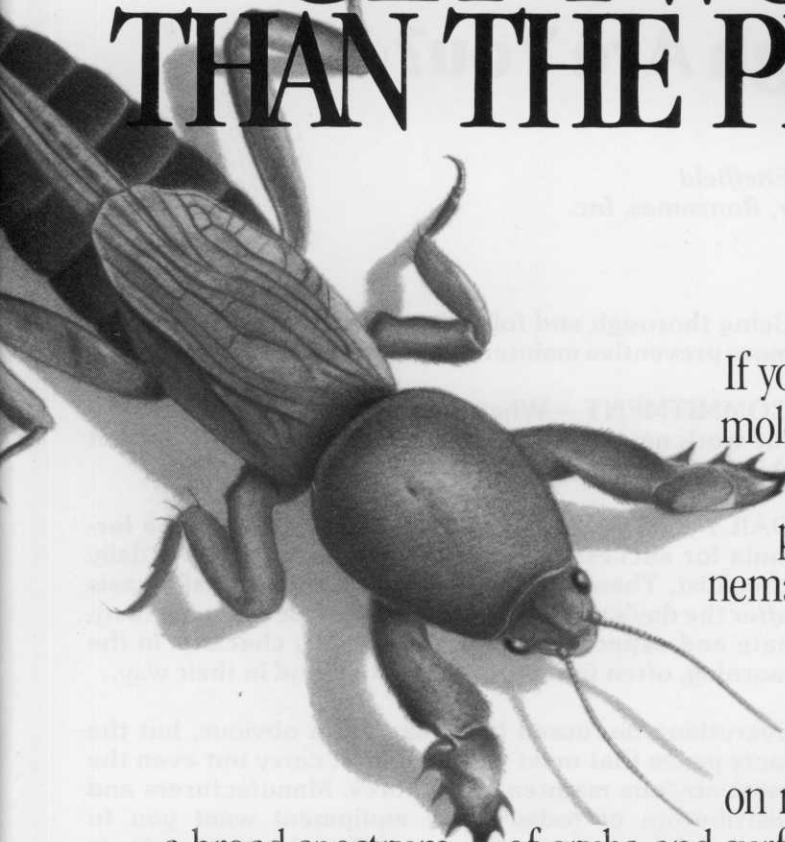
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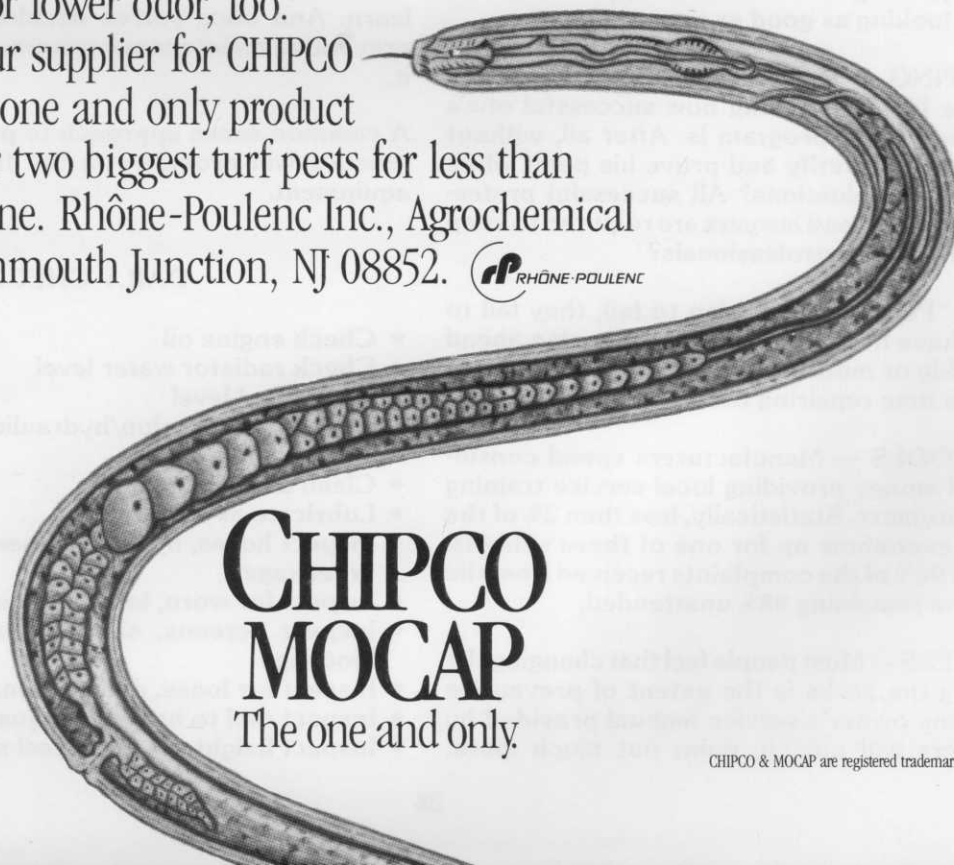
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PREVENTIVE MAINTENANCE —

How Thorough Are You?

By Michael L. Sheffield
Regional Sales Manager, Ransomes, Inc.

Most of us are familiar with the term, preventive maintenance. Certainly all of us agree with the theory of preventive maintenance, or P.M. as it is often referred to. So why do problems still exist with many machines in use? Do manufacturers produce equipment not designed for the rugged demands of today's turf equipment?

As the representative of a major turf equipment manufacturer, I have the unique opportunity to view and examine a wide variety of equipment. Problems that may exist in one location, may not exist at all just down the road at someone else's facility.

What is the difference? Why is one customer satisfied, even happy, the other upset and disappointed? Consider some of these common denominators that manufacturers say work together to produce long life and trouble-free service.

ATTITUDE — Those customers who take a personal interest in the peak performance of a machine often are the most satisfied. They are the ones who respect and view machinery as sophisticated, well-designed work tools for accomplishing difficult tasks. Machines reflect this attitude by looking as good as they perform.

RECORD KEEPING — Record keeping has long been used as a gauge for determining how successful one's preventive maintenance program is. After all, without records, how can one verify and prove his point when making equipment evaluations? All successful professionals such as doctors and lawyers are required to keep records. Are we any less professionals?

PLANNING — "People do not plan to fail, they fail to plan" you may have heard said. People who plan ahead their daily, weekly or monthly maintenance procedures often spend less time repairing their machines.

SERVICE SCHOOLS — Manufacturers spend considerable time and money providing local service training sessions for customers. Statistically, less than 2% of the customers will ever show up for one of these schools. Also true is that 90% of the complaints received from the field are from the remaining 98% unattended.

THOROUGHNESS — Most people feel that changing the oil and greasing the zerks is the extent of preventive maintenance. Any owner's/service manual provided by all manufacturers will quickly point out much more.

Being thorough and following the manual will result in more preventive maintenance - but less frequent repairs.

COMMITMENT — What good are plans and intentions if the work never gets done? Commit yourself to see that this all important work is carried out dogmatically.

DAILY CHECKLIST — One key ingredient in the formula for successful preventive maintenance is a daily checklist. These are things performed on a daily basis *after* the day's work is completed. People who procrastinate and expect to perform their daily checklist in the morning, often find other things to stand in their way.

Everything discussed here may seem obvious, but the facts prove that most people do not carry out even the most obvious maintenance chores. Manufacturers and distributors of today's turf equipment want you to receive the most value for your dollar. A proper attitude and respect for machines is the first step. Keep records and make a definite plan for each day's scheduled maintenance. Learn to become a problem-spotter instead of a trouble-shooter in order to prevent breakdowns. Attend factory sponsored service schools and go expecting to learn. And once you've decided to develop a proper preventive maintenance program, carry through and do it.

A common sense approach to proper preventive maintenance will provide you the freedom of trouble-free equipment.

DAILY CHECKLIST

- Check engine oil
- Check radiator water level
- Check fuel level
- Check transmission/hydraulic oil level
- Check tire pressure
- Clean air filter element
- Lubricate as scheduled
- Inspect hoses, hydraulic lines and fuel lines for wear or leakage
- Inspect for worn, loose, missing or damaged parts
- Inspect screens, shrouds and radiators for grass blockage
- Inspect for loose, dull or damaged rotary blades
- Inspect reel to bedknife adjustment on reel mowers
- Inspect height of cut on reel mowers ■

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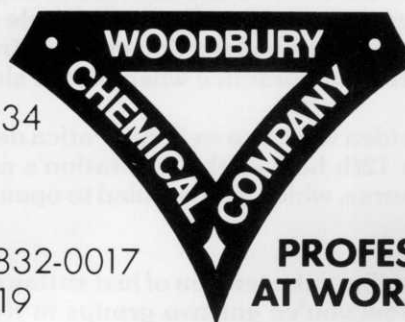
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THE PLANTATION GOLF AND COUNTRY CLUB

Ed Fatica, C.G.C.S. — Pound For Pound

By Sandra P. Carmouche

There's a saying among the plantation's members concerning their golf course superintendent, Ed Fatica: "Pound for pound, he's the longest around."

The statement is made both in jest (Fatica might weigh in at 115 pounds on a good day) and with a great deal of respect. Fatica can really blast them off the tee. "I never saw such a little guy hit the ball such a long way," quips one member. Indeed, while riding around the Plantation's Bobcat course, Fatica receives several invitations to round out a foursome. There are also dinner invitations and requests for Fatica to "stop by sometime."

Clearly the members at the Plantation hold Fatica in high regard. "I've been here four years now so I know them all," says Fatica. "They really are great and I enjoy them."

Yet, just knowing the members and being a good golfer isn't enough to elicit the kind of affection that Fatica receives from his members.

In fact, Fatica's success is the result of his constant attention to how course conditions will affect the member's game and long hours on the job.

"Most of the people here have their private country clubs up north, so they're used to being treated right. And they're down here to have a good time. They don't care if it rained five inches yesterday. If the sun is shining today, they want to play golf. They don't want to hear that the course is closed because it's too wet. So I just get out there and rope it off."

Then there are the special touches that Fatica uses to enhance play for the members. For example, during a tournament he used poinsettias as the ladies tee markers. He planted annual beds on the 15th tee to separate different tee placements. And on the twelfth hole of the Bobcat course, he built a small putting green in front of the tee where golfers can practice when play is slow.

The putting green idea works so well that Fatica decided to add one to the 12th hole of the Plantation's new \$3 million Panther course, which is scheduled to open in the spring of 1987.

"It's something to relieve the tension of just sitting in that cart when you know you've got two groups in front of you. Now you can chip and putt."

Located on Florida's West Coast, three miles south of Venice on U.S. 41, the Plantation's relaxed, yet active atmosphere is not something that just happened.

According to Kathy McEachran, sales manager at the Plantation, "It's an atmosphere that we made a conscious effort toward creating. We've used Bermuda-style architecture because that's how we feel people up north envision Florida. And we've combined a variety of activities and amenities to create an upbeat community."

The Plantation's style of living includes condominiums, attached and detached villas, and single family homes. All exteriors are done in pastel colors and are within walking distance of pools. The clubhouse is also of Bermuda design with hanging baskets and beds of flowers decorating the veranda-type walkways. There are pineapples growing around the patio of the Golf & Racquet Grill while The Manor Restaurant offers outstanding cuisine. Activities include jogging and fitness trails, nine Har-Tru tennis courts, and, of course, golf.

Last year the Bobcat course was host to 60,000 rounds of golf, a good number by any standard.

"I've got lights on all my greens mowers because we have so many 8:15 shotgun starts," Fatica explains. "I put three mowers out when I mow tees. Everything has to be done quickly to beat the play because at 7:30 the gates open and I've got golfers teeing off on the first and tenth holes."

That the Bobcat has been ranked #26 in 1986 by Florida Golf Week Magazine is testament to Fatica's ability as a superintendent. With a degree in Landscape Design and Turf Maintenance from Alfred State in New York, he is well qualified to handle the landscaping around the clubhouse and golf course.

Then there is the construction of the new Panther course which Fatica, along with Director of Golf, Ted Beisler, is supervising. "This is really my first experience with construction," Fatica says, "but I've been around golf all my life (his father was a Golf Pro) and I've seen so many bad things; bad designs, bad cart path and tree placements, bad drainage. I feel confident with my knowledge."

Both the Bobcat and Panther courses were designed around a Scottish theme by golf course architect Ron Garl. Each course incorporates rolling hills (one of the man-made hills on the Bobcat is noted as the third highest elevation in Sarasota County), lakes, and natural terrain to create a chip-and-run game.

"Ron Garl is easy to work with and he's done an excellent job on the Panther," Fatica says. "This could be the best

(continued on page 31)

(continued from page 30)

36-hole facility on the West Coast. And the 12th through the 15th holes on the Panther are going to be four of the best back-to-back holes in Florida."

Ramar Group Companies, Inc., the developer of the Plantation is well known on Florida's West Coast for its outstanding achievements in the development of environmentally sensitive land. "We had to do a tree survey on the Panther course," says Fatica. "Every palm, oak, and pine tree above a three-inch caliper had to be shown on a map. Then we had to go down each fairway and note each tree that we were going to take out. I replanted a lot of trees from the middle of fairways to the sides."

There's also a natural slough into which all the water at the Plantation drains. While building the Panther course, 650 feet of the slough had to be bridged. "We had an environmentalist come out and check to be sure no sensitive plants would be disturbed."

The result is a beautiful view of the slough's natural habitat. "It's a Ramar trademark," says McEachran. "We really utilize the wilderness areas."

While nature may have provided the Plantation with some beautiful settings, it hasn't always been kind to Fatica.

During construction of the Panther, before sprigging was complete, eight inches of rain fell in a seven-day period. I'd just ride up and down the sidewalk and glance at it. The washouts were unbelievable, but at least I know which way the water is going to go and I know my drain-

age is good."

Other than the rain, Fatica seems to be enjoying his involvement with construction. "I designed all the cart paths. I'd ride around on a cart, the way I would if I were golfing, and I'd stick flags in the ground as markers. Then the construction guys would dut them out and pour concrete."

Fatica also had some input into the design of the new course. "It was nice because Ron Garl had enough confidence in me to know that I wouldn't do anything that would be bad for the course. So far, he's approved all my suggestions."

Still, all the work adds up to long hours for Fatica. His day begins at 6 A.M. and doesn't end until after 5 P.M. "First I go over to the Panther and see what's being done and which contractors are coming in. I get them squared away and then I take a quick spin around the Bobcat and see what's going on there."

"It's easy to do a good job for the members and guests when you work with dedicated people like Curt Conrad (assistant on the Bobcat) and Chip Copeman (assistant on the Panther). I work with my crew and I always try to see their side. If somebody needs a day off for a personal reason, it can be arranged. This golf course will be here tomorrow so it's not that critical that everybody be here every second; as long as you have a few good people that you can trust."

"Once a week, Curt and I will get out on the Bobcat and
(continued on page 32)



The new Panther Golf Course under construction at Plantation.

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(continued from page 31)

ride from tee to green. We'll bring a tape recorder and I'll list what needs to be done. Then I take the tape home, write it out, and give it to Curt. He checks the things off as he gets them done."

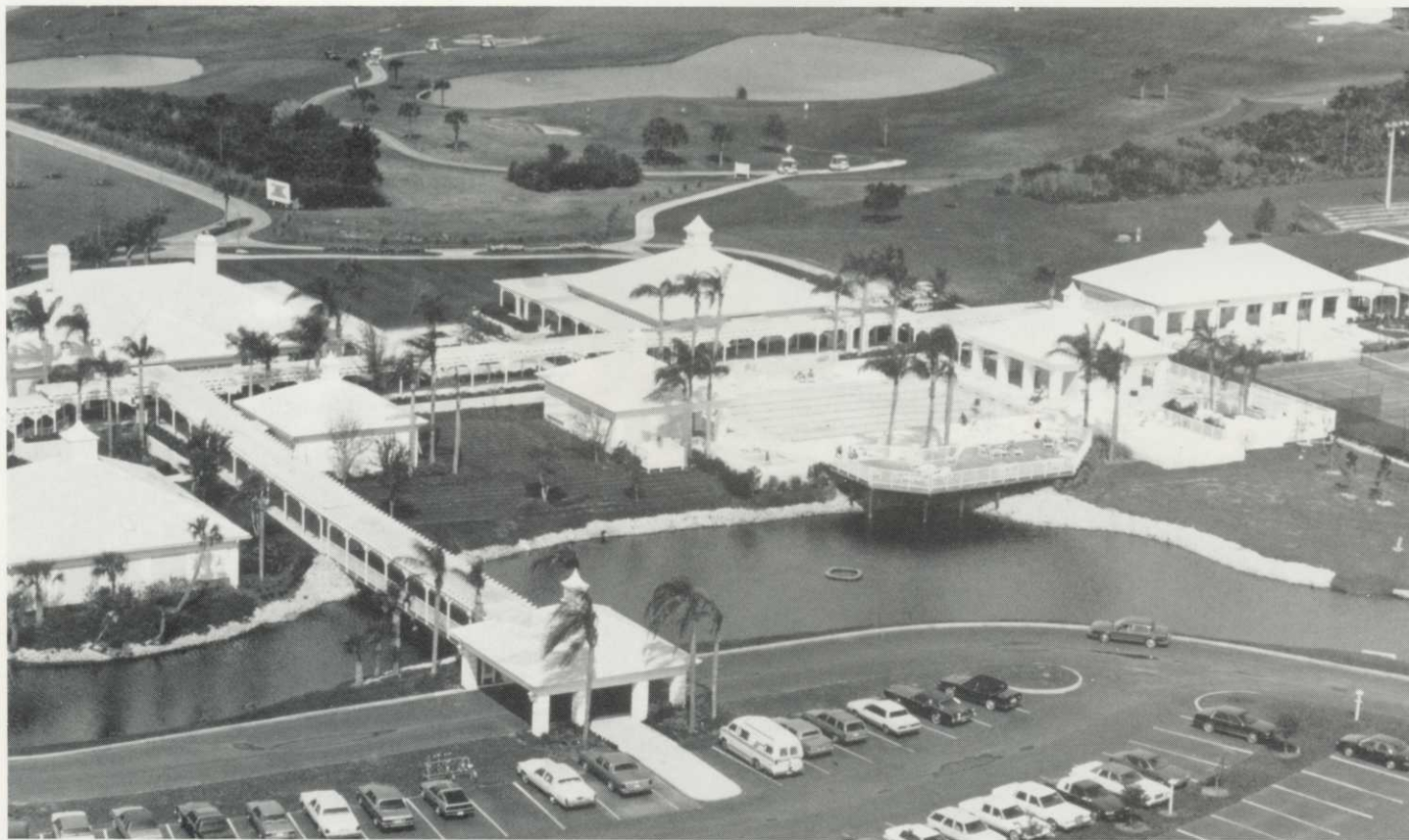
"I like the convenience," says Fatica about living at the Plantation, something that a lot of superintendents might feel reluctant about doing. "I am able to just run out and get things done. In the evening, Janet (his wife) and I will take the kids and ride around on a cart. I'll turn on the water and if I see anything wrong, I'll make a mental note of it and get it fixed the next morning."

Speaking of children, Fatica's oldest son, Pat, designed the Bobcat and Panther logos for the flags at the Plantation. At age 14, he is an excellent artist.

Every afternoon around four, after the crew has finished, Fatica heads over to the grill. And on Wednesday, when the men play, he has lunch with them. These are the times when he works at establishing a good rapport with his members. It is their chance to ask questions, give suggestions, or make complaints.

"I guess I'm just a glutton for punishment," he laughs, and then adds in a more serious tone, "Once in a while, somebody will get mad. But it's rare. I try to stay on top of everything because if the members and guests don't like it here, they can always go up the road."

That sentiment sums up Fatica's philosophy at the Plantation. And he really utilizes his abilities in golf and communication to make it work. ■





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Florida Green REPEATS

Editors of eight outstanding newsletters will be recognized during the Golf Course Superintendents Association of America's (GCSAA) 58th Annual International Golf Course Conference and Show in Phoenix, January 26 - February 2, 1987.

The 1986 winners of the annual GCSAA Chapter Newsletter Editors Contest were selected by a panel of four highly qualified judges. The winners were chosen from newsletters published by 48 eligible, affiliated chapters.

Within each of three chapter size categories, one newsletter was selected as the best overall. Newsletters were evaluated on overall excellence, appropriate design, editorial judgment and content, scope and quality of writing, and presentation. The size categories: A—fewer than 30 members, B - 30 to 70 members, and C - more than 70 members.

In addition to the three overall awards, judges selected five newsletters for special recognition awards regardless of chapter size. The special categories: best flag design, best cover, best original editorial content, best format and readability, and most improved.

The 1986 winners are:

Category A:

Turf Talk
New Hampshire GCSA
Editor, Barrie Robertson

Best Flag:

Northern Ohio Turf
Northern Ohio GCSA
Editor, Alan F. Clark, CGCS

Category B:

Turf Talk
Wy-Mont GCSA
Editor, Jane R. Barry

Best Editorial Content:

Hole Notes
Minnesota GCSA
Warren J. Rebholz

Category C:

The Grass Roots
Wisconsin GCSA
Editor, Monroe S. Miller

Best Format:

The Ballmark
Central Illinois GCSA
Michael Vogr

Best Cover

The Florida Green
Florida GCSA
Editor, Dan Jones, CGCS

Most Improved:

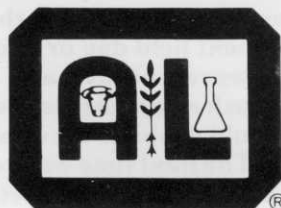
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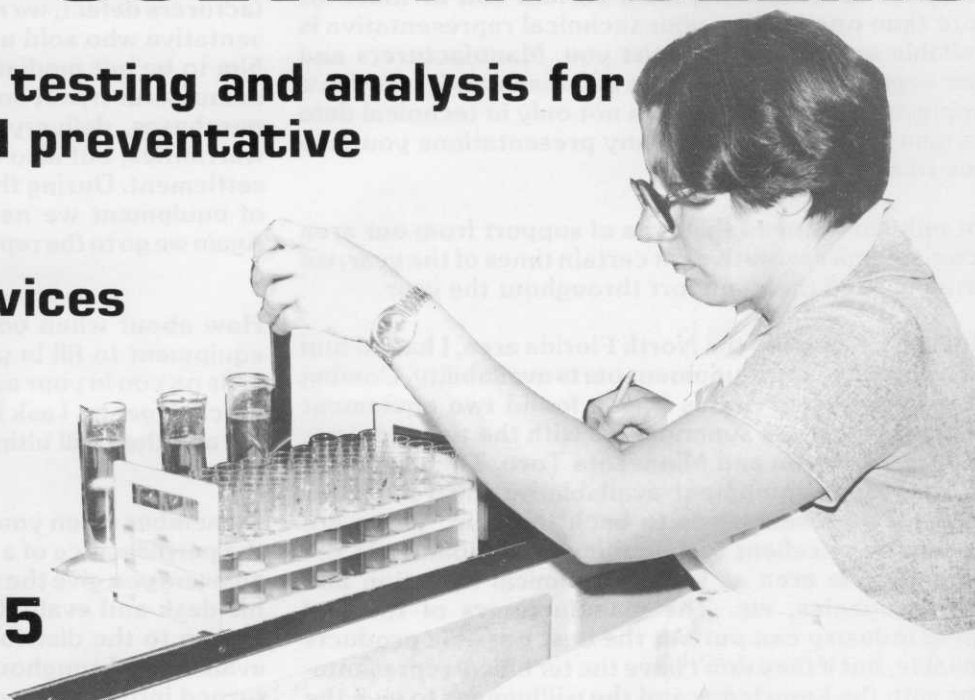
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DIVOTS

*By Donald E. Kooyer, C.G.C.S.
Willow Lakes Golf Club*



Technical Representatives

If you have ever had to write equipment specifications for a government bid contract or had to convince a greens committee board that you need a piece of equipment, you can sure use all the technical information you can obtain.

When submitting equipment acquisitions to a regulated agency such as the military, school board, college or park system in your area, you will have to submit bid forms from different distributors. You, as the superintendent of your facility, know what piece of equipment is needed to perform the job. You have worked with this type of equipment for some time and are comfortable with its operation. You could tell everyone at your facility what piece of equipment you want. But when writing the exact specifications for a certain unit or units for more than one facility, your technical representative is available and willing to assist you. Manufacturers and their representatives such as Jacobsen and Toro have people available to assist you not only in technical data but also to assist you with any presentations you may have to make.

Not only do we need this type of support from our area technical representatives at certain times of the year, we certainly need their support throughout the year.

When I first came to the North Florida area, I had to find out equipment and equipment parts availability. Coming across the United States I have found two equipment companies that are synonymous with the turf industry, Jacobsen Textron and Minnesota Toro. They have not only excellent equipment available but also have the technical representatives to back them up. There are many more excellent turf equipment companies in the North Florida area as well as chemical irrigation and seed companies, etc. The manufacturers of the turf supply industry can put out the best possible products available, but if they don't have the technical representatives with the knowledge and the willingness to give the support needed by the turf manager, he will look elsewhere.

It sure is assuring to know that there are technical representatives like Bob Ward at Zaun Equipment and Paul Hamrick at Tresca Industries who will work hard in your

area to keep you informed of the technical changes not only at the end of the year but will also work with you on a daily basis. These men are the working arms of the equipment distributors in our area. They have the training and technical knowledge to support the superintendent when he needs it. The technical representative in our area knows that when we purchase a product we need to be backed up by the entire company that we are doing business with. When there is a problem that needs to be taken care of we need to be able to talk to the right people. When contacting the representative that sold us the product, we need to know that he will back up his products with warranties, parts and service.

When a new piece of equipment fails because of a manufacturer's defect, we need to be able to contact the representative who sold us the piece of equipment. We need him to be our mediator between the purchaser and the manufacturer, not only to help with all needed records of purchases, delivery date, condition upon delivery, or warranties, but also to ensure both parties of equitable settlement. During this period of waiting for a new piece of equipment we need something to do the job with. Again we go to the rep — he will find something, if possible.

How about when you are looking for a used piece of equipment to fill in your fleet? The representative who calls on you in your area also covers a lot of territory that we can't get to. I ask Paul and Bob to keep an eye out for me and they will ultimately come up with what I need.

Remember when you are out in your shop talking about the performance of a certain piece of equipment that the answers you give the representative will be taken back to his desk and evaluated, to help make any weak points known to the distributor. When these weak points are evaluated throughout his company and we see them turned into strong points at the next field day or equipment show, we know that the representative and his company are listening. When we ask a representative to look into a new alternative to an old problem we expect some kind of answer or solution. The next time we are at our national annual golf course superintendents meeting we can see and hear many answers.

(continued on page 37)

(continued from page 36)

As a member of the Board of Directors and the Secretary/Treasurer of the North Florida Golf Course Superintendents Chapter, I know that we need and expect the support of the commercial companies and their representatives. The representatives come and join our meetings and always bring industry information that all the superintendents can use. The representatives at our meetings travel a wide area and bring us useful information from this area.

I hope that the representatives that the superintendents need and count on know that we appreciate their knowledge and expertise in their fields. ■

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MASTER GARDENERS Till the Soil of Knowledge

By: Catherine C. Elverston

Gainesville Last year alone, 1,100 volunteers in 33 Florida counties donated more than 25,000 work hours giving some 62,000 pieces of free advice on plant care, with a reported savings to consumers of more than \$400,000.

The Master Gardeners met in Gainesville recently to receive their reward for all that volunteering from the Cooperative Extension Service of the University of Florida's Institute of Food and Agricultural Sciences (IFAS).

During the three days of courses, "They named practically every plant or tree and diagnosed just about every plant problem at hand," said Kathleen Delate, master gardener state coordinator at IFAS.

"The MG program was started in 1979 in three Florida counties to help Extension agents deal with increasing numbers of horticulture questions and plant problems of urban population," Delate said. Community volunteers are trained in intensive weeklong horticulture classes in return for committing 50-100 hours of service to the county MG program.

Workshops on 22 subjects — including landscape design, plant propagation, and the basics of plant disease — emphasized hands-on experience for the volunteers who are often called upon to assist in diagnosing homeowners' plant problems.

IFAS Extension Dean Jim App assisted in presenting the annual awards to over 70 Master Gardeners who have dedicated more than 300 volunteer hours.

Award winning projects included city beautification, a community plant seminar series, and creative educational participation at a regional Youth Fair.

The conference closed with tours to seven areas of horticultural interest, including Kanapaha Botanical Gardens, Paynes Prairie, and IFAS horticulturist Benny Yjia's Exotic Gardens.

"Master Gardeners are involved in a variety of county service projects," Delate said, "including demonstration and community gardens at Extension offices, convalescent homes, schools, and neighborhoods. They offer plant clinics at many public locations and diagnose plant problems via telephone, walk-ins, home visits, and computers at the Extension offices, to name just a few."

Any person interested in learning more about plants, their problems and how to solve them, should check with their county Cooperative Extension office to receive an application to participate in the MG program.

SOIL TESTING: Techniques and Application

by John Wildmon
Lake City Community College
Lake City, Florida

Soil testing is probably the most misused and misunderstood tool of modern agricultural technology. Soil tests were originally developed to predict yield responses of specific agronomic crops to elements applied on a specific soil type. That is all they were ever intended to do and from a fertility standpoint that is all they are capable of doing. Unless the results from a particular soil extraction technique are correlated experimentally with field responses of a particular crop being grown on a specific soil series the results are just numbers and nothing more. To predict crop responses to applied fertilizer using soil tests results when these relationships have not been established is guessing, pure and simple. In other words soil tests have to be calibrated for each crop on each soil type. Recommending specific quantities of elements based on soil testing for a soil and crop which have not been calibrated to that particular soil testing procedure is a very common misuse of soil testing. This is not calibrated to a given situation. It can still yield

valuable information and can be used to make some inferences about how a soil should be managed and fertilized.

There are 3 basic parts to any soil test, the sample, laboratory analysis, and interpretation of the lab data. Optimum results from a management program based on soil testing depends on all three steps. The soil sample must be representative. The lab analysis must be consistent and minimize errors. The interpretation must be done by someone with experience who is aware of the inherent limitations of soil testing.

Most good turf managers know how to take a representative soil sample but since this is probably the single largest source of error in most situations the procedure bears repeating. Keep in mind that the lab is going to use from about 1/4 ounce to 8 ounces of soil depending on the procedure being done and you intend to make inferences from that sample for a soil that weighs about 2 million pounds per acre furrow slice. This size is equivalent to about 10 to 230 parts per billion of the total soil mass per acre. You can see why the sample had better be a representative one. To obtain a representative soil sample you must take samples at random all over the area of interest and from the root zone of the crop being grown. For turf the effective rooting depth is usually considered to be 6". Soil samples should be taken from a depth of 2 to 5 inches below the soil line. Areas that are not representative of the general status of the soil, such as localized wet spots or soil near building foundations or road beds, should be avoided. A different sample should be submitted for every area with a different soil type or different management scheme. For golf courses a separate sample should be done for each green, tee, and fairway even if soil types are similar. Never sample immediately after applying fertilizer, wait at least one week. Once a composite sample for an area is obtained all thatch should be removed and the sample should be screened to remove roots, rocks and other large particles. A piece of ordinary fiberglass house screen will do the trick. The sample should then be thoroughly mixed. Samples should be air dried unless they can be analyzed immediately.

The second step in a soil test is the lab analysis. Soil pH is usually determined using a 1:1 by weight soil water mix. The mixture is stirred, allowed to settle and the pH of the supernatant liquid is determined with a pH meter. This procedure is reliable and the results are fairly easy to interpret. Determination of "available" nutrients usually consist of adding a liquid "extractant" to a given volume of soil. The extractant is a chemical solution containing a relatively large concentration of a given cation, typically ammonium or hydrogen. The cation in the extractant drives other exchangeable cations off the soil colloid and into the surrounding solution. The solution is then separated from the soil by filtration and is analyzed to determine the quantity of calcium, magnesium, potassium, and sodium it contains. Phosphorus is determined in a similar manner. From the results of the extraction procedure the lab attempts to predict what will be available to the crop over the course of a growing season or year. The lab procedures for any given extractant are standardized and give reasonably consistent, reproducible results if the procedure is done correctly. However, this is obviously a very artificial system which only

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vaguely resembles what actually happens in the soil over time. Furthermore numbers obtained from one extractant will be different from results using a different extractant. Thus the need arises for calibrating the numbers obtained in the lab with actual field responses.

The research correlating response of turfgrass and many other ornamentals with soil test results has not been done for most situations. A half dozen subsamples of the same soil sample sent to six different soil testing labs typically will, result in six different recommendations. These recommendations may be 5 to 10 times higher from smallest to largest. The reason for the discrepancies is not poor lab analysis in most cases but rather a difference in interpretation of what the results mean. Labs which use the same extractant usually report similar results but very often make different recommendation. Who is right and who is wrong is anybody's guess. Very often soil test labs will report results with quantities of individual elements rated from very low to very high. A rating in the low range implies the crop will respond to applications of that element. A medium rating means the element is probably present in adequate amounts while a rating in the high range means that more than ample quantities are present and the crop should not respond to applications of that element. However, this is not always the case. Research at the University of Florida on St. Augustinegrass showed no differences in rooting, yield, and turf quality for potassium rates ranging from $\frac{1}{2}$ pound to 2 pounds per 1000 sq. ft. per month on plots which tested low in potassium. Studies at Texas A&M using 2, 4, 6 and 8 pounds of potassium per acre, year demonstrated increased wear tolerance of bentgrass with increasing amounts of potassium on a soil which tested high in potassium.

Differences in recommendations often occur even for crops and soils which have been calibrated to soil test results. One study on corn grown in Nebraska on four different soil types followed recommendations from 5 different soil testing labs. They found no difference in yield between the lowest recommendation, for nitrogen and potassium only, and the highest recommendation for large applications of virtually every fertilizer element. Again the reason is differences in interpretation. Many labs interpret their data using concepts, such as cation saturation ratios, which aren't valid.

I've spent a lot of ink telling you what a soil test cannot do. By now if you are still reading you are probably wondering what a soil test can do for you. A soil test can give some valuable information such as soil pH which is very important and may need to be adjusted for optimum crop performance. It can be used to monitor changes in soluble salt levels in the soil when saline irrigation is being used. Soil test results can be used in conjunction with visible deficiency symptoms and tissue analysis when trying to diagnose problems. Soil texture, C.E.C., and percent organic matter are also reported by most soil testing labs. This information can be used when deciding how much, and how often, fertilizer and water should be applied. Course textured soils with low CEC's should be applied. Course textured soils with low CEC's should be fertilized with light frequent applications while finer textured soils with higher CEC's can hold more fertilizer and can be fertilized less frequently.

Some general inferences can also be made in terms of watering. Course textured soils such as sands hold less available water and must be watered more frequently. Medium textured soils such as loams hold most available water and require less frequent watering while fine textured soils such as clays have available water contents similar to sands. Soil C.E.C. and water holding capacity will also increase with increasing organic matter content.

As far as recommending specific quantities of elements based on soil test results, the research simply has not been done for turfgrass on Florida soils. The first and most important rule is to fertilize, and use the proper ratio of N-P-K. For turf this ratio should be 3-1-2- or 4-1-2. Changing ratios or deleting one or more of these elements based on soil test results could be a dubious practice. Elements other than N, P, and K, particularly iron and sulfur, can be limiting factors to turfgrass growth in Florida. Probably the best way to determine need for other elements is simply to apply them individually to a small area and look for a response. Keep in mind that things other than yield, such as stress tolerance and turf quality, are important parameters.

To put it simply, soil testing is no panacea but rather a small piece of the puzzle. Even well calibrated soil test results must be evaluated in conjunction with other environmental conditions. Light, temperature, diseases, insects, soil moisture, soil oxygen, and numerous other factors will influence responses in specific instances. The best test is still the discerning eye of an experienced agronomist and the best fertilizer for any plant is the grower's shadow.

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By: Bud White
Southeastern Director
USGA Green Section

Some Interesting Findings About Putting Green Construction and Materials

Even though not originally intended for research purposes, the development of a new sampling technique by Agri-Systems of Texas Inc. has revealed some very interesting and important findings. The extremely simple technique involves the hammering into the soil profile a section of 3 inch ID PVC pipe to the sub-base of an existing putting green. The pipe is then removed and the ends are tightly packed with newspapers and then sealed so that an intact core can be shipped to the lab for analysis.

Upon arriving at the lab, the length of the core is measured and the sub-soil material is removed from the base. Then a retaining screen is placed in the bottom and the core is then saturated. This procedure allows for a very accurate infiltration test of a putting green. Once the infiltration test is completed, the pipe is split long ways down each side and a physical history along with an analysis of the materials within is made.

The information derived from these procedures is then used to make recommendations and provide solutions to problems. Agri-Systems is also currently developing regional recommendations to further fine tune construction and management practices of putting greens. Some of the factors taken into consideration are: mean temperatures, rainfall, wind velocity, surface contours and other special problems. Thus, recommendations can be made for specific areas, and to the conditions into which the greens will have to be maintained. In a letter dated December 1, 1986, to Mr. William H. Bengeyfield, Executive Director of the USGA Green Section, Judith Gockel of Agri-Systems of Texas Inc. discussed some of their findings from analysis of the cores submitted during 1986. The following are some of her observations.

First and foremost, in the construction of the USGA "spec" type greens, the intermediate or choker layer CANNOT safely be eliminated. The particle size differences between the seedbed mix and the openings of the gravel blanket are too great for the mix to stay suspended in open air. To prevent the seedbed mix from migrating into the gravel blanket, it is necessary to have in place an intermediate layer that is 5 to 7 times greater in particle size than the seedbed mix, and also 5 to 7 times less than the gravel blanket. Even before the green is planted, the gravel blanket will become contaminated if the intermediate level is eliminated, and this results in

water infiltration rates being reduced to its lowest common denominator. Thus, even before the green is brought into play, problems begin to arise.

Next, it has been found that in the construction of sand-peat type greens, the use of Michigan-type or bog peats, (and also muck type materials would be included here) will definitely cause problems. These "black" peats possess a very fine particle size and these materials will very rapidly migrate to form a layer within the sand of the seed bed mix. This layer results in reduced infiltration and excessive moisture retention and is a major contributor to the "black layer" phenomenon. When a fine sand is used for the seedbed mix, the high capillary porosity of the sand plus the water retention capacity of the peat causes a seedbed too wet for proper turfgrass growth and development.

Agri-Systems is recommending the use of sphagnum peatmosses, (or composted rice hulls on the Gulf Coast and in the Mississippi Valley), as the source of organic material in the seedbed mix. There is always a potential for problems associated with any organic additive and this recommendation is based on mechanical considerations. Based on the above information, one would tend to think that a pure sand type of construction would eliminate a layering problem. As it turns out, a reverse and just as detrimental result occurs when pure sand is used. To compensate for the lack of organic matter in the seedbed mix, the root systems of the turf generates large quantities of its own debris, which migrates through the pore spaces of the sand. The resulting organic material tends to accumulate 2 to 3 inches below the soil surface and this creates a shallow, perched water table. Two of the worst cases of reduced infiltration were observed with all sand greens.

It has been my experience observing putting greens all over, that if problems are being experienced, 70% to 80% of the time the problem is due to the use of improper materials or construction techniques. While there are few guarantees in nature, with adherence to tried and true methods along with thorough testing of the available materials, can one be reasonably assured of success. This is true not only for the construction of new putting greens but also for the topdressing and renovation of existing greens. ■

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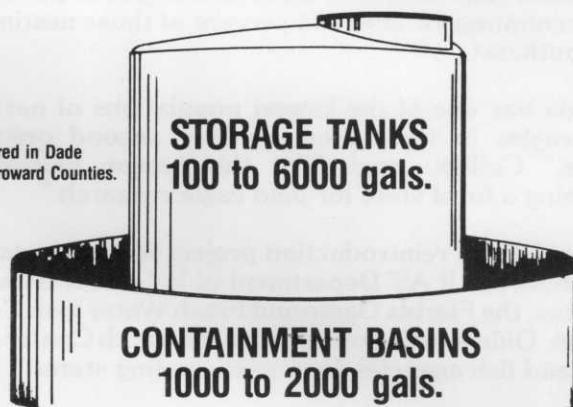
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Florida Shares Bald Eagle Population

By: Barbara Bobzin

Gainesville Relocating Florida bald eagles may help revive endangered populations of the national symbol, according to Dr. Michael Collopy, principal investigator for the Southern Bald Eagle Reintroduction Project at the Institute of Food and Agricultural Sciences (IFAS).

Now in its third year, the project has relocated 41 bald eagles from Florida nests to southeastern states having less stable populations of the bird.

The researcher estimates 1,500 bald eagles live in Florida, accounting for about 85 percent of those nesting in the Southeast.

"Florida has one of the largest populations of nesting bald eagles in the nation—ranking second only to Alaska," Collopy says. "For this reason Florida is becoming a focal state for bald eagle research."

The bald eagle reintroduction project is a cooperative effort between IFAS' Department of Wildlife and Range Sciences, the Florida Game and Fresh Water Fish Commission, Oklahoma's Sutton Avian Research Center and game and fish agencies from participating states.

Results of this research were presented at the Raptor Research Foundation's annual meeting Nov. 21-23 at the

University of Florida.

"Our goal is to fine tune methods of reintroduction," says Collopy. "Using solid biology and conservation, we hope to develop positive management activities."

Bald eagles lay eggs once a year, from mid-November through January. If the eggs are taken early enough in the nesting season—typically in December—the parents have enough time to renest.

The eggs are taken to the Sutton Avian Center where they are hatched and the fledgling birds are distributed to participating southeastern states. So far, Oklahoma, Mississippi, Alabama and Georgia have received Florida bald eagles.

The researchers hope to expand the project, releasing more birds to more states. "It is important to take protective measures now while we have stable populations and adequate sample sizes for research," Collopy states.

Miller Brewing Company and the Sutton Avian Center have sponsored the project. "Hopefully more agencies, both public and private will become involved in the future," the researcher says.

Today, the bald eagle's largest enemy is urban development. In Florida the problem is especially keen as bald eagles gradually lose their preferred wetland habitat to large scale development. "Most bald eagles cannot adjust to human disturbance," Collopy says. "While some can live in proximity to people, it takes a special kind of bird with the right disposition." ■

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Golf's Forgotten Heroes:

COURSE SUPERINTENDENTS

By David Zaslowsky
Desert Sun Sports Editor

"The course has to be playable, has to look good, you have to please the members and if you can do all three and keep your sanity and your wife, you're doing a good job."

Golf course superintendent Bill Killen wasn't joking when he made that statement.

Any golfer worth his handicap who fails to shoot up to par may use the course as a scapegoat. It is as simple as the rough was too high or the pin placement was bad. Or half a dozen other excuses.

The people that Killen and others in his profession have to please sometimes pay as much as \$2 million to buy their dream house and a membership at one of the Coachella Valley's more prestigious clubs. The cost at other clubs often runs well in excess of \$250,000. All bring the promise of playing on some of the world's most beautiful courses.

"They (Club members) want the course to look good all year," said Jack Roessinger, director of turfgrass management at The Vintage Club. They want the club to be the best in the world and the members are paying quite a bit of money."

"But they really don't know or understand what we do. They think all you have to do is grow the grass and mow it."

A golf course superintendent's day starts as early as 5:30 a.m. The routine begins with a weather report, followed by an inspection of the course from the greens and fairways to the water pump station and the wells. Then he makes assignments for his crew and takes care of any special projects.

At many clubs, the superintendent spends more time than he wants to in the office, burdened with paperwork and the headache of budgets. It is a year-round job.

"You have to be a manager, accountant, plumber and carpenter," said Don Pakkala, course superintendent at The Vintage Club in Indian Wells.

"You need to know a little about everything."

And a lot about the weather.

In the Coachella Valley that means coping with summer temperatures of 115 degrees and near-freezing or sub-freezing temperatures in the winter.

"Everything we do is dictated by the weather," Killen said. "Our reputation is based on the weather and it's a crap shoot."

Pakalla explained some of the problems that a course superintendent can run into. "Let's say you're irrigating the course on a humid day and you get a rainstorm. It aggravates the situation because you can't control the amount of water. You must adjust your program according to what nature is doing, has done and will do. The weather is the big boss."

The type of work that has to be done also varies with the kind of grass used on the course.

Only a handful of courses—Sunnylands, The Club at Morningside, Mission Hills, The Springs, Eldorado, The Vintage Club and Palm Desert Resort Country Club—have bentgrass. The rest of the courses have bermuda grass.

"Bentgrass is a natural cool season, fine-texture grass that grows great in places like Oregon," said Bud Lombard, a salesman for Foster and Gardner of Coachella, which keeps the superintendents in grass seed, chemicals, fertilizer and the other supplies needed to maintain a golf course.

"Bentgrass is the most well-accepted putting surface, very smooth, but it goes into a warm season dormancy," Lombard added, "and it has disease problems, Pythium. It is a warm-season disease that can completely kill a green in 24 hours."

The courses with Bermuda have a different problem. Each year they must be overseeded because it is a warm-season grass that is tailor made for Coachella Valley summers, but is dormant during the winter when course use is at its peak.

Course superintendents mow down the bermuda as low as possible and plant rye grass on top of that. According to Lombard, most superintendents use one of 15 types of perennial rye for their overseeding. He said overseeding costs, including water, range from \$70,000 to \$90,000.

Overseeding a 150-acre course also means 10 to 12-hour workdays for superintendents six or seven days a week.

Lombard said most of the overseeding in the Coachella Valley is done between October and November when the courses are closed from three to four weeks.

The perennial rye then becomes dormant in the summer and the Bermuda becomes active again, aggressively "squeezing out" the rye grass and growing over it.

Other battles also are being waged at all clubs.

There is an on-going war against insects. And superintendents have to keep their lakes looking like lakes instead of marshes. To combat the growth of vegetation in the lakes, most valley superintendents use chemicals in the summer and a combination of tilapia (a weed-eating fish) and chemicals during the winter. (Tilapia die off when the water temperature drops below 55 degrees.)

In addition to overseeding and battling diseases and insects, summertime is when superintendents are busy preparing the courses for winter. The courses are completely renovated. Cart paths are redone, sand traps reshaped and trees trimmed—all 3,000-or-so when it comes to the more established courses.

All of this takes an annual budget of up to \$1.5 million for some courses and a staff as large as 50 to keep the "beautiful courses" beautiful.

"When you watch a golf tournament on television, you will hear the announcers and golfers say that the course is in beautiful shape," Killen said. "They never say who does it, but you certainly get screamed at if the course is in bad shape."

Topdressing

by JUDITH FERGUSON GOCKEL,
Agri-Systems of Texas, Inc.

Did you ever wonder what an earthworm might think about topdressing practices on our golf courses? If you haven't, then maybe it's time to take a closer look.

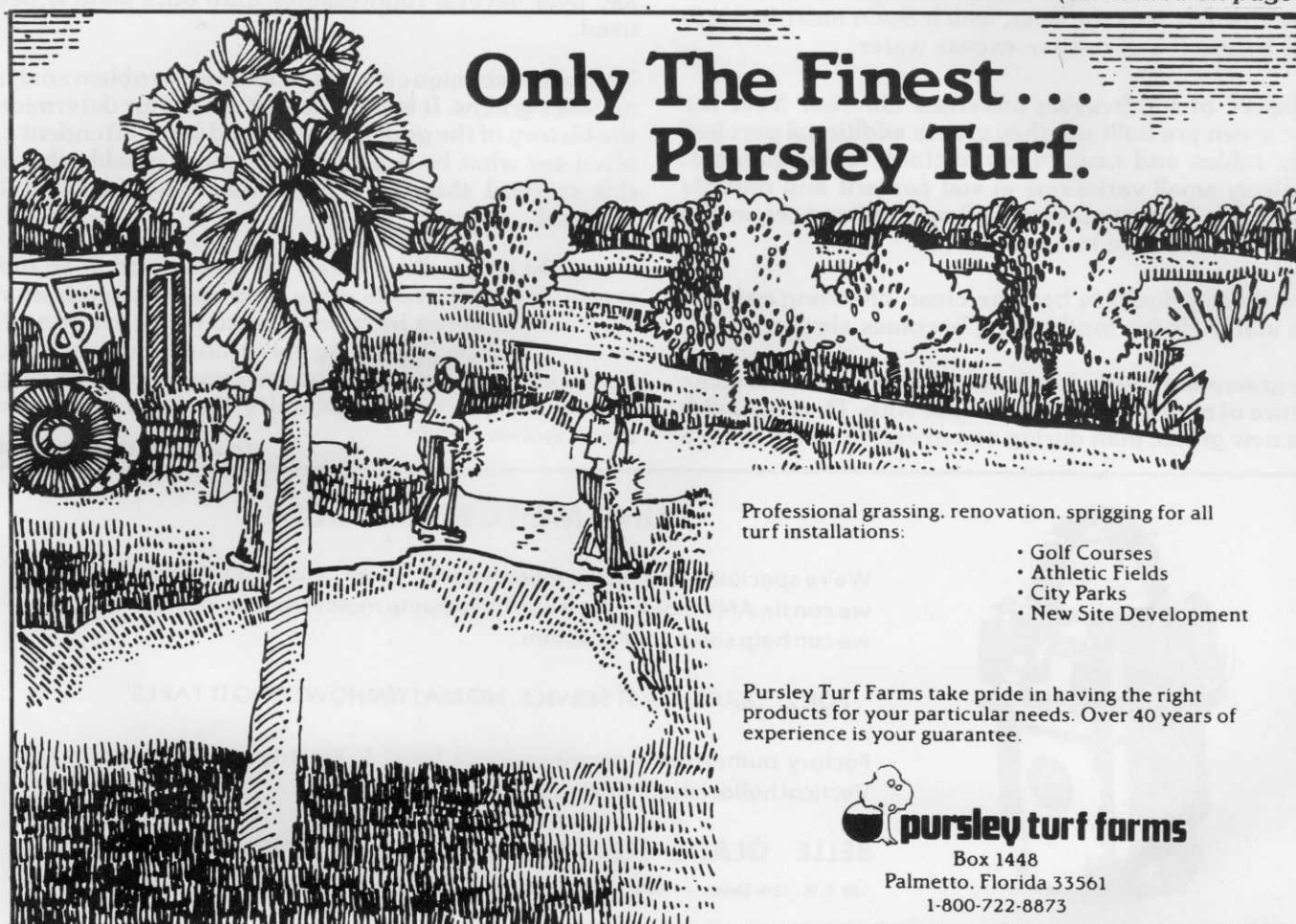
Topdressing for putting green maintenance is an almost universal practice; it is used to true up the putting surface and to help prevent thatch buildup. In recent years, topdressing programs have also been used to increase putting green speeds. If it is done with care and follows some simple guidelines, topdressing can also modify the basic structure of the green. This will improve water handling capacity and add to the life and health of the green and the turfgrass on it.

Topdressing practices are a major reason for the success or failure of new greens. With adequate basic construction and an informed superintendent, a new green can have a predictable life of 20 years or more. Without these fundamentals, the same green can be in serious trouble within a year.

Although topdressing is used widely, the how and why of its function are often misunderstood. We were not

aware of the wide variance in practices until recently, when our laboratory developed a new technique for analyzing rates of field infiltration. The method involves using three-inch PVC pipe to take a profile of the green through the seedbed, intermediate layer, gravel, and into the subsoil beneath the green. The tube is submitted whole, tightly packed to prevent movement of the contents. After doing the infiltration test in the pipe, we cut it open to try to determine the reasons for its behavior. In a startling number of cases, it is apparent that topdressing practices have created the problems we've found. There are cores that look like appetizing Viennese tortes, made up of many layers of differing sands and soils, and cores that have been dubiously blessed with every commercial topdressing of the past 15 years, one after another. We find poor greens topdressed with superb materials, and great greens smothered with the cheapest filler available. We have found we can count layers like the rings in a tree and determine when the course changed superintendents, when the budget crunch came, and the year of the big flood, blizzard, or drought. We also see greens that have been maintained to perfection, and are very successful regardless of their

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age. While it is possible to have problems with the best built and maintained greens, the problems are usually more manageable and involve less brinkmanship on the part of the superintendent to correct.

To understand why correct topdressing practices are so important, it is necessary to think about the growth patterns of turfgrass and to have a basic grasp of water movements in soils.

Where distinct layers of materials exist in a profile, grass roots make little effort to grow through one layer and into the next. If the roots have as much as an inch of one material to grow in, however poor it is, they will not cross into another layer even though that layer may have optimum growth medium characteristics. We often see well-constructed seedbeds with an inch of a different but equally good topdressing. The turf can usually be peeled off like a throw rug at the interface, because the layers aren't bound together by a network of roots. Where shallow root systems exist, turfgrass is vulnerable to problems from many sources.

Not only do layers affect the root systems directly, but there is a further problem with water movements through textural barriers. To visualize this involves understanding the way a perched water table works. The perched water table, which is, incidentally, the basic principle upon which the USGA recommended method of greens construction is based, affects all soils. Simply put, the original research demonstrated that water remains within one layer until that layer is saturated. Then it drains into the next, which again must be saturated before it can release excess water.

As layers of topdressing materials different from the basic green are built up, they create additional perched water tables and cause unpredictable consequences. Relatively small variations in soil content and particle distribution can produce significant differences in the interaction of these materials.

Once these principles become clear, choosing appropriate materials for topdressing becomes simpler.

New greens should be topdressed initially with the same mixture of materials they were built with. Thus, in building a new green, plan during construction to set aside a

supply of construction material adequate to topdress for at least two years. It is prudent to make sure the supplier will have the identical sand available in the future, and keep a supply of the organic material used in construction for an indefinite period.

After a period of time, which will vary greatly in individual cases, the roots will begin to provide enough organic material to meet their own needs for retaining water and for cushioning from the abrasion of heavy traffic. Because this is a gradual process, only by observing the root zones regularly can you know when you reach the point for a gradual cutback in the organic component. This is done best by looking at the root systems regularly. A cup cutter is a good tool to use for this examination. Go to an average area on the green and cut the deepest cup possible. Carefully extract the plug from the cut and look at the roots. In an ideal situation, the material around the roots is very similar to that below, and the roots themselves are plentiful and have a plump, healthy look. There should be no compacted area developing, nor any indication of unusual moisture retention. The topdressing program is ideal if these criteria are met.

If the top two to three inches of the core are hard and the root system scanty and weak, the organic component is very likely inadequate, and there may be an excess of silt and clay. It will be necessary to use aerification with core removal, and topdress with a clean sand of a similar type combined with about 10 percent organic material to correct this development. If the soil is becoming spongy, the organic material should be cut back gradually over several topdressings until pure sand is being used.

The same technique should be used for problem analysis on older greens. It is an excellent means for determining the history of the green; an informed superintendent can often see what he is dealing with more quickly through this method than with any other single tool at his disposal.

A variety of conditions may be discovered in an older green. There may be layering from multiple topdressing. This condition can be relieved to some extent by aerifying several times, removing cores, and topdressing each time with a clean sand in the medium to fine size range. This technique will be helpful if the layer is less than three inches deep.

(continued on page 49)



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(continued from page 48)

Problems may appear in the form of a spongy upper layer, perhaps resulting from on-site mixing during construction, which has left excessive quantities of organic material in the upper portion of the green. This is more difficult to correct, although the same basic technique may be tried. It is sometimes necessary to remove the sod and remix the seedbed before real gains can be made.

The upper layer may be hard and compacted, indicating an excess of silt and clay in the topdressing material, often in combination with very fine sand. Here again a very clean medium to fine sand may be employed in conjunction with aerification. It can be helpful to add up to 10 percent peatmoss in this instance.

Beyond the top three inches or so, it is almost impossible to make significant changes in the green's behavior using topdressing modifications. New technologies developing in some areas may make it possible to modify most of the seedbed. Time and experience will give us a better idea of their long-term effectiveness.

A current trend, which has caused many problems, is the building up of a sand layer on top of greens that are basically soil in order to improve putting speed. While it is possible to modify the greens in this manner, it should be done gradually over a couple of years rather than in an abrupt changeover. The modifying sand should be selected and mixed into the existing topdressing in a ratio of about 25 percent of volume. This material should be used several times and then further divided into a 50-50 proportion for several more topdressing. Continue increasing the quantity of sand in the topdressing until roughly a two-inch transition layer has been built up. This slower procedure usually allows the soil and sand to blend well enough for water to be moved as if there were no change. The infiltration rate will be that of the soil portion of the green, of course. Regular aerification should be done throughout the transition period, and cores should be removed each time.

If the original material of which a good green is built becomes unavailable for topdressing purposes, it is crucial to locate the closest possible substitute. This can be done by taking the particle analysis of the original sand to area sand suppliers to seek a match. Fortunately, similar sands are often available from the same area.

Locating a close substitute will allow a continuing successful topdressing program.

Regular examinations of the seedbed using this core sampling technique are helpful in becoming aware of problems before they develop into serious conditions. Success or failure often takes place on the worm's eye level.

Topdressing is more than a filler. It plays an active part in keeping good greens good, golfers happy, costs down, and aggravations to a manageable level. These are goals well worth pursuing. ■

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The new **LESCO Gasoline—Powered Hydraulic-Driven Spreader** provides smoother, easier application of granular material.

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Available from **LESCO, Inc.**, Rocky River, OH, the **LESCO Gasoline-Powered Hydraulic—Driven Spreader** features an 80-pound capacity polyethylene hopper, corrosion-resistant Delrin 100 gears and third hole on shut-off plate with adjustable metering slide for varying product bulk densities. The stainless steel frame provides durability and strength; extra-long stainless steel handles allow for easy maneuvering. The durable bumper/handle on the front of the spreader protects the impeller and makes carrying easier. The stainless steel axle, impeller shaft and on/off assembly are durable and corrosion resistant.

The engine on the **LESCO GASOLINE POWERED HYDRAULIC—DRIVEN SPREADER** is a three horsepower recoil-start Briggs & Stratton Industrial/Commercial. The hydraulics consist of a pump and motor combination with a one-gallon hydraulic reservoir. The spreader has 13x5.00-6 pneumatic tires.

A hopper cover to protect product and allow spreader to be transported without being emptied is available as an option. ■



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KILLER COURSES

Golf course pesticides can harm more than their intended targets

by Bob Condor

More than four years have passed since U. S. Navy Lieutenant George Prior died from a mysterious ailment that doctors traced to the Army Navy Country Club near Arlington, Virginia. Prior played golf three straight days while on leave in August 1982. After the first two, he returned home with moderate headaches and nausea, but following the third day, Prior grew weak and a blistering rash spread across his stomach. He checked into a hospital. Within two weeks, his skin festered and scabbed, his internal organs failed and he died of a heart attack. Prior was 30 years old.

An expert Navy forensic pathologist, Dr. Jonathan Lord, concluded that the cause of death was a severe allergic reaction to Daconil 27⁰⁰, a common fungicide sprayed weekly on the Army Navy course to control brown spots on the greens. Among the Navy doctor's evidence: A chemical similar to Daconil allegedly killed a Florida family after it was used to fumigate their house; Prior had a history of health complaints after playing golf; the club's grounds and Prior's equipment and clothing tested positive for Daconil.

Prior's wife filed a \$20 million lawsuit against the Army Navy Country Club and Daconil's manufacturer, Dimond Shamrock Corp. The case remains in litigation.

Although most golfers play on pesticidesprayed courses without ill effects, Prior is not the first golfer to experience flu-like symptoms after a round. "I used to have all kinds of trouble playing in Florida," says Billy Casper. "One year, in the National Airlines tournament near Miami, I had to withdraw after 36 holes even though I was two shots off the lead. The course had been heavily sprayed, and there was weed killer in a lake. When I got to the course for the third round, I couldn't hit a wedge shot 30 yards — I didn't have the strength. My eyes were bloodshot, my complexion was very ruddy and my right hand was swollen from taking balls from the caddie. My doctor diagnosed acute pesticide poisoning."

Casper, who now credits vitamin and mineral supplements with helping him stay stronger on sprayed courses, says there were times when "I couldn't think my way out of a paper bag" during a tournament round. "I found I couldn't reason on heavily-treated courses."

Dr. Samuel Epstein, an expert on environmental toxicology at the University of Illinois Medical Center, confirms that "Golfers are greatly exposed to pesticides. Direct contact encourages absorption of toxic materials through the skin and sometimes ingestion. Recently-sprayed pesticides do volatilize on hot days, leading to the additional risk of inhalation."

Golfers affected by pesticides will experience several early symptoms, including memory loss, fatigue, headaches, nausea and dizziness. But although Epstein recognizes the potential seriousness of these symptoms, he is more concerned about the long-term ill effects of pesticides. "Golfers spend a good deal of time on golf courses, up to four hours or so a day," he explains. "That's a high level of exposure to a number of chemical agents that produce delayed effects, such as birth defects, neurological disorders and cancer. A golf course is essentially a hazardous site, and it's time golfers realize they are captive to an industry (lawn care) that is indifferent and ignorant about the public health."

In the early 1970s, the Environmental Protection Agency (EPA) was mandated by Congress to register all pesticides used on turf. That means testing and approving any new product on the market. But because many golf course pesticides predate 1970, they were granted exemptions from extensive testing for EPA approval. Now the Federal agency periodically "re-registers" existing pesticides, but testing doesn't appear any more rigid.

The EPA will respond to "any valid data showing chronic effects such as carcinogens, birth defects or bird kill," says Henry M. Jacoby, the EPA's product manager for agricultural fungicides. Jacoby reports that "Diazinon," made by Ciba-Gergy is a pesticide under special review. It is likely to be disapproved for golf course use by year-end, due to numerous incidents of birds (mostly geese and other water fowl) dying.

Golf course superintendents also have their hands full with the pesticide issue. "Some courses forbid spraying when members are playing," says Jim Snow, a turf management director for the United States Golf Association. "They'll close one day each week to apply the pesticides."

However, Snow maintains that attention to spraying seems to have turned into a witch hunt, "making golfers paranoid about something that isn't all that critical. Most pesticides and fertilizers used on golf courses are quite tame, and the people applying them are professionals."

The USGA is studying alternative methods of pest control, as are some local golf superintendent groups. "Pesticides and fertilizers are our biggest expense items," says Ed Nash, golf Superintendent at the Bass River Golf Course in South Yarmouth, Massachusetts, which is participating in a local pesticide study of Cape Cod courses. "We have no economic interest in using chemicals if we don't have to. We're looking at ways to integrate pest management by using less water with safer chemicals. After all, we're exposed more than anybody else because we apply it".

Reprint — Golf Magazine

Editor's Note: The Florida Green does not endorse the article "Killer Courses" but reprints it as a service to our members so you will understand the rebuttal on the following pages. Our thanks to Mark Jarrel and Cecil Johnston for bringing this article to our attention.

KILLER COURSES ANGERS SUPERS

Executive Editor
GOLF Magazine
380 Madison Ave.
New York, NY 10017

Dear Sir:

I am writing to you to offer, free of charge, some sound business advice: expand your title to GOLF ENQUIRER and begin marketing your magazine in supermarket checkout counters. After reading your special report entitled "Killer Courses", I feel this strategy is the only feasible way to maintain sales, as most knowledgeable golf business people have written you off as a serious golf publication.

If you haven't received thousands of letters from Golf Course Superintendents and other club officials protesting your publication of this erroneous and misleading article, it is probably only because they were too busy explaining to their members that they weren't indifferently and systematically trying to poison them.

Did anyone in GOLF magazine stop to think of the potential damage this article could do? Did anyone take the time to do even a little research on the subject, or did you just jump on the bandwagon with the other sensationalistic rag sheets and television shows? This is inexcusable from a magazine such as yours which is supposedly dedicated to the promotion of golf.

In general, the media has deservedly earned a reputation similar to that of politicians and used car salesmen. Why hasn't anyone questioned the deceased Lt. Prior's involvement in top-secret biological warfare and the possibilities of its contribution to his death? Why hasn't anyone questioned the Navy's motives for conducting a closed-door autopsy and investigation, and then conveniently pointing fingers at the Army Navy Golf Club and the fungicide Daconil 2787? No Daconil was found in any of Lt. Prior's tissue or body fluid - just on his shoes, clubs, and golf balls.

I have personally used Daconil 2787 for 13 years as a golf course superintendent, and have never experienced, seen, or heard of any problems associated with its use, and that included splashing pure concentrated on myself on more than one occasion. Checking my pesticide toxicity chart, I find that Daconil 2787 is the least toxic pesticide that I commonly use on the golf course. This chart also lists a few common items for comparison, and it shows that aspirin is at least 13 times more toxic, and table salt is at least 3 times as toxic, than Daconil 2787.

With this evidence and my experience, I still would not say absolutely and without question that Daconil 2787 did not cause Lt. Prior's death, though I believe it overwhelmingly unlikely. I leave such omniscience to such "experts" as the Dr. Samuel Epstein quoted in your article. Some people die from bee stings; others hardly have

a reaction. If we were all exactly alike and reacted to all substances exactly the same way, there would be no need of the word "allergy" in our vocabulary.

This brings me to your next "expert," Mr. Billy Casper. First of all, it is a well-known fact that Mr. Casper has a history of unusual personal allergy problems. Second, many of the pesticides used during Mr. Casper's prime four years are no longer used on golf courses. Third, from exactly which pesticide or pesticides did his doctor diagnose acute pesticide poisoning? Mr. Casper particularly singles out South Florida, which is where I have made my home now for nearly 8 years, and I also have experienced more allergy problems since living here, but I attribute it to melaleuca pollen or other natural phenomena rather than pesticides. In Florida, we probably do use a greater volume of pesticides than courses in the North because of the longer growing season, but northern courses generally are sprayed heavier for the time they are open. At Tam O' Shanter in 1964, he did so on some of the most heavily sprayed greens the golf business has ever seen. A disease was attacking the grass during this tournament and the greens were sprayed heavily on almost a daily basis to try to save them, and the fungicides used were some of the mercury compounds that have since been taken off the market. Funny that all that pesticide "exposure" did not affect his performance during this tournament.

Your statement that "a chemical similar to Daconil allegedly killed a Florida family after it was used to fumigate their house" is another ridiculous statement. Responsible publications don't inflame public passions with statements based on "similar" and "alleged" evidence. What is similar to Daconil 2787? Daconil is a fungicide used on turf and ornamentals, and under the name Bravo is used on fruits and vegetables. It is not a fumigant, and no one I've contacted associated with pesticides can figure out what "similar" chemical you are alluding to - not even a good guess.

Returning to your "expert" on environmental toxicology, Dr. Samuel Epstein, I highly recommend that you check with respected authorities, such as: Sir Richard Doll and Dr. Richard Peto, University of Oxford cancer researchers and epidemiologists; Dr. Elizabeth Whelan, epidemiologist and author of 12 books on health issues, including Toxic Terror; Dr. J. Gordon Edwards, a professor of entomology and counselor for the National Council for Environmental Balance; or Dr. Keith C. Barons, author of Are Pesticides Really Necessary? Ask them or any other reputable scientist about Dr. Epstein's scientific methods and motives. Dr. Epstein makes quite a good living feeding on society's environmental paranoia and is time and again called in as the "expert" on environmental issues more diverse than any one man could possibly be an authority on. At the EPA hearings on the banning of DDT, Dr. Epstein was the only scientist to contend that DDT presents a high cancer-causing risk in humans, citing data from

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abotched laboratory experiment on mice.

To put things in perspective, let us try to think logically and consider the following points:

- 1.) Golf Course Superintendents, their spray technicians, and other maintenance personnel take the greatest risk using pesticides. They are exposed to the pure concentrated pesticide when mixing and handling; they are exposed to the diluted spray mixture before it is watered in; and they spend 2 to 3 times as many hours on the golf course as golfers do.
- 2.) A golf course crew is generally a small close-knit group, and it would be very difficult to look another member of that group in the eye if you felt you were exposing him to unnecessary or unusual hazards.
- 3.) Thanks to the efforts of the media and environmental groups, pesticides with residual activity (mostly chlorinated hydrocarbons like DDT) have been taken off the market, and the replacement chemicals (mostly organophosphates and carbamates) are more dangerous to man (especially those who mix, handle, and spray them), and must be used more often and at much higher cost to deliver the same level of control.
- 4.) The only reason golf course maintenance people support the use of pesticides is because it is a necessary tool for doing their job of providing the fine playing conditions that golfers have come to expect and demand. None of us like using pesticides. We receive no "kick-backs" or other compensation from chemical companies. Without pesticides there would be no golf as we know it today.
- 5.) Every year we lose one or more pesticides for use on golf courses, usually because of accidents, excesses, or false allegations in the agricultural industry. Golf Course Superintendents must pass examinations to obtain and retain licenses to use restricted pesticides and are head and shoulders above the ag industry and the general public concerning pesticide use and safety.

It is time that golfers realize that they had better get behind their Superintendents and support the responsible use of pesticides. There is little incentive for a chemical company to invest the huge sums of money necessary to get a new pesticide tested and registered for use on golf courses. If present trends continue, many of today's golfers may not be able to afford being one of tomorrow's golfers. When your Superintendent asks for your financial support for turfgrass research projects (some of which involves finding biological controls to replace pesticide controls), give generously. If every golf course gave just \$500 a year for turf research, most of the serious problems facing Golf Course Superintendents would be solved in a few short years.

The pesticide controversy is an issue of vital concern to the golf industry, and presents a challenge that should be met head-on by everyone who cares about the great game of golf.

Sincerely,

Mark Jarrell, CGCS

Chairman, Superintendent Promotions, Florida GCSA
Director, Florida Turf-Grass Association
Past-President, Palm Beach Chapter GCSA

From . . .

OUR SIDE

I would expect this type of article from a publication like "National Enquirer" but not from a magazine that is in the business of promoting.

I admit that you did lend some credibility to golf course superintendents in the closing paragraphs of your article buried in the closing pages of your magazine but to entitle the article "Killer Courses" and to put a large skull and crossbones in a poison bottle on the first page of the article is inexcusable.

A little research goes a long way-consider the following facts:

— Daconil 2787, also called BRAVO, is used on nearly all vegetables and fruits.

— Considerably more people suffer from allergies to seafood, milk, grains pollen, and grass itself than they do to Daconil 2787 on golf balls.

— In laboratory tests it took three times as much Daconil 2787 than table salt to kill test animals and thirteen times more than aspirin.

— One alleged death due to Daconil 2787 is negligible compared to golf course deaths that occur due to insect attacks, lightning, heat stroke, heart attacks, and even golfers being struck by balls.

— Diazinon, also called Spectracide, which you have also mentioned in your article will probably soon be prohibited from use on golf courses but will still be permitted for use on almost all agricultural crops, in home gardens, and even in homes themselves for control of roaches, stored food pests, and other insects.

Golf course superintendents in Florida raised over \$35,000 this year to support research efforts.

Wouldn't it be more responsible for you to publish an article encouraging golfers to support these fund raising efforts rather than telling them in bold skulls and crossbones that superintendents are poisoning them?

I don't know if the damage you have already done can be corrected but I can assure you that your magazine has lost credibility with golf course superintendents and other knowledgeable people throughout the nation.

I hope that you now realize that "Killer Courses" was a mistake.

Sincerely,

Cecil C. Johnston

External Vice President

Florida Golf Course

Superintendent's Association

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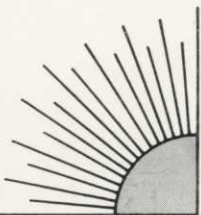
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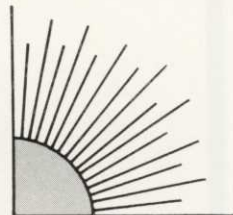
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South Florida Sunshine



By George Jones, Golf Course Manager
Earl Morrall's Arrowhead C.C.

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- RD600 Cable Locator
- Swing-Joint, "That Really Swings"

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When the game is over, take the computer's cassette-type cartridge to the pro shop. The scores are put into the printing station and entered with the touch of a button. A score card is printed for the golfer to take home. Handicap stroke calculations have been computed and everything has been stored in the memory of the printing station.

All types of golf games can be played. All types of tournaments can be played, recorded and calculated. Mountains of record keeping are eliminated along with the human error that goes with this tedious task.

You don't have to imagine it. It's here. It has already been refined to the point of player I.D. codes and handicaps, warnings when the player's golf cart is running on low batteries and reverse clock indicating time of play. There are many more features of this unique system.

Contact: PRO CART COMPUTER
2331 Thomas Street
Hollywood, FL 33020
(305) 922-3133

RD 600 CABLE LOCATER

We were about to dig a trench across the side of our practice green when Earl Morrall, the owner of Arrowhead Country Club, mentioned the underground cable carrying the clubhouse power may be in the same area. I called Florida Power and they scheduled a trouble-shooter to check it out. When Buck, the Florida Power technician, showed up on schedule, he pulled out a three foot long plastic instrument shaped like a trombone case. He called it a CAT SCANNER and promptly located the buried high power cable. He showed me how the bottom end was worn off from five years of constant use and it had been dropped many times, yet still worked good as new. Well, with my engineering background I had to find out more. I wrote down the info from the heavy plastic instruction card in the case and promptly called the Radiodetection Corp. in New Jersey, the American Sales Company for the English Mfg. Company, Radiodetection Ltd.

The following day, I received a call from the sales rep. in Chicago and he said he would be in Florida in about a week. This appointment turned out to be a life saver for me because, during the week before he came, we had a tremendous thunder storm. Three irrigation time clocks were burned out even though they had lightning protectors and grounding. The telephones were knocked out, and as I checked the irrigation system, which is electric, not hydraulic, I discovered seven of the 23 clock stations at five and six fairways were out. Witnesses at the clubhouse including my assistant, Melody Staton, reported at least one of the lightning strikes to be the longest they had ever observed.

For the next few days we managed to get our phones working and the clocks repaired. But, in the 20 acres or so at fairways five and six we didn't know where to dig first to locate our problems. We used good detectors borrowed from neighboring courses. Although they located wires, we didn't know where our breaks were.

When the sales rep. for Radiodetection arrived, I quickly talked him into a demonstration at the problem area. He obliged with the RD600, the latest version. He explained that this solid-state electronic tool is much more sensitive than anything to date and produces peak noise and

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reading as it passes across the wire. Not only did we find wires and breaks, deteriorating current, and ground signal wires, but the depth within half an inch. We also saw where wires dropped from nine and one-half inches to two feet in depth. To find the depth, he held the RD600 over the strongest signal and with the push of a button, the depth was read on a meter.

The RD600 should be seriously considered where any significant amount of buried cable presents a problem. Also, for help in finding dead cables, a signal generator is available.

Price of the RD600: About \$1,200.00

Contact: Radiodetection Corp.
P.O. Box 623
Ridgewood, N.J. 07451

SWING-JOINTS THAT REALLY SWING

As I looked through my trade show literature, I came upon a flyer on a flo-SEAL swing-joint that was obviously different than any I had seen before. I checked the business card attached and noticed flo-SEAL is made by Flo Control, Inc., a manufacturing company with facilities in both Florida and California.

Since their Florida plant was conveniently located in Pompano Beach, I decided to give them a call. I talked with Stafford McCarthy, the sales manager, and asked as the South Florida Reporter, if I could meet with him and learn more about the new swing-joint.

As I toured their large factory and warehouse, I realized this company is definitely well established. Most of their production is geared toward institutional water and sewage fittings, involving high standard engineering specifications. The swing-joint also meets applicable engineering specs.

Next, he introduced me to the flo-SEAL swing-joint and how it's made (since it's a factory assembly and cannot be taken apart). Looking at a swing-joint cut-away, I saw an "O" ring seal to prevent leakage and to allow 360° turning. Behind this, in its own separate groove, is a nylon snap-ring to lock the two PVC parts together. The section with the "O" ring and snap-ring are pressed into the remaining piece. The snap-ring locks into a groove. As water pressure is applied, the snap-ring tightens locking and holding the assembly by its special wedge shape, becoming tighter as more pressure is applied.

NO WAITING FOR PVC CEMENT TO CURE

Still another feature is the use of a threaded nipple (not supplied) instead of a slip fitting. The threaded female parts of the swing-joint are reinforced with a stainless steel collar to prevent damage from overtightening. After the swing-joint is installed, water pressure can be applied immediately.

The swing-joint is 1½" and can be purchased with one 90° swing-joint equipped with a service tee. This is available

in 2" through 8", or with a 1½" male thread to go into an existing line tee. A second swing-joint that connects to the irrigation head, consists of two female threaded 90° elbows connected with a swing-joint. It can be purchased separately.

Tom Jones (no relation), at Melrose Distributors in Ft. Lauderdale, says they carry the line. It's a flo-SEAL swing-joint made by Flo Control, Inc.

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Rhone-Poulenc Inc., Agrochemical Division, announced that new Chipco®Ronstar® Wettable Powder is now available from Turf and Ornamentals Chemicals Distributors. The product, a preemergent herbicide with a long residual for the control of goosegrass, crabgrass and many additional broadleaf weeds, was registered earlier this year by the EPA.

Ron Keegan, Product Manager for Ronstar, said "we didn't offer the product for sale immediately after registration because we chose to wait for additional EPA registrations that expanded the varieties of ornamentals on which Chipco Ronstar 50 WP can be used. These registrations have now been received. It also gave us an opportunity to add another year of closely supervised field trials to our data base."

Chipco Ronstar 50 WP is a companion product to the widely-used preemergent herbicide, Chipco Ronstar G. According to Keegan, "The two formulations of Chipco Ronstar give turf grass managers and nurserymen the option of either spraying on the product or applying the dry granules."

Chipco Ronstar 50 WP is another product in the well-known Chipco line of turf and ornamental products that have been serving the industry for over 30 years. ■

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Things Pesticide Users Can Do To Protect Against Pesticide Liability Complaints

*Edited by Tom Teets
Urban Horticulturist
Palm Beach County*

Increasingly, the routine use of pesticides is generating complaints of illness by those who believe they may have been exposed. Complaints usually include immediate ill effects (nausea, vomiting, runny nose, diarrhea, headaches) and, occasionally, long-term concerns (cancer, birth defects). Responding to complaints received is important. Even though you may believe a complaint to be unfounded, a sensitive response is important. It's simply good business, and your approach can make a big difference in a person's reaction to your future use of pesticides. Sometimes, however, no matter what you do, a concerned citizen may pursue regulatory or legal actions against you. It is absolutely vital, then, to always be prepared for a worst-case occurrence.

For every complaint you receive, certain immediate steps should be taken — for your own protection and to reassure the complaining citizen.

1. Demand that the complaining person(s) immediately see their physician or be taken to a clinic or emergency room for blood and urine samples. If immediate analysis of the samples is not required, label them and store them in a freezer. (The samples will remain good for a long time, allowing later analysis if, for example, a lawsuit is filed six months down the line.) Be certain that the taking of the samples and their analysis or storage is documentable by a reliable third party. (Be able to accurately trace the chain of events.) If the complaining party refuses to allow the taking of samples, document the refusal.

2. The day a complaint is received, collect environmental samples from the spraying area. Spray-site samples of leaves, litter and soil should be collected. Also, similar samples from the complaining party's property should be gathered. Again, immediate analysis may not be necessary, so proper storage should be arranged. **IMPORTANT:** When collecting environmental samples, be

certain to include a credible third-party witness (e.g., off-duty policeman). This will permit corroboration of time, place and procedure if a subsequent regulatory or legal action arises.

3. If particular advice or assistance is needed, the best resource for help is your State Department of Agriculture. (Oregon Farm Bureau News, May, 1986. NERR July, 1986, p 3.) ■

from Chemically Speaking, July, 1986

EVERGLADES ANNOUNCES POA ANNUA

The Everglades Golf Course Superintendents Association announces the 13th annual Poa Annua Classic. The Naples Beach Club will host the event which will be held May 16-18. A half-day seminar from 8:30 to 12:00 on Sunday the 17th will feature Mr. Jim Robertson of Sports Enhancement Associates. Mr. Robertson's topic will be "The Other Side Of Golf."

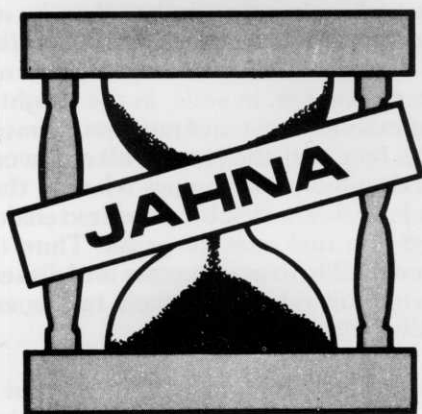
Along with the usual Sunday afternoon practice round of golf, there will also be a beach party for those who don't wish to play golf. The beach party will include volley ball, horse shoes, shuffle' board, and lawn croquet.

Sunday evening will be the scene of the usual outdoor dinner. However, the theme for this year's banquet will be "50's night" and entertainment is promised to be outstanding.

The tournament on Monday begins with an 8:00 shotgun start and will be followed by a golf clinic. This year Mike Calbot will be demonstrating the trick shot.

Cost per entry for the tournament is \$65.00 and will include one ticket for the banquet. Additional tickets for the banquet are \$35.00. The Beach Club is offering special rates for superintendents and their families who wish to spend the weekend. Rooms are \$50.00 for double occupancy. However, reservations must be made by April 15 to qualify for the special rates.

Proceeds from the event will be donated to turf research.



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— BETTER TURF — A World Concept

FRED V. GRAU

Director, United States Golf Association Green Section
Plant Industry Station, Beltsville, MD

Editors Note: The following article was presented at the 6th International Grasslands congress in August 1952. See letter on page 10.

Grass has many uses. The use of grass for turf purposes has no relation to forage or pasture; yet this use has the greatest direct appeal to the majority of civilized peoples. Turf, in our world concept, refers to sod of grasses used primarily for appearance—for instance, of a lawn—and for a wearing surface on sports fields, airfields, roadsides and other areas. Turf combines beauty with utility. Regardless of the main purpose for which turf may be established, the control of soil erosion becomes a natural consequence. Good turf on sports fields reduces injuries to players. Turf controls dust and wind erosion, which are so very important in areas where aircraft operate. A good lawn turf helps the housewife keep her home

clean. Good lawns around factories and offices raise morale and property values. Indeed, the value of turf to many millions of people cannot be denied.

Official recognition of turf management as a true function of the agriculture of a nation or a state or other political subdivision long has been delayed. A survey of the development of research in turf management reveals that a large part of the progress in the last half century has been the result of private funds. The pioneer among the states in the study of turf grasses has been the little State of Rhode Island, U.S.A. Turf plots at Kingston, R.I., have been operated continuously for over 50 years. Pennsylvania and New Jersey rank second and third, respectively, in the development of State turf programs. The private organization which has done much to develop turf knowledge in the United States is the United States Golf Association Green Section, organized in 1921. Scattered efforts to develop turf work at a few agricultural experiment stations before World War II subsided during the conflict. It must be recorded, however, that the cause of turf management was advanced during the Fourth International Grasslands Congress even though the subject was not officially recognized. The greatest expansion in turf work has occurred since 1945. One reason for the development is the American Society of Agronomy's recognition of turf management as a true function of agriculture and it has provided a section for turf within its corporate body. Since that action was taken, nearly half of the 48 States have developed a turf program. The largest of these include Pennsylvania, Georgia, Rhode Island, New Jersey, Indiana, and California.

The development of turf programs in England, New Zealand, and South Africa have been marked by significant achievements and excellent publications. A free interchange of information has helped to create a valuable fund of knowledge and the establishment of sound principles underlying the science of turf management. May the Seventh International Grasslands Congress give further recognition to this highly important, nonforage branch of agriculture!


Classification of Types of Turf

A natural method of classifying and identifying turf seems to be that related to use.

Lawn turf describes turf by location rather than by any particular grass or quality of turf. Probably in no other turf is it possible to find such a wide diversity in sun and shade, in the choice of grasses, in soils, in the height of cut, and in degree of management and mismanagement. The reason lies in the fact that the law problem is world wide, that uncounted millions of laymen who do their own cultural research, resident teaching, and extension, largely have ignored the turf uses of grass. Thus the institutions have been unable to accumulate and disseminate accurate information on turf to their taxpayers, students, and constituents.

Putting green turf immediately involves the concept of closely cut, immaculately groomed turf of the finest texture. It may be composed of any one of several grass

(continued on page 59)




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(continued from page 58)

species, but in order for a golf ball to roll smoothly to the cup when stroked, the quality must be of the highest order.

Fairway turf is familiar to most people as a smooth expanse of green grass which is the envy of many who would like to have a lawn like it. The golfer demands also a certain playing quality which may be described as a firm, closely cut cushion of turf which provides a good lie for the ball.

Other types of turf include cemetery, park, tennis, athletic field, golf-course tees, and golf-course roughs. Each type is bounded by a particular set of requirements which are similar in many respects.

Basic Attributes of Turf Grasses

Close Mowing

The true value of any grass for turf is determined first by its ability to thrive without injury under a system of management which includes close, frequent mowing. For this reason the height of cut is an important consideration in the testing of species and strains of turf grasses. Any grass, to be useful for putting greens, must perform satisfactorily when it is mowed daily at 3/16 of an in. There is no real compromise. Some of the best fairways are mowed at 1/2 inch. Therefore, any new fairway grass must perform well when it is cut at 1/2 inch on a three-times-a-week schedule. Lawn turf may include height of cut from 1/2 to 3 inches. Beyond that nearly any forage or pasture grass will survive if no premium is placed on quality. Some of the grass species which are included in turf-seed mixtures fail to qualify as turf grasses because they cannot tolerate close, frequent mowing.

Disease Resistance

The next important consideration in selecting and devel-

oping turf grasses is resistance to disease. Close, frequent mowing of any grass tends to reduce its ability to resist a disease attack or to recover from one. When water is applied artificially the problem is complicated further by providing conditions in the microclimate that are favorable to the growth of organisms. Add to this the effect of traffic on the grass blades and of soil compaction on root growth and it should be apparent that a grass, to survive the punishment of turf uses, must be rugged indeed. The diseases of turf grasses have been studied in a very limited way for more than a quarter of a century. This characteristically identifies the progress and development of turf research in the United States. The first publication on turf diseases appeared in 1932 by Monteith and Dahl. A more recent bulletin by Howard of Rhode Island amplifies the earlier work.

Drought Tolerance

Many types of turf in various parts of the world demand that the turf grasses be resistant to drought. The artificial application of water to supplement natural rainfall is utterly impossible in many locations and is inadvisable in others. The true value of a turf grass lies in its ability to produce satisfactory turf under natural rainfall conditions or with only the minimum of applied water where grass will not grow under natural precipitation. This attribute is a necessity not only to economize in operations but to preserve ground water supplies for agricultural, domestic, and industrial uses. It is important to use only minimum quantities of applied water even where the supply is abundant. Many areas of turf virtually have been ruined (unnecessarily and at great cost) by applying too much water! Only in recent years have we learned the evils of using too much water. Still more recently we have begun to correct the effects.

The ability of a grass to resist or to recover from attacks of various insects is a mark of superiority. The development of low-cost efficient insecticides, together with rapid methods of application, means that insect resistance is not of the first order of importance. Therefore, when performance records are being compared the grasses that are insect tolerant or resistant must be given preferences when other considerations are equal.

(continued on page 60)

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"Keeping Golf Courses Green"

(continued from page 59)

Color and texture frequently are given value far greater than can be justified under a plan of judging grasses by their performance under play. If two grasses should perform in identical fashion, preference naturally would be given to the one which developed the more pleasing color and texture is highly personal in character and can not be reduced to scientific terms capable of statistical analysis.

Resistance to weed invasion is a measure of the adaption and vigor of a grass which is affected by other attributes such as resistance to close mowing, diseases, drought, and insects. Weeds invade when turf density is lacking or when growth is checked or retarded. Weeds are the symptom or the effect. Too often we design elaborate systems of control for weeds in turf (treating the symptoms) before we seek the cause and devise a means of preventing weed invasion by producing turf that is capable of natural resistance through competition. Only in the past few years has any attention been given to weed control by competition under a system of generous fertilization, using superior strains of grasses. This represents a very fertile field for further development.

Major Turf Grasses

The principal turf grasses of the world are included within a surprisingly limited number of species. These have been reviewed adequately in Grass, the 1948 USDA Yearbook of Agriculture; and Turf Management, a book sponsored by the United States Golf Association, H. B. Musser, author. For the purposes of this discussion I shall name only the major ones.

In the warm-season group we find the Bermuda grass (*Cynodon spp.*), Zoysia grasses (*Zoysia spp.*), centipede grass (*Eremochloa ophiuroides*), St. Augustine grass (*Stetaphrum secundatum*), Bahia grass (*Paspalum notatum*), buffalo grass (*Buchloe dactyloides*).

Among the cool-season turf grasses are bluegrasses (*Poa spp.*), bent grasses (*Agrostis spp.*), fescues (*Festuca spp.*), and rye grasses (*Lolium spp.*).

Superior Strains of Turf Grasses

It is the considered opinion of most turf workers that the cause of better turf will be advanced most rapidly when superior strains of turf grasses are produced and made available to the consuming public. Crab grass, the curse of turf in many countries, and other weeds represent simply an expression of the failure of the grasses we use to compete successfully with weed pests. The impact of disease, insects, wear and tear, poor soils, and indifferent management has been too much for the common pasture grasses which have been harvested and sold as turf grasses. The super-turf that is needed to overcome these hurdles has not been produced as yet, but important advances have been recorded. Here are some of the significantly superior types of turf grasses used in the United States:

BENTS

Arlington (C-1)
Cohansey (C-7)
Congressional (C-19)
Dahlgren (C-115)
Polycross seed

CHEWINGS FESCUE

Penn State Chewings fescue

BLUEGRASS

Merion

BERMUDA GRASS

U-3
Tifton 57
Tifton 127
Gene Tift

CREEPING RED FESCUE

Polycross seed (synthetic blend)

ZOYSIA

Meyer (Z-52)

The list of superior varieties is meager indeed. Much work lies ahead of us in the field of genetics and plant breeding so as to develop the superior qualities which are needed in all of our turf grasses. Until we have the right grasses, much of our work with fungicides, herbicides, and insecticides represents a "marking time" in doing the best we can with what we have.

(continued on page 61)

NEW TEE CONSOLE with a TRADITIONAL LOOK

The new Traditional Console from Standard Golf Company combines function and style for your tee area with traditional look. Simulated wood grain tee information signs in natural brown or weathered gray finishes give your course a more natural look without the maintenance problems associated with wood. Or if you prefer, a silk-screened metal sign can be used to highlight your course logo. This rugged console includes a Professional Ball Washer, Litter Caddie, and Spike Kleener, in your choice of color, and your choice of two distinct Information Signs. The Tee Data Information Sign has up to four color coded yardages to match the course's tee markers.

The Traditional Console is built with 2", 16 gauge, square steel tubing, and finished with a polyester-thermosetting powder coating for a long lasting finish. All Standard Ball Washers, Spike Ball Washer, Spike Kleeners and Litter Caddies are interchangeable between styles of consoles. This Console is solidly built, yet can be easily moved for mowing and to prevent heavy traffic patterns. If permanently mounted, it can be easily mowed around as it has a 2" clearance. ■

Other Achievements in Turf Management

The National Coordinated Turf Program, headed by the United States Golf Association Green Section, is an achievement of which we can be justly proud. It was developed primarily on a research basis, but several schools have established courses of study in turf management with the result that undergraduate students in 4-year colleges have an opportunity to specialize in this important field. Extension services have recognized their duties and responsibilities with regard to turf problems in a few colleges. Penn State was the first (1935) to employ a full-time extension agronomist for extension work in turf. This phase of turf management on a national scale is still by far the weakest point in the entire program, when it should be the strongest.

Cool-Season and Warm-Season Grasses Combined

One of the great advances made in the first against weeds and for more perfect turf was reported by Grau and Ferguson in, What's new in Crops and Soils, for June-July, 1949 under the title, "Bad News for Crabgrass." The article described the trails at the Beltsville Turf Gardens where *Zoysia japonica* and various cool-season grasses were developed into a blend or combination turf which is remarkably resistant to weeds. Since that time we have discovered that the combination of Meyer Zoysia and Merion bluegrass developed as turf superior in every way for most lawn and fairway uses where it is adapted. The limits of the regions of adaption for this combination are not known but they appear to be very broad. This principle of developing a permanent turf of a warm-season and a cool-season grass is sound and deserves intensive study in all the regions where turf work is conducted.

Fool-Proof Fertilizers Needed

The development of a more fool-proof fertilizer long has been awaited. Only the professional turf superintendent can use ordinary fertilizers on our common grasses with any degree of success. Indeed, much turf is starved simply because the home gardener is afraid he will burn the grass if he fertilizes adequately. Organic fertilizers most nearly answer the problem. The recently developed ureaform materials act like the organic nitrogen carriers and can supplement the supply of natural organics.

Cultivating the Soil Under Turf

Various forms of spikers have been designed to aid in water absorption. Although used widely, they have failed in the needed purpose of loosening the soil to allow air and water to circulate freely. The development of the tubular tine in 1919 in England was a step forward, but it also failed to loosen and cultivate the soil. Not until 1946, when the half-round curved spoon was designed and built into a machine, was true soil cultivation beneath the turf achieved without destroying the surface. Data was developed to indicate the efficiency of the curved spoon in aiding water infiltration, penetration of fertilizer mate-

rials, and development of roots.

We must not fail to record here our advance in knowledge of selective weed control. The development of 2, 4-D and methods of using it successfully on turf rapidly have advanced the cause of better turf. Sodium arsenite gradually is gaining in popularity among professional men, and potassium cyanate finds more friends daily among the laymen. Mercury preparations have found limited application, and several new compounds appear to be very promising.

In the field of turf fungicides there have been several notable achievements. Mercury preparations, long the standard treatment for dollarspot and brownpatch, have found worthy rivals in the cadmium and in thiuram compounds. There are a number of turf diseases for which there are no specific treatments. In all probability the solution will lie in the development of superior varieties of grasses.

The ultimate development of turf management in all its phases, for the benefit of the millions of civilized peoples who need and want good turf, in a large measure will depend upon our ability to obtain full recognition among the tax-supported institutions of the world. The brunt of the burden has been carried by private funds far too long a time. It is the duty and the privilege of the agricultural colleges to meet the needs of all the taxpayers. It is true that food production is paramount, but as long as there is a gross waste of funds, time, and effort in turf management, the need for research, education, and extension service should be met. ■

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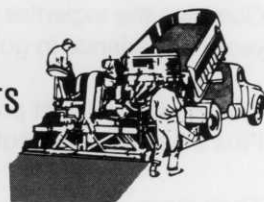
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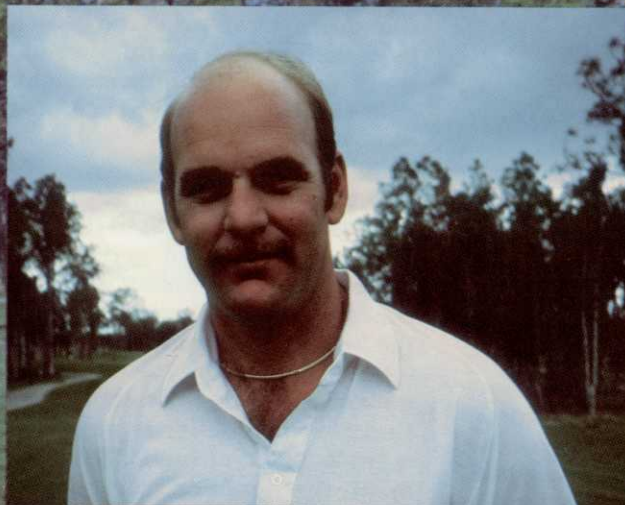
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Vintage Country Club, Ft. Myers, Florida

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Chuck Garrett

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"MAXI III is at the front of golf's move into a new era of water management technology."

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Larry, what makes Turf Growth Regulator Plus Fertilizer unlike anything on the market today? "Scotts®

Turf Growth Regulator Plus Fertilizer is the first product registered to regulate the growth of fine turf. Based on technology developed by Scotts and tested at field stations and golf courses throughout the South since 1982, Turf Growth Regulator Plus Fertilizer not only slows the growth of grass, it reduces the amount of nutrients necessary to maintain dark green turf. The result is prolonged and enhanced greening, well beyond what fertilizer alone can achieve. And mowing requirements during the control period will be reduced by up to $\frac{2}{3}$."

How does it help reduce mowings and clippings?

"Turf Growth Regulator Plus Fertilizer is a combination of Scotts Fairway Fertilizer and a unique growth regulator.

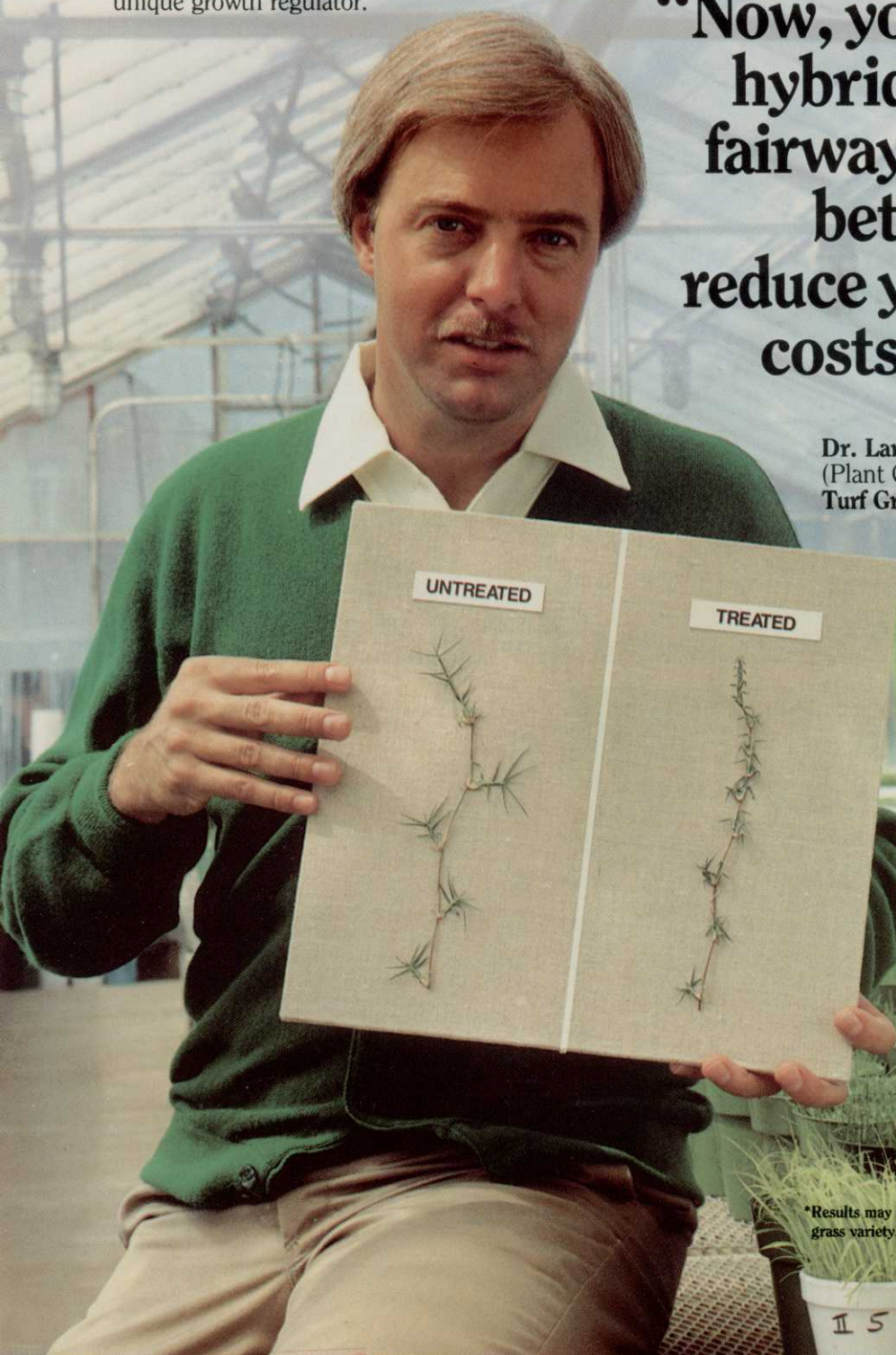
Applied during the height of the growing season, it dramatically slows the growth of hybrid bermudagrass for up to 8 weeks by altering the balance of growth hormones. The grass plants continue to produce shoots and leaves, but they grow much shorter and generally below the level at which mower blades are set."

What about color response? "In addition to the reduced vertical growth, an application of Turf Growth Regulator Plus Fertilizer yields an enhanced green color for up to 12 weeks. The result is a greener, denser turf with better golf ball playability and less susceptibility to scalping."

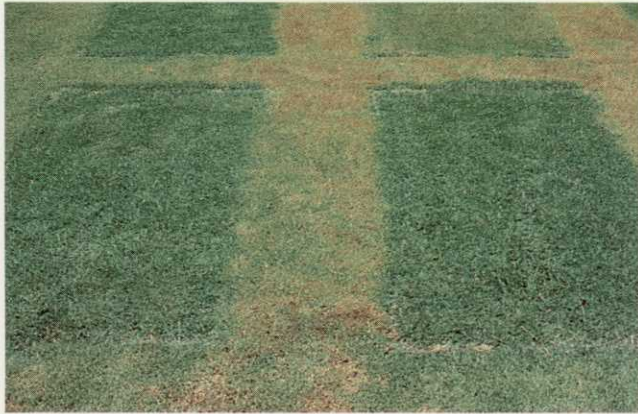
For more information on Scotts new Turf Growth Regulator Plus Fertilizer, call your ProTurf Tech Rep. Or call Scotts direct at 800-543-0006.

"Now, you can grow hybrid bermudagrass fairways a new and better way...and reduce your mowing costs by up to $\frac{2}{3}$."*

Dr. Larry Widell, Scotts Research project leader (Plant Growth Regulator R&D), talks about new Turf Growth Regulator Plus Fertilizer.



*Results may vary according to weather conditions, soil types, grass variety, and turf management practices.



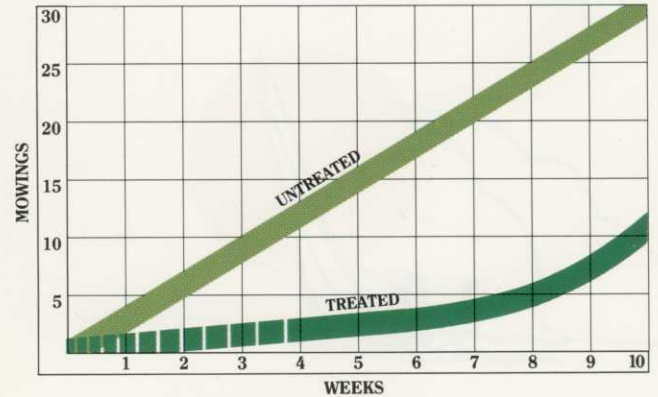
This hybrid bermudagrass was mowed after 7 days of growth. Scalping is obvious in the untreated walkways. Sections treated with Turf Growth Regulator Plus Fertilizer (left and right) were not scalped.



Balls take a better lie, and playability improves on the denser, more tightly knit treated turf (right).

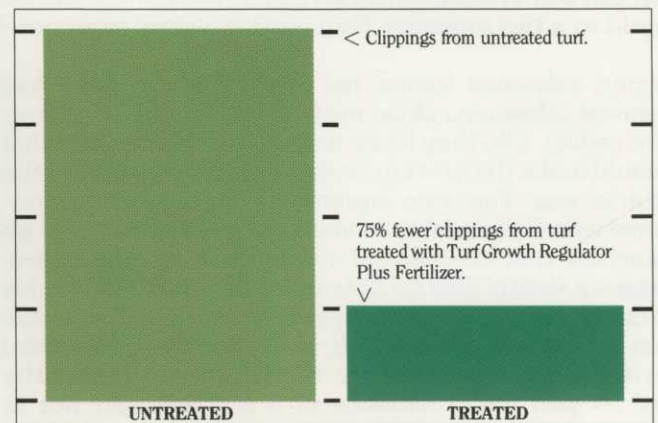


Turf treated with Turf Growth Regulator Plus Fertilizer (fairway area to the left) continues to show good color response 11 weeks after application in this comparison with fertilizer only.



FEWER MOWINGS

Over a 10-week period, you can mow fertilized turf about 30 times. Turf treated with Turf Growth Regulator Plus Fertilizer may require as few as 10 mowings. Treat your fairways twice during the summer growing season and continue to realize similar mowing savings. You save on labor, fuel, and equipment maintenance and replacement costs. And your crews can be working on other priority jobs.



FEWER CLIPPINGS

During the period your turf is under control, you can take off up to 75% less clippings when you mow, compared with a fertilizer-only program. This means fewer clippings left on fairways. More important, you can keep most of that desirable green color in your fairway turf where it belongs.





Suncoast Sails

By Larry Livingston
Gator Creek Golf Club

What Makes A Good Salesman

The turf products salesman is an essential part of the turfgrass industry. This person should do much more than just sell. A good salesman can be worth their weight in gold to a turf manager. But, what is a good salesman?

A good salesman knows his product line. I have had chemical salesmen call on me who had no idea what they were selling. Oh, they knew it was good for turf and that it would make the grass greener but had no idea what the material was. I've seen equipment company sales personnel who were unable to make a simple adjustment on a machine that was being demonstrated. A sales representative should also be able to intelligently discuss his products. He should take the time to gather information from a variety of sources, I.E. their company, published literature, turf managers, etc. this information should be used to gain the confidence of a turf manager not to mislead him.

A good salesman has literature, labels, etc. available for the products he offers. If the information is mailed, it must be done within a reasonable amount of time. It also helps to provide the names of other turf managers in the area who have had experience with the product being sold. Written testimonials are of little value since they can sometimes be deceptive. It's a bad practice for a salesman to call a person whom the customer does not know and ask them for a testimonial. This guy could be some jackleg from who knows where who is in with the salesman trying to make a buck. The customer should be given some names of turf managers who he knows so he can call them at his leisure.

A good salesman should not use high pressure tactics to make a sale. This turns many customers off fast. A customer who buys something because of a pushy salesman, may end up not being satisfied with the product. When this happens, repeat business is not very likely. Customers should not be pestered by a salesman. Making routine calls is ok but the welcome mat can get worn out if the salesman visits too often and/or takes up too much of the customers time. A salesman has no grounds to get out of shape if a customer does not have time to see him. Calling ahead for an appointment can avoid any problems here. If the appointment cannot be made, a phone call is appropriate.

A good salesman will go an extra step to help a customer. When I need a product it is very comforting to know that my salesman will stay on top of it until it is in my hot little hands. If it's an emergency he will do everything in his power to expedite delivery. I've had salesmen who have taken a badly needed part off a new machine in their warehouse and delivered it to my shop. Their help in a crisis is almost always remembered when machine ordering time comes rolling around.

A good salesman does not hold a grudge when he has lost a sale to a competitor. Instead, he should work harder to make the next sale. This is very important because it can affect future dealings. A salesman who criticizes a customer for not seeing his way is just asking for trouble when the time comes for future negotiations.

A good salesman will not try to buy your business. A person who opens their trunk full of merchandise and says that if you buy a 30 gallon drum you get a radio or watch and for a 50 gal. purchase you get a television or microwave oven is not very ethical. I've heard superintendents at new jobs talk about seeing drums of worthless chemicals in storage knowing that kickbacks were taken. This is a degradation to our industry's reputation. Superintendents who participate in these shady deals usually don't keep their jobs very long.

A good salesman will back his products. After the machine is sold the salesman's work has only just begun. He should review the operating procedures with the superintendents and/or operator when the machine is used for the first time. The machine should be thoroughly checked for proper adjustments, the operator should be checked for proper operation, and any very important or unusual maintenance requirements should be reviewed with the mechanic. This way many minor but potentially major problems can be nipped in the bud. After the machine has been in use for a short period of time, the salesman should return to make sure everything is kosher. The correction of any problem with the machine should be monitored.

Yes, a good salesman is a very important part of the turfgrass industry. The service he provides is another tool the turf manager uses to produce the end product... fine turf. We must remember that this service does not come cheap. When making a purchase the turf manager should consider service from the salesman as well as the company. Good service is worth a little extra money, don't overlook it!



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Naturally, products like these are only as good as the company that stands behind them. And nobody offers you more technical support than Chipco with our field force exclusive to turf and ornamentals.

In 1987, Chipco will introduce new formulations of three Chipco products. But we're not stopping. Exciting new products soon to earn the Chipco name are in various stages of development.

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Anchor It is the fast easy way to hold sod and turf covers in place. No more tedious staking...no more anchoring problems. Firmly holds materials in place on even the steepest slopes.

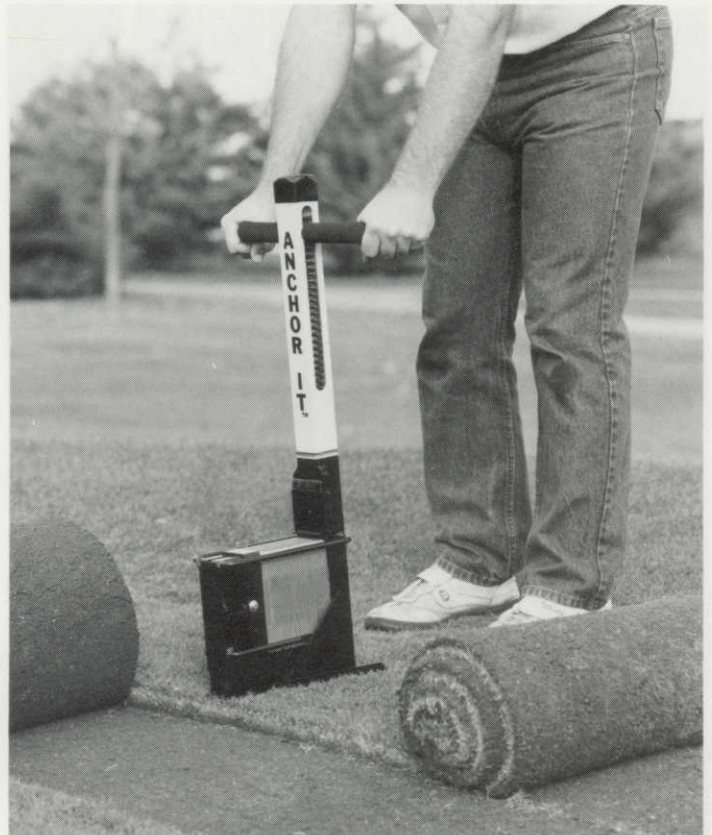
Anchor It works like a large staple gun. Simply position Anchor It in place, press down on the spring loaded handle and a sturdy, 6" long steel staple is set to hold sod, greens covers or landscape sheeting firmly in place.

Sturdy cast aluminum construction is lightweight (it weighs less than 10 lbs.) for easy use. Handles are cushioned with foam.

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Anchor It can save enough time by speeding up your anchoring operation to pay for itself in a very short time—and make your work easier as well.

Anchor It works fast...Anchor It holds fast.



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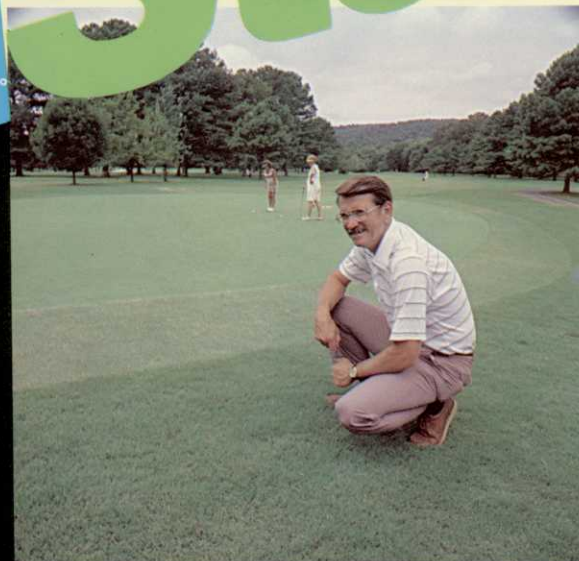


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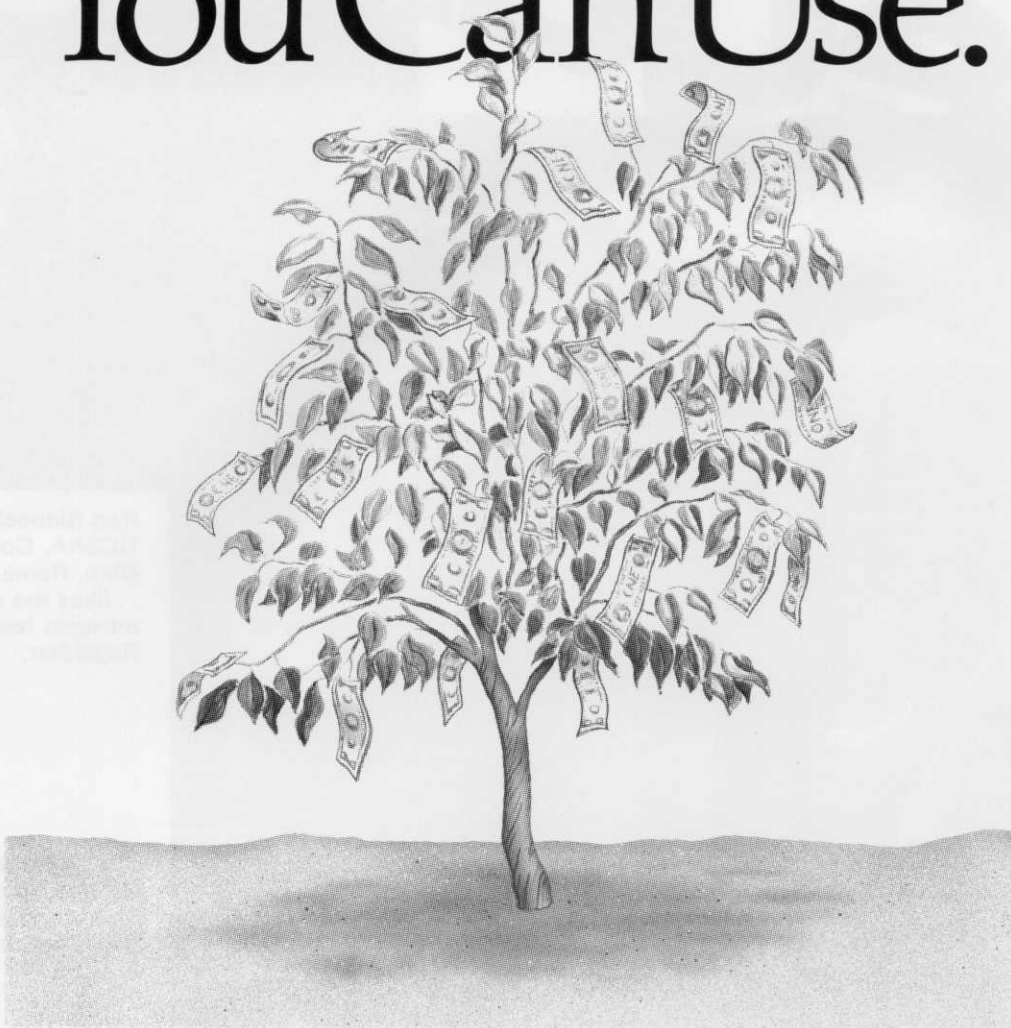
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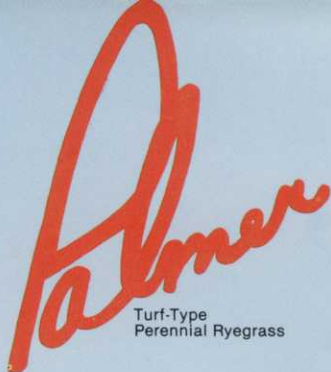
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Variety	2-Yr. Avg.	Variety	2-Yr. Avg.
Palmer	5.9	Derby	5.5
Gator	5.9	Yorktown II	5.4
Prelude	5.8	Cowboy	5.4
Repell	5.8	Pennfine	5.3
Tara	5.8	Diplomat	5.3
Premier	5.7	Regal	5.3
Citation II	5.6	Barry	5.2
Manhattan II	5.6	Delray	5.2
Blazer	5.6	Omega	5.1
All Star	5.6	Elka	5.1
Ranger	5.6	Manhattan	5.1
Birdie II	5.5	Citation	5.0
Fiesta	5.5	Linn	3.4
Pennant	5.5		

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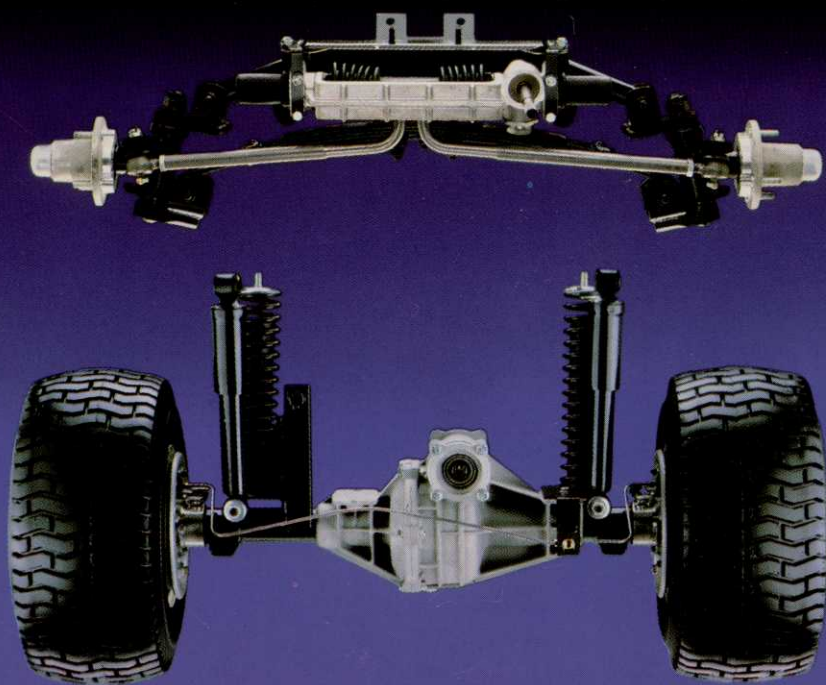
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