



# The Florida Green

SUMMER 1987

JUPITER HILLS CLUB  
NINTH HOLE, PAR 3  
HILLS COURSE



WE'RE INTRODUCING IMAGE<sup>®</sup>  
FOR A LOT OF REASONS,

Until now, controlling purple nutsedge in turf was a tall order. No matter what you did to eliminate it, the problem kept popping up.

That's why American Cyanamid developed new IMAGE<sup>®</sup> herbicide. It's the first post-emergent product that controls purple

nutsedge in warm-season grasses. Even when temperatures are at seasonal highs.

IMAGE is also effective against other tough-to-stop weeds. That includes wild garlic and wild onion.

What's more, you can use IMAGE herbicide on all warm-season turf species

BUT ONE STANDS OUT.

(except Bahiagrass) and all soil types— with no volatilization. And it's compatible with fertilizer as well as other herbicides for tank mixing.

So ask for new IMAGE. The only herbicide for turf that stands up to purple nutsedge.



Always read and follow label directions carefully.

IMAGE<sup>®</sup>  
herbicide



# LESCO SELLS IT.

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, Inc., 20005 Lake Road, Rocky River, Ohio 44116 (216) 333-9250

# The Florida Green

The Official Bulletin of the Florida Golf Course Superintendents Association

Florida Green Phone: Days - (305) 793-2497

Officers and Directors for Florida G.C.S.A.

**REED LeFEBVRE** ..... **President**

*Plant City Golf & Country Club  
3102 Coronet Rd., Plant City, FL 33566 • (813) 752-1524*

**TOM BURROWS, C.G.C.S.** ..... **Past President**

*Turtle Creek Club  
Club Circle Dr., Tequesta, FL 33458 • (305) 746-8911*

**RICHARD C. BLAKE, C.G.C.S.** ..... **Vice President**

*Quail Ridge Country Club  
3715 Golf Road, Boynton Beach, FL 33436 • (305) 737-2889*

**JOEL JACKSON** ..... **Secretary-Treasurer**

*Lake Buena Vista Club  
6780 Tamarind Circle, Orlando FL • (305) 828-3664*



Golf Correcting Water Usage Image



1st Place 1985

**DAVID LOTTES** ..... **South Florida**  
*Rolling Hills Golf Resort (305) 475-0400*

**MARK HENDERSON** ..... **Palm Beach**  
*Mayacoo Lakes Country Club (305) 793-1706*

**KEVIN DOWNING, C.G.C.S.** ..... **Treasure Coast**  
*Mariner Sands Country Club (305) 283-7500*

**JOE ONDO** ..... **Central Florida**  
*Winter Pines Golf Club (305) 671-1651*

**DAVID MOTTE, C.G.C.S.** ..... **Everglades**  
*Wildcat Run Country Club (813) 765-0750*

**ROBBIE ROBBINS** ..... **North Florida**  
*Gainesville Golf & Country Club (904) 375-3037*

**WILLIAM SMITH, C.G.C.S.** ..... **Gulf Coast**  
*Killearn Country Club (904) 893-2412*

**CECIL JOHNSTON** ..... **West Coast**  
*Feather Sound Country Club (813) 576-9353*

**GARY SMITHER** ..... **Sun Coast**  
*Tournament Players Club at Prestancia (813) 923-3104*

**DAN JONES, C.G.C.S.** ..... **Florida Green Editor**  
*Banyan Golf Club  
9059 Ranch Rd., West Palm Beach, FL 33411 • (305) 793-0069*

**DICK LONG** ..... **Printer**  
*Printing Services, Inc.  
3249 N.W. 38th St., Miami, FL 33142 • (305) 633-2571*

## TABLE OF CONTENTS

President's Message .....	8
North Florida Divots .....	10
The World of Golf .....	16
Palm Beach Trade Winds .....	22
New Labor Law .....	24
What Pests Cost Floridians — Biological Pest Control Opportunities .....	26
The Gator Grows .....	38
Preventive Maintenance — Another Freedom to Enjoy .....	40
Jupiter Hills: Site of U.S. Amateur Championship .....	58
New Era of Ag Microbiology .....	61
Disciplinary System for Golf Course Maintenance Crews .....	64
Letters to the Editor .....	68

## ABOUT OUR COVER

Jupiter Hills Club is located on the lower east coast of Florida and is the site of the 1987 Amateur Championship. Dick Herr is the golf course manager. See story on page 58.

**DANIEL ZELAZEK**  
Cover Photography

For reprints or other photographic needs, call Daniel at (305) 746-2123.



## Florida Green Reporters

<b>South Florida</b> .... (305) 563-2229	<b>George Jones</b>
<b>Palm Beach</b> .... (305) 482-1005	<b>Mike Bailey</b>
<b>Treasure Coast</b> .... (305) 231-6885	<b>Jim Callaghan</b>
<b>Central Florida</b> ... (305) 828-3663	<b>Joel Jackson</b>
<b>North Florida</b> .... (904) 384-8038	<b>Donald Kooyer, C.G.C.S.</b>
<b>West Coast</b> .... (813) 867-2111	<b>Charlie Miller</b>
<b>Everglades</b> .... (813) 768-0892	<b>Norman Carmouche</b>
<b>Sun Coast</b> .... (813) 792-2943	<b>Jim Svabek</b>
<b>Gulf Coast</b> .... (904) 932-4222	<b>Charles Brasington</b>

**NOTICE:** All correspondence concerning business matters, circulation, editorial and advertising should be addressed to the Editor, P.O. Box 5958, Lake Worth, Fla. 33466. Opinions expressed by writers in by-lined editorials are not necessarily those of this publication. "The Florida Green" is published quarterly: January, April, July, October. Closing date for advertising and copy is 45 days prior to publication. Not copyrighted. Please credit the author and "The Florida Green." All advertising and circulation matters should be addressed to Irene Jones, Assistant to the Editor, at the above address or telephone (305) 793-2497.



NOW, THE FIRST NAME  
IN FUNGICIDES IS  
THE LAST WORD  
IN CONVENIENCE.

INTRODUCING  
NEW CHIPCO®  
26019 FLO.

FUNGICIDE

---

The easy way to stop major  
turf diseases for up to  
four full weeks.

---

Thousands of golf course superintendents have discovered one important fact. You just can't beat Chipco 26019 fungicide for controlling turf diseases.

And now you can get all the advantages of Chipco 26019 wettable powder in a convenient flowable formulation. New Chipco 26019 FLO.

Like the wettable powder, new Chipco 26019 FLO offers unsurpassed protection against major turf diseases, including Helminthosporium Leaf Spot and Melting Out, Dollar Spot, Brown Patch, Fusarium Blight, Red Thread, Fusarium Patch, plus Gray and Pink Snow Molds.

Chipco 26019 FLO also delivers the same long-lasting residual control. In fact, both Chipco 26019 formulations protect your turf for up to 28 days.

With Chipco 26019, you also get the added benefits of convenience, no phytotoxicity, pesticide compatibility, low toxicity and no corrosiveness.

Wettable Powder or new FLO, it's easy to see why Chipco 26019 is the Number 1 name in turf disease control.

Rhone-Poulenc Inc., CHIPCO  
Department, P.O. Box 125,  
Monmouth Junction, NJ 08852.

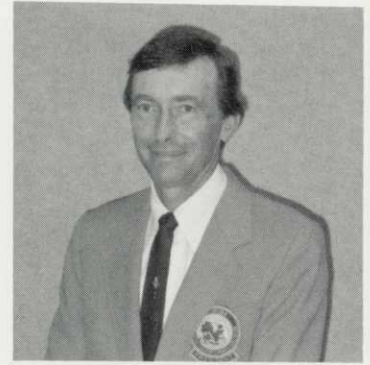


CHIPCO®  
26019

FUNGICIDE

Please read label carefully and use only as directed. CHIPCO® is a registered trademark of Rhone-Poulenc Inc.

# President's Message



There are many demands on our time and money. Getting the most of both takes serious thought and research. We, in the golfing industry, are well aware of the increasing amounts of time and particularly money, that it takes to run a golf course.

A large part of our increasing cost is in the chemicals that we must use to give our members and the golfing public, the beautiful golf courses they want and expect.

Ten years ago we could treat a golf course for nematodes at a cost of from \$25 to \$50 an acre. Today to *try* to get the same control the cost runs up to \$300 an acre. A large portion of our most effective chemicals have been taken off the market, some rightfully so, some not.

The chemicals we have available to us now are not as effective as what we had in the past, and they can cost up to ten times as much.

## WHAT ARE THE ANSWERS?

We don't have the answers right now, but we are working hard to find them.

The University of Florida, with what little funding can be scraped up, is working on research to answer some of these questions.

## WHAT CAN BE DONE?

The nine chapters of The Florida Golf Course Superintendents Association have raised nearly \$50,000 to go towards this research, that is how important we think it is.

How important do you the club member, or club official think this research is? Do you like the idea of your dues, or your clubs expenses skyrocketing as they have been? We all have to share the burden of this.

## WHAT CAN YOU DO?

You can support your superintendent in our efforts to raise funds for *The Florida Turfgrass Research Foundation*. Individual donations are crucial to this research effort, without individual participation in this effort, it will fall flat.

Some of the golf clubs, who would appear to have the most to gain from this research effort, have been the most reluctant to support it.

Money given to *The Florida Turfgrass Research Association* or an endowment fund in the foundation, is tax free.

Consider this. We have to control mole crickets. We spray our course with a product that costs approximately \$7 per pound and we use 1-2 pounds per acre. This product will give us control for 2-3 days depending upon whether it rains or not. We treat 60 acres at a cost of from \$400 to \$800 depending on which rate we use. And the next week we start over again.

With the research we are trying to get done, it is realistic to say that this cost can be cut dramatically.

If each club would donate an amount equal to, or more than, what they spend on ONE SPRAY APPLICATION, it will go a long way towards our research goals. And by doing so it will not only save the clubs money, it will also provide a much safer and desirable way to control insects.

Please take time to seriously consider your commitment to a cleaner environment and support our research efforts.

---

Look to Chipco for full-course  
protection against disease,  
insects and weeds.

---

When it comes to turf care, you look for products from companies you can count on, year in and year out. That's why more golf course superintendents look to Chipco professional turf products than any other brand.

Over the past 30 years, Chipco has developed outstanding turf products such as Chip Cal many superintendents will remember for its outstanding control of poa annua. More recently we introduced Chipco® Ronstar® preemergence herbicide, Chipco 26019 fungicide and Chipco Mocap® nematocide- insecticide.

But we're not standing still. Just last year, we ushered in a new era in pythium prevention with our new Chipco Aliette® fungicide—the first of a new generation of advanced chemistry to carry the Chipco name.

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.

So when it's time to order your turf care products, remember Chipco, the company with the ongoing commitment to helping you care for your course.

Rhone-Poulenc Inc., CHIPCO Department,  
P.O. Box 125, Monmouth Junction, NJ 08852.



# CHIPCO®

Please read labels carefully and use only as directed.  
Chipco Mocap 5G is not yet available for sale.

CHIPCO® RONSTAR® MOCAP® and ALIETTE® are registered trademarks of Rhone-Poulenc Inc.

# DIVOTS

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



## GCSAA Leader in Education

A certified Golf Course Superintendent has many responsibilities that have to be filled. It is one of those responsibilities that I would like to bring to light in this article.

Today's mail, as usual, consisted of invoices and purchase orders which have to be signed and sent up to Carol, our office manager. She needs these as soon as possible in order to keep my budget in line. I hope that all superintendents let their office personnel know how much they appreciate their help in this important area of golf course management.

But...getting back to my mail...near the end of the stack there is a letter from our Golf Course Superintendent's Association of America's headquarters in Lawrence, Kansas. It reads, "Dear Mr. Kooyer, we are writing in regards to a request from Mr. Robbie Robbins, the superintendent at Gainesville Golf and Country Club. We would appreciate it if you could find the time to make a visitation to Mr. Robbins golf club. There will be another superintendent accompanying you from your area."

I was so intrigued by this letter of invitation from my peers and from the GCSAA that the ringing of my desk phone was ignored until I did not think anyone would be on the other end by the time I picked up the receiver. I finally answered, "Good morning, Willow Lakes Maintenance, may I help you?"

"Don, this is Tom Prescott from Timaquana Country Club. Have you received a letter from our national golf course superintendent's association?"

"Yes, but I am only about halfway through reading it, have you read your letter yet?"

"Yes, and it asks if we can set a time to go over to Robbie's club for a certification visit. Can you make it?"

"I am sure I can, Tom. I will call Robbie and let him know that we can come over and I will call you right back Tom; I think we should go over as soon as possible, don't you? I think we should schedule this visit for Robbie right away."

"Tuesday is a good day for me here at Timaquana. How about you?"

"Tuesday would be fine as far as I am concerned. I will check my calendar and let you know for sure when I call you back. Talk to you later, Tom, and thanks for calling."

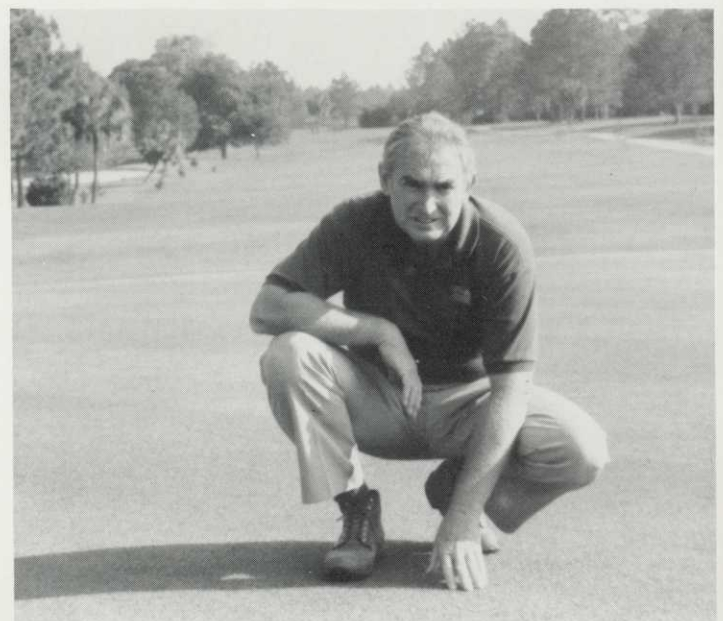
After hanging up I think to myself, it certainly feels good to be involved in helping another professional in my field. I finish reading the GCSAA letter and realize how good it feels to have the opportunity afforded to me to conduct the visitation portion of the certification program. As I start wondering how to start the visitation, the ever present phone rings again. I catch it on the first ring this time, "Willow Lakes Golf Club, may I help you?"

"Don, this is Chris, How are things on the course this morning?"

"Pretty good, Chris. Had a little vandalism last night, the men are taking care of it. Can I help you?"

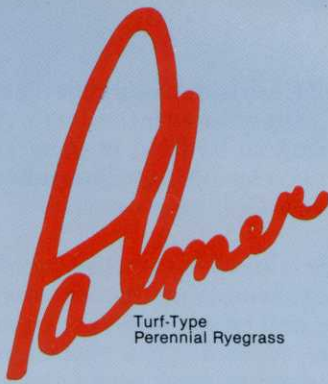
"We are having a shotgun start this weekend at about 7:15 am. I thought I had better let you know."

*(continued on page 12)*



*Not only root development, but a true putting surface is one of Robbie's concerns. Robbie told me years ago, "Don, maintain excellent greens."*





Turf-Type  
Perennial Ryegrass

# Still the Best

That's right. For the second year in a row Palmer turf-type perennial ryegrass scored number one in the National Ryegrass tests conducted by the U.S.D.A. coast to coast:

## U.S.D.A. National Perennial Ryegrass Test\* Turf Quality 1-9 (9 = Best)

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		

It's no wonder courses like Bay Hill in Florida, Shinnecock in New York, PGA West in California and Sahara in Nevada are only a few of those that are demanding the excellent performance of Palmer.

As a turf professional wouldn't it be nice to know you're using the best? Use Palmer.



### Lofts Seed Inc.

World's largest marketer  
of turfgrass seed  
Bound Brook, NJ 08805  
(201) 356-8700

To locate the Lofts' distributor nearest you, call  
(800) 526-3890 (Eastern US)  
(800) 547-4063 (Western US)

\*21 Test locations: Kingston, RI; Ithaca & Riverhead, NY; North Brunswick & Adelphia, NJ; Beltsville & Fairland, MD; Blacksburg & Springfield, VA; Lexington, KY; Mississippi State, MS; Ames, IA; St. Paul, MN; Lincoln, NE; Stillwater, OK; Fort Collins, CO; Everett & Puyallup, WA; Hubbard, OR; San Jose & Riverside, CA.



Lofts/New England  
Arlington, MA  
(617) 648-7550

Lofts/Great Western  
Albany, OR  
(503) 928-3100 or  
(800) 547-4063

Lofts/New York  
Brewster, NY  
(914) 278-2710

Lofts/Maryland  
Beltsville, MD  
(800) 732-3332  
(800) 732-7773 (MD)

Sunbelt Seeds, Inc.  
Norcross, GA  
(404) 448-9932 or  
(800) 522-7333

Oseco Inc.  
Brampton, Ontario  
Canada  
(416) 846-5080

(continued from page 10)

"That is great Chris, thanks. Is there anything special that needs to be done?"

"If you could put out our special Willow Lakes flags and have the barbeque grill ready we would appreciate it."

"OK Chris, we will have them ready. Thanks for calling and letting us know about the tournament on Saturday."

As I hung up the phone I wrote down the information the pro shop had just relayed to me for the weekend. 'Communications' I wondered if Robbie has as good a communications system as our staff at Willow Lakes. Before I realize it, I have already started on the visitation at Robbie's course.



*Mr. Thurman Lee in his maintenance area — it was apparent to Tom and I that a maintenance schedule is utilized at Gainesville C.C., one of Mr. Lee's tools in his professional maintenance operation.*

I decide that the first thing to do in order to set up a professional meeting is to get all parties together. As I was jotting down some steps that should be taken at the course inspection I was contacting the third party via telecommunications to the Gainesville Country Club.

I have known Mr. Robbins for four years. When I came to Florida Robbie had contacted me about joining the North Florida Golf Course Superintendent's Chapter. (He was the President at the time.) As the phone rang I asked myself, should I talk to him as a friend or as a certified golf course superintendent representing the GCSAA?

The ringing stopped, "Gainesville Golf and Country Club"

I had to say something, "Mr. Robbie Robbins please."

"One moment, sir." Phone clicks on desk. This is one of those times when you hope for a hold with FM music.

I begin to feel like I did when I first talked to our association from the secretary and vice president's side of the podium.

"Robbie here, can I help you?"

Be professional I decide, "Mr. Robbins, this is Don Kooyer

from Willow Lakes Golf Club in Jacksonville. I am calling in regards to a Golf Course Superintendent's Association of America visitation to be held at your club. Mr. Robbins, there will be two class A superintendents coming to visit your club, of which I am one."

Contact had been made with all the parties involved and after a few more business telecommunications with each party we had the dates and information provided by the certification committee ready for the visitation. To be able to judge and be judged by your peers can be one of the best emotional highs in ones professional career. As a member of the national Golf Course Superintendent's Association of America I am very proud of having this chance to work with the superintendent from Timaquana Country Club. Tom and I are director and officer respectively in the North Florida Chapter and will represent our association in this endeavor also.

The day of the visitation I had to meet Tom at Timaquana Country Club so Tom and I could commute to Robbie's facility together. When I arrived at Tom's course I could see why Tom's facility was one of the popular clubs in Jacksonville. My course is only a turn around the bend and this was the first visit I had made to Timaquana. As I drove past the clubhouse and down the winding road to the maintenance facility I could tell the grounds were professionally maintained. Everything was trimmed and manicured from the flower beds that surround the stately southern clubhouse to the shrubs that trailed toward the Saint Johns River. The river rolls past the clubhouse heading to the Atlantic. The palms swaying in the breeze seem to be guarded by the hundred year old and older oaks that guided me down the lane. As I pulled into the maintenance area everyone was involved in their duties. Tom invited me into his office and we had coffee. He introduced me to his assistant and we had a short tour of the maintenance facility. At the same time, we talked about some of the things we should bring up at Robbie's course during our visitation later that morning.

When Tom and I arrived at the Gainesville Golf and Country Club we had both looked over the itinerary that the GCSAA had provided for us. Tom would handle certain areas of the interview and I would handle other parts. When Robbie met us at the maintenance area we introduced ourselves as Golf Course Superintendent Association representatives to perform an inspection of his facility for the purpose of his certification in the Golf Course Superintendent's Association of America.

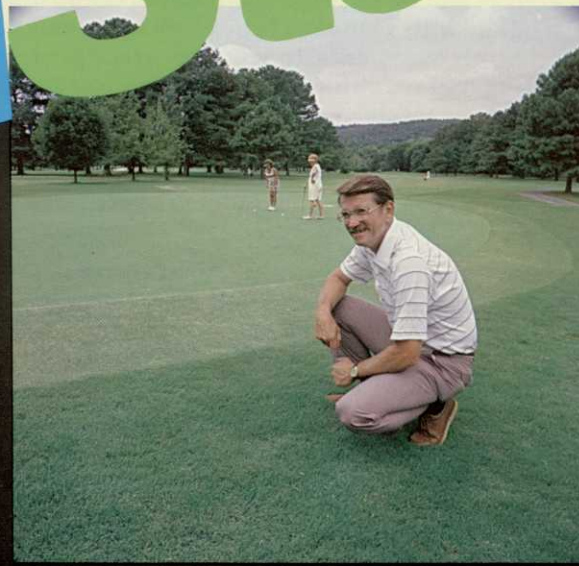
I made up my mind that this was a business trip and I was not only representing the GCSAA but also my professional club.

Having been a superintendent for fifteen years and a certified superintendent for slightly less, I have a good feeling for what has to be done at a golf course facility. Robbie made us feel at ease and opened his club for our inspection.

We started at the maintenance facility. All areas were well signed with respect to safety; such as fire extinguishers, gasoline pumping station, pesticide usage area, etc. Floors in all buildings were clean and policed, equipment not being used was stored in proper areas.


(continued on page 14)

# RegalStar™



**Ron Sinnock**, Certified GCSAA, Coosa Country Club, Rome, Georgia . . . likes the season-long nitrogen feeding from RegalStar.

**Dick Schultz**, Certified GCSAA, Atlanta Country Club . . . checks his 100% RegalStar results.



Knotweed, Spotted Spurge, and Chickweed, are three noxious annual weeds that other herbicides commonly fail to control. But where others fail, RegalStar succeeds . . . 100% weed-free turf is the standard result, not possible

with herbicides that fail to control all the weeds. Just one application lasts **all** season. You too can get these results. It all comes from the synergism of RONSTAR<sup>®1</sup>, NITROFORM<sup>®2</sup>, and BALAN<sup>®3</sup>.



<sup>1</sup>RONSTAR<sup>®</sup> is a registered trademark of Rhone Poulenc, Inc.

<sup>2</sup>NITROFORM<sup>®</sup> (Nitrogen) is a registered trademark of BFC Chemicals, Inc.

<sup>3</sup>BALAN<sup>®</sup> is a registered trademark of Elanco Products Company.

For the Best Herbicides

**REGAL CHEMICAL COMPANY**  
P.O. Box 900  
Alpharetta, GA 30201  
Phone 404/475-4837

(continued from page 12)

Mechanics area bay was being used but still orderly and clean.

Robbie introduced us to his head mechanic, Mr. Thurman Lee and we asked a few questions about operating procedures and inventory control of parts and materials. As we talked with Thurman I could tell by visually assessing and by his comments, that he was a true professional. Something that we all look for is a team effort and Robbie seems to have established this at his maintenance operations. After spending some more time at his maintenance area and office looking over records and office procedures, we moved out to the links proper.

We spent quite some time looking at the course design, bunkers, turf quality, taking soil samples and checking overseeded turf. We talked of cup changing procedures, golf car traffic control and equipment traffic control areas. We asked Robbie what some of his problem areas were. Was it drainage, irrigation, budgeting or other areas? Remember there is no such thing as a perfect situation. Robbie took us up to the clubhouse area, beautiful flower beds surround the clubhouse with acres of natural wildlife habitat in the background of the pool and veranda. Mr. Robbins introduced us to his greens chairman and to the club manager and other personnel of the clubhouse.

We toured the entire clubhouse facility and needless to say, we were treated graciously. The entire club is run in a very professional manner. All the members should be very proud of all their staff.

Good luck to Mr. Robbins and his continuing endeavor as a professional golf course superintendent. Our North Florida Superintendent's Association is very fortunate to have such a man as Robbie in our organization, and The Golf Course Superintendent's Association of America will gain a true asset as Mr. Robbins becomes one of our certified superintendents. This visitation is just one step in the certification process and I am proud to have been a part of this educational process.

As we all know, our national association was honored this year for excellence in the educational field. We owe our Educational Committee a great vote of confidence for their work in the field of education and the continuing standards of education. Our association is strong in this field and others because we (the superintendents) continue to stand strong and united in our association's future.

If any of my colleagues are in the Gainesville, Florida area be sure and stop in to see a truly professional golf course operation and enjoy the links at Gainesville Golf and Country Club.

I hope this article brings out some of the points in the certification process which will help to keep our profession strong. The knowledge we gain we must give through continuing education and professional involvement. ■



**1-800-282-8473**

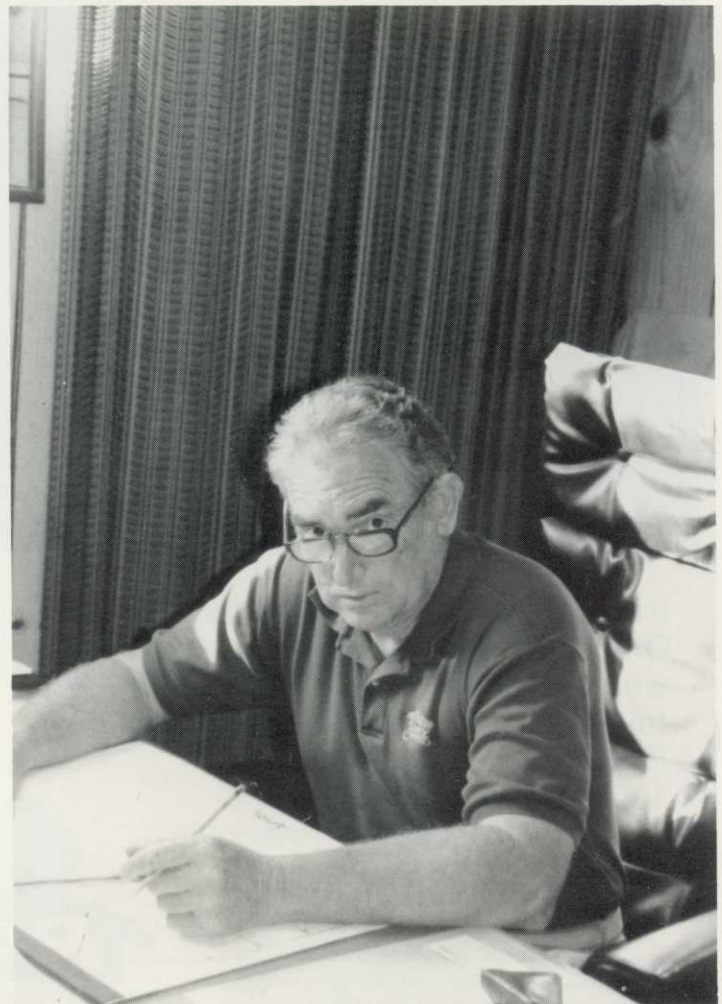
FULL LINE OF LIQUID FERTILIZERS

*Specially formulated  
for golf course uses*

**305-747-3277**

COMPLETE SERVICE  
FOR ALL FERTIGATION SYSTEMS  
PLUS NEW INSTALLATIONS

**Serving All Of Florida**



Robbie Robbins again — more time spent at the office.



**The first heavy-duty work vehicle  
that's light on your turf.**

**T**he Hahn Multi-Pro 44 work vehicle sprays, fertilizes, top dresses, seeds, aerates, dumps and hauls...yet is gentle enough on turf to be used on delicate greens.

Fingertip controls and adjustable flow rates give you greater spraying control. A unique low center of gravity helps prevent tipping, even on soggy slopes. And the Multi-Pro's heavy-duty design gives years of low-maintenance, easy operation. Interchangeable dump bed, Aerifier® and spreader attachments are also available. For a free demonstration call:

**1-800-457-HAHN**

Save the tough jobs for Hahn

**Hahn**



# The World of Golf

By Denise Jones

The game of golf is over 500 years old. The earliest playing fields for golfers were found on the Scottish Linkland and were referred to as links. The golf game was first played in Scotland along the estuaries of the rivers Eden, Tay and Forth, and was entirely designed by nature. It is speculated that the earliest golfers made rabbit holes their putting cups.

In the 15th century King James II of Scotland took great pleasure in the game of golf. Mary, Queen of Scots also found golfing enjoyable and started to play it at a very early age which started a tradition leading to the creation of the St. Andrews Golf Club in Scotland in 1552. St. Andrews is recognized as the birthplace of golf. The members of the St. Andrews Golf Club drafted 13 basic golf rules that still govern the golf game today.

By 1608 golf started to spread into Ireland and then England. Golf was introduced into America as early as 1779 and a golf club was founded in Charleston, South Carolina in 1786. In 1829 a club was formed in India.

The golf game was introduced to France by Scottish officers convalescing near the Pyrenees. They also built the continent's oldest course, the Pau Golf Club in 1856. Golf was also being played in Hong Kong and on the Cape of Good Hope in South Africa by Scottish soldiers and engineers. By 1870 golf courses were appearing in Australia and New Zealand and by 1876 five golf courses were located in Canada. Most of these early courses were played on undeveloped premature courses having only a few holes.

Despite its far-ranging introduction the game of golf was still not widely known or played. By the 1800's several golfing events were capturing the public's attention in England and Scotland. In the 1840's a number of widely publicized golf matches were being played at the St. Andrews Golf Club.

It was another 70 years before the game of golf began to gain real popularity in the United States. A lot of the credit for this increase in popularity was given to Frances Quimet who lived near the Brookline Country Club in Massachusetts. The club became the site for the U.S. Open and Quimet an ex-caddy, entered the match.

After 36 holes Quimet's score was 151, four strokes off the pace. Moving into the final round Quimet was nervous but soon relaxed and moved past the early leaders. On the 18th hole Quimet sank a four-foot putt for a par round and took the title. The upset victory of Quimet's over the best golfers in the world brought the sport into the limelight and its popularity contributed enormously to it.

Sports historians give credit to a Scotsman, John Reid, with laying out the first structured golf course in the United States in Yonkers, N.Y. Play began there Feb. 22, 1888. The U.S. Golf Association was first called the Amateur Golf Association and was formed in 1894. The first U.S. and Amateur Championship tournaments were held in Newport, R.I. in 1895.

Here's a few facts about golf that I found extremely exciting that I'd like to share with you.

- Golf was played on the moon in Feb. 1971 by Capt. Alan Shepard (U.S.), Commander of the Apollo XIV Spacecraft.

- It has been suggested that golf originated with Scottish Shepards using their crooks to knock pebbles into rabbit

(continued on page 18)



IRRIGATION & TURF CARE EQUIPMENT

Behind our own good name are a lot more good names.

Distributors for:	Mitsubishi Tractors	Olathe Turf Equipment
Toro Mowers & Turf Equipment	Power Trim Edgers	Vicon Spreaders
Toro Turf Irrigation	Lely Spreaders	Byho Spreaders
Toro String Trimmers	Standard Golf Supplies	Billy Goat Vacuums
Cushman Turf Care System	Florida Turf Sprayers	Nearby Grinders
Ryan Turf Care Equipment	Broyhill Sprayers	Bernard Spin Grinder

Wesco Zaun. Backs You With the Best.

2101 Cantu Court, Sarasota, FL 33582 Ph. (813) 377-6777

# THE GRASS GAME.



## It Shouldn't Be Like Rolling Dice.

We at Woodbury Chemical Company take no chances with your grass. We have the technical know-how to ensure green, healthy turf year round. We can provide horticultural programs and all the products you'll need: pesticides, fertilizers, adjuvants, seed, and more.

Why gamble? A call to Woodbury eliminates guesswork. After all, in the grass game you can't afford to play guessing games. Let Woodbury Chemical Company make you a winner.

### **Princeton, Florida**

(305) 258-0421

Fla. Wats 800-432-3411

### **Boynton Beach, Florida**

(305) 734-4441

Delray: (305) 449-4900

Deerfield: (305) 421-2393

### **Mt. Dora, Florida**

(904) 383-2146

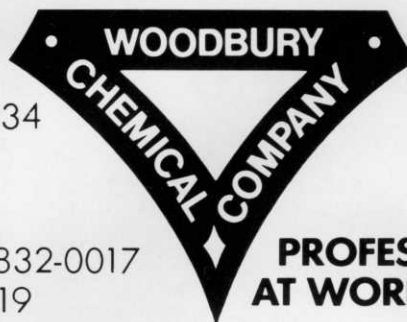
Fla. Wats 800-342-9234

### **Tampa, Florida**

(813) 247-3621

Pinellas County: (813) 832-0017

Fla. Wats 800-282-2719



**PROFESSIONALS  
AT WORK FOR YOU**



(continued from page 16)

holes.

- The world's longest course is the par-77, 8,325 yd. International Golf Course, Bolton, Mass. from the "Tiger" tees, remodeled in 1969 by Robert Trent Jones.
- The world's biggest sand trap is Hell's Half Acre on the 585-yd. 7th hole of the Pine Valley Course, Clementon, N.J. built in 1912 and generally regarded as the world's most trying course.
- The longest hole in the world is the 7th hole (par 7) of 909 yds. at the Sano Course, Satsuki, Japan.
- Probably the largest green in the world is the par-6, 695 yd. 5th hole at International G.C., Bolton, Mass. with an area greater than 28,000 sq. ft.
- The longest drive was made by Tommie Campbell at a recorded 392 yd. distance in July 1964 at Dun Laoghaire, Dublin, Ireland.
- The longest recorded holed putt was one of 86 ft. on the 13th green at the Augusta National, Ga. by Gary

Middlecoff in the 1955 Masters Tournament.

- Bobby Jones was reputed to have holed a putt in excess of 100 ft. on the 5th green in the first round of the 1927 British Open at St. Andrews, Scotland.
- The greatest amount ever won in official USPGA golf prizes is \$4,686,280 by Jack Nicklaus through 1985. The record for a year is \$530,808 by Tom Watson (U.S.) in 1980.
- The youngest golfer recorded to have shot a hole-in-one was Coby Orr (aged 5) of Littleton, Colorado, on the 103 yd. 5th hole at the Riverside G.C., San Antonio, Texas in 1975.
- The oldest golfer to have performed the feat is Otto Bucher (Switz.) age 99 years, 244 days on January 13, 1985 when he aced the 130 yd. 12th hole at La Maya G.C., Spain.

*\* Quoted, Bob Hope once said: "If you watch a game, it's fun. If you play it, it's recreation. If you work at it, it's golf." ■*



*Cowboys at Russellville, in Cochise County, laid out a five-hole course and rode their horses between strokes.*



# GET TWO FOR LESS THAN THE PRICE OF ONE.

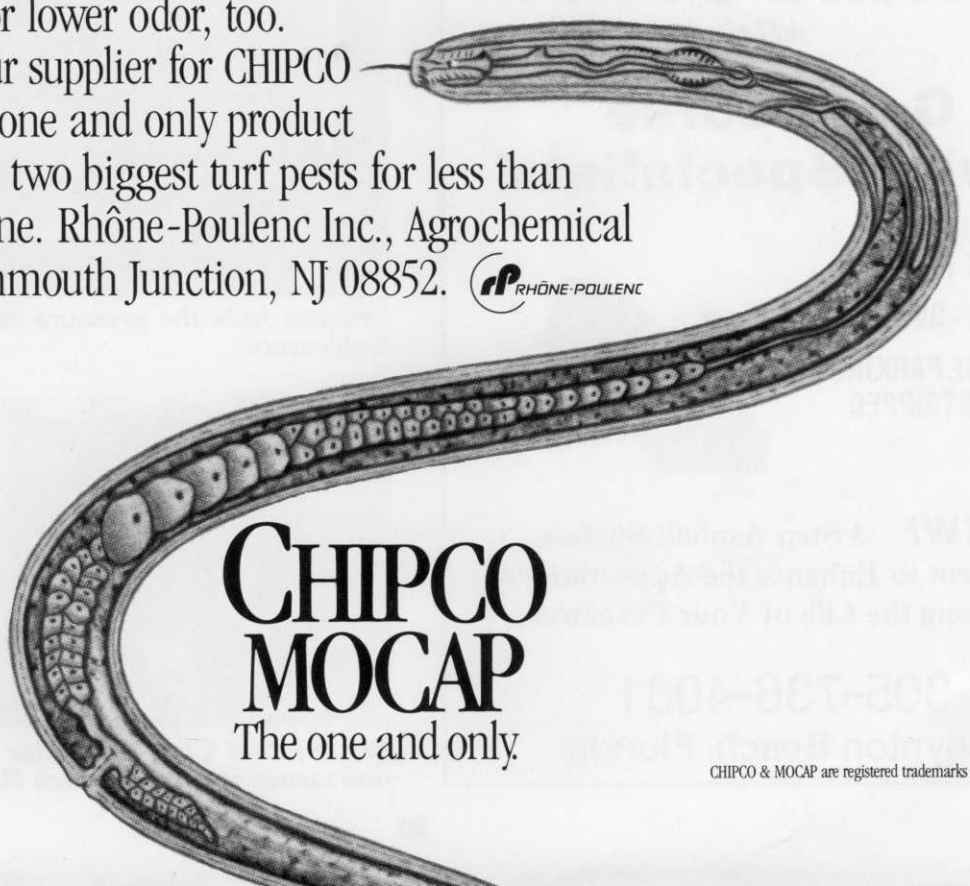


If you're using more than one product to kill mole crickets and nematodes, you're wasting money. Because, in Florida, there's one product — CHIPCO® MOCAP® insecticide/nematicide — that effectively and consistently controls both for less cost than products that control only one.

CHIPCO MOCAP works fast, not only on nematodes and mole crickets but also on

a broad spectrum of grubs and surface insects. It can be used on Bahia, Bent, Bermuda, Centipede, Fescue, St. Augustine and Zoysia turfgrasses. And now it's formulated for lower odor, too.

Ask your supplier for CHIPCO MOCAP... the one and only product that gets your two biggest turf pests for less than the price of one. Rhône-Poulenc Inc., Agrochemical Division, Monmouth Junction, NJ 08852.



**CHIPCO  
MOCAP**  
The one and only.

# THERESA SMALLRIDGE Becomes Collier County's TOP SPELLER

Clint Smallridge, CGCS, golf course superintendent at the Royal Poinciana Golf Club, Naples, Florida, is regarded as one of the top superintendents in the Naples area. And now, Clint's daughter, 13-year-old Theresa, an eighth grade student at Pine Ridge Middle School, is regarded as "Collier County's Top Speller."

Theresa Smallridge defeated four other contestants in less than 20 minutes during the Naples Daily News Collier County Spelling Bee Championship held in the studio of Palmer Cablevision on Saturday, April 4, 1987. Four students, including Theresa made it into the finals. It was noted that being in front of the cameras caused a case of nerves in the remaining four good spellers. And as the almost equally nervous parents (including Clint) observed, 32 words were spelled . . . four of them incorrectly . . . before Miss Smallridge was crowned champion. She spelled a dozen words including "pulley" which tripped the runner-up.

The contest was decided when Theresa correctly spelled "pulley" and then followed with the correct spelling of the final word "chivalry." A complete list of her words during the competition is as follows: "herring," "alien," "amateur," "beggar," "Knapsack," "burglar," "scrump-tious," "eerily," "biscuit," "hymn," "pulley" and "chivalry."

Theresa is certain to face some stiff competition again, when she travels to Washington, D.C. on May 25, 1987, to represent Collier County in the Scripps Howard National Spelling Bee. Students from all across the United States will converge on Washington, all, with the hopes of walking away the winner.

The Naples Daily News, local sponsor of the event, will pay Miss Smallridge's way to Washington. Clint plans to accompany his daughter. Theresa also was presented with a set of the Encyclopedia Britannica, the Random House Dictionary of the English Language and Webster's Collegiate Thesaurus. Theresa enjoys chorus, jazz dancing, track and softball. She also hopes to have time to visit Congress while in Washington.

We, at *The Florida Green*, want to give our congratulations to Theresa and we also want to sincerely apologize to her for any misspelled words in this article. ■



Beautiful and smiling Theresa Smallridge is the Collier County Spelling Champion.



Theresa feels the pressure of competition at Palmer Cablevision.



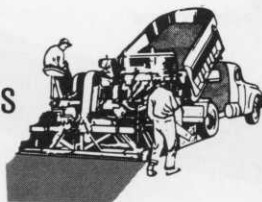
Proud father Clint Smallridge (left) stands with friend and owner of Naples Beach Hotel Henry Watkins.

## BLACKROCK PAVING CORP.

*a Haverland Company*

### Golf Course Paving Specialists!

NEW CART PATHS  
PATCHING - OVERLAYS  
CLUBHOUSE PARKING LOTS  
SEALED & STRIPPED



**NEW!** 3 Step Asphalt Surface  
Treatment to Enhance the Appearance &  
Prolong the Life of Your Pavement

305-736-4081  
Boynton Beach, Florida

## *Rayside Honored by Estech*

William Evans Rayside better known to his friends and customers as "Bill" was awarded Estech Branded Fertilizer, Specialty Products Division's highest award when he received "The Man of the Year" award at the Par Ex Annual Dinner in Phoenix during the 1987 GCSAA Convention.

Rayside, a native Floridian from West Palm Beach, received a B.S. degree in Agriculture from the University of Florida, and joined the fertilizer industry in 1978. He received the 1981 award for outstanding performance as an Agricultural Territory Manager from Swift Agricultural Chemicals, and then transferred to the Specialty Products Division, specializing in Par Ex® products as a Territory Manager in the southeastern Florida area.

Rayside is married to the former Martha Jane Duncan, and they have a beautiful baby daughter, Bethany Laurel.

The family enjoys most Florida sports, including Golf. ■



*Left to right: Mark G. Boulanger, President of Estech Branded Fertilizers, W.E. "Bill" Rayside, Par Ex® Territory Manager and I.B. Stacy, III, Director of Marketing, Specialty Products Division of Estech Branded Fertilizers.*

# **Ransomes Owners Alert**

**WE'VE  
GOT A  
BETTER  
ROLLER**

- Designed for serviceability — uses common size bearings and seals
- Fits ALL Ransomes 30 in. cutting units
- Costs LESS than O.E.M. rollers

**DOUGLAS  
PRODUCTS**

1810 Hypoluxo Rd. Suite D-9 Lantana, FL 33462

RE-LUBE END CAP WITH REPLACEABLE STAINLESS STEEL WEAR SLEEVE

TWO OUTER SEALS: ONE TO KEEP DIRT OUT, ONE TO KEEP GREASE IN

TAPERED ROLLER BEARINGS

INNER SEAL

DIAL TOLL FREE  
FOR ORDERS OR INFORMATION  
**1-800-541-2255**  
WAIT FOR TONE, THEN DIAL  
**368-4527**

Tel: 305/582-6180



# Palm Beach Trade Winds



By: Mike Bailey  
The Falls Country Club

## Herbigation

Imagine this. you notice the golf course is slowly dying. Every day, for the last few weeks, you observe more trees turning off color, leaves dropping, and the turf-grass is simply not as lush and green as everything used to be. No, it's not cooler weather coming on. No, it's not the lack of fertilizer. And no, the irrigation system has functioned properly every night. As a matter of fact, the entire maintenance program has not been altered to cause such a phenomenon. It's not your imagination. The entire crew is noticing it. Trees are dying and the turf looks terrible.

All of a sudden, you begin to panic. I think I'm in trouble, but I don't know how, when or why. First I ask my brother to come over (a fellow superintendent), who just might help to pull this one out. We both conclude that we're not sure what the problem might be. By next week, the crew begins pulling dead trees, while another bulk application of fertilizer fails to cause a response.

By now it's really affecting me, both mentally and physically. My boss accuses me of spraying that weed killer around the base of those dead trees. That, he says, is what is causing the problem. I know this is not the case. I have applied this herbicide for years and not killed a tree yet. However, to him, yes, one plus one equals two. (I really can't blame him because that's a pretty logical assumption.) After having the manufacturer's technical representative come by to assess the situation, chemical tests revealed no trace elements were found within the tissue analysis. This cleared one suspected liability that I personally never suspected; however, this did not cure the problem.

I then called the Forestry Department over for a visit. "It's the darndest thing. I've never seen anything quite like this one before" failed to make my day. Now, it's official — I need help! Maybe I'll become a car salesman and completely forget the golf industry.

Next, a well known and greatly respected turf consultant feels quite confident that this is a herbicidal problem. We agree, but fail to recognize the source. Two outside inde-

pendent laboratories begin leaf tissue analysis, soil tests, and even test for water quality. Tests continue to come in negative. I become even more frustrated. I feel as if I'm looking for a needle in a haystack. If there was ever a time to quote the adage, "Don't become blinded by the trees in the forest," it was now. By golly, down at the irrigation pumphouse a ficus hedge was turning off color and

---

### ALL OF A SUDDEN, YOU BEGIN TO PANIC. I THINK I'M IN TROUBLE, BUT I DON'T KNOW HOW, WHEN OR WHY.

---

dying. (I thought a ficus was a plant that nobody could kill!) What struck me as being so peculiar was the location of this hedge — along a lakebank edge where water would periodically collect in the pumphouse and drain outside to the hedge. Those plants on the corners received no water and were exceptionally healthy, while those directly receiving the drain water were quickly dying. Now I am convinced there is a water quality problem within the lake system.

I contacted a few professionals that were foremost experts within the aquatic industry. They were quite familiar with the growth habit being displayed appearing as mutilated, distorted, curling of the leaves along with pale white streaks occurring in the leaves, totally destroying any photosynthesis. I was given a clue of perhaps six different herbicides to test. Elemental trace analysis testing is not cheap. Over \$60.00 per test and two weeks later — Bingo! A herbicide is detected at a trace quantity of .02 parts per million. I not only have never used this chemical, I've never even heard of the chemical. However, at this point, I feel greatly relieved. I'm finally off the hook. I have found something that is a strong clue to the heart of the problem. My next step should be legal advice.

Yes, the Environmental Protection Agency can be your friend. Upon a research investigation, the EPA acknowledged, "The rate of chemical found within the water in the lake will definitely kill trees and grass." To the dismay of several people, the superintendent and the mainte-

(continued on page 23)

(continued from page 22)

nance department were clear and free of any wrong doing. That was the sole issue. The developer and I were not necessarily concerned about financial reimbursement, although \$40,000 worth of trees was lost. We were confident we knew where the misuse of application

## TO CURE THE PROBLEM WOULD BECOME EQUALLY AS DIFFICULT AS FINDING WHAT THE PROBLEM HAD BEEN.

occurred. However, the case is closed and let's pursue the upswing of the problem — getting the golf course back to normal.

To cure the problem would become equally as difficult as finding what the problem had been. What is the half life of the chemical? How can I get rid of it? Not only in the lakes, but in the trees and turf. Will it outgrow the problem? Will things ever get back to normal? For quite awhile I had serious doubts. A half life of 18 months! That's right, one and a half years later the chemical would have reduced its potency by only 50%. For the next year, many trees were pulled and hauled away, sodded over and, hopefully forgotten. Bulk applications of charcoal and excessive rates of fertilizer, both bulk and liquid, were applied at a rate much like growing in a new golf course to help overcome the herbicidal toxicity.

For over two years, I was irrigating via a means that I called "a herbigation system." (A sprinkler system incorporating a prescribed amount of herbicide being applied within the water source.) This phenomena greatly reduced the rate of photosynthesis within the chlorophyll tissue of both the turfgrass and trees.

There was an interesting comparison between the turfgrass and the trees. Considering the irrigation system was spoon feeding a prescribed amount of chemical by means of a foliar spray each night, the leaves of the trees accumulated enough chemical in due time to become toxic. A tree has no means of ridding the chemical accumulation. However, turfgrass, due to daily mowing, has an ability to rid some of its toxicity. This was the savior for the turf. The EPA acknowledged, "Bermudagrass can maintain upwards of 5 parts per million while this concentration will cause death in trees." I found this to be true. The Bermuda pulled through while only the heartiest of the trees survived.

Within two years, life was back to normal. Quite a few trees were replaced and those migraine days nearly forgotten. The point of this story has been to trust nobody, not even yourself. Assume everyone is guilty until proven innocent. There are many professionals within our industry — governmental, private laboratories, consultants, and even friends — who can help advise on such problems. It's amazing. Just when you think all there is to do today is just to mow the grass, you learn of a new word to add to your vocabulary — "Herbigation." ■

# LIQUID AG SYSTEMS INC.

Pompano Beach  
(305) 971-0022



Ft. Myers  
(813) 332-5565

For over **14** years we have been at the cutting edge of nutritional technology and TOTAL CONCEPT SERVICE, providing:

- ★ Highest quality, prescription mixed CLEAR LIQUID FERTILIZERS.
- ★ Dependable flow sensing, metering and injection systems.
- ★ Proven nutritional programs.

## 1-800-432-2249

# ALL EMPLOYERS MUST COMPLY WITH THE NEW LABOR LAW

By Chuck Woods

GAINESVILLE — Under a federal get-tough policy to curb the employment of illegal aliens in the United States, all employers face fines and possible prison terms for failure to comply with the new Immigration Reform and Control Act.

"The law isn't just for seasonal farm workers. Everyone who hires anyone — even for one day — is subject to this new law, beginning June 1, 1987," says Dr. Charles D. Covey of the University of Florida's Institute of Food and Agricultural Sciences (IFAS).

"The usual reaction of employers to the Immigration and Reform Act of 1986 is that it doesn't apply to me because I don't hire any aliens. But the fact is that every employer in the nation must comply with the law whether they hire aliens or not," Covey explains.

"Even if the employer personally knows for sure that the employee is an American citizen, that person's citizenship or right to work in the United States must be verified," he points out.

Penalties can range from \$250 to \$10,000 and even im-

prisonment for each instance of "knowingly hiring" an illegal alien, and \$100 to \$1,000 for paperwork failures, even in connection with the employment of a legal citizen in the United States, according to Covey.

The IFAS economist says the new law will mean additional paperwork for employers and he estimates there would be additional costs to the nation's businesses to comply with the law. On the other hand, he adds, it will help protect the jobs of legitimate American workers who are being displaced by illegal aliens, including those coming from Canada.

Specifically, the law makes it illegal for anyone to knowingly hire, recruit or refer for a fee an alien not authorized to work in the United States. It requires all employers to verify the legal status of every employee hired after November 6, 1986. Employees on the payroll prior to this date will be "grandfathered in" and will not have to document their legal work status.

"The law requires all employers to sign and retain an I-9 Form (issued by the U.S. Immigration and Naturalization Service) stating what documents have been examined. It also requires the employees to sign the same form certifying that they are legally eligible to work in this country. Both employer and employee must sign the I-9 form under penalty of perjury," Covey explains.

Acceptable documents include a U.S. passport, certificate of citizenship, certificate of naturalization, unexpired foreign passport with attached employment authorization or alien registration card with photograph. Also acceptable would be a valid state driver's license and original Social Security Card or birth certificate.

To protect themselves, employers should make copies of documents shown to prove citizenship or the right to work in this country. For example, a worker may provide a valid driver's license, birth certificate or Social Security card. Copies of these documents should be kept along with the form both parties signed.

During a 12-month period beginning June 1, 1987, citations without civil money penalties will be issued for the first offense. Citations and fines will be issued to employers for additional violations during this period. On June 1, 1988, the full provisions of the law will be in effect for all employers except those engaged in "seasonal agricultural services" who are exempt from civil money penalties until December 1, 1988.

"After December 1, 1988, employers will have to fill out the I-9 Form for all seasonal agricultural workers who are working in the field with perishable agricultural commodities. This gives farmers a little leeway in complying with the new law," Covey said. ■

## DUDA SOD



**Bermuda**  
**Floratam**  
**Raleigh**  
**Bitter Blue**



Zellwood 904-383-6111	Cocoa 305-636-3966	Ft. Pierce 305-461-0962
Oviedo 305-365-2189	Ft. Lonesome 813-634-3008	La Belle 813-675-0545

**A. Duda & Sons, Inc.**



# We work at ground level...



## so you can play on top!

The fact is, **Central Florida Turf** is working hard to provide you with superior workmanship in construction of new golf facilities, irrigation with all turf installations or renovation of existing golf courses ...

*and* all at a competitive price!

Registered dealer for:

**Warren's<sup>®</sup>**  
**TerraCover**

Polyester Geotextile Ground  
Blanket: an alternative to  
annual resodding.

**Jeff Harstine**

*President/Vice President*

**Rodney Davis**

*Secretary/Treasurer*

**Dennis Crews**

*Sales Manager*

# Central Florida Turf, Inc.

*Specialists in Bermuda Grass*

47 Lake Damon Dr., Avon Park, FL 33825

Telephone: (813) 452-2215

# WHAT PESTS COST FLORIDIANS

**and why biological pest control is a good investment opportunity**

By Darcy Meeker

GAINESVILLE — Insects, weeds, nematodes and plant diseases cost Floridians about \$250 per year per person.

The \$2.5 billion yearly tab for pest damage and pest control in Florida amounts to nearly two cents out of every dollar of personal income in the sunshine state.

It's an indirect cost of living that we all pay when we buy food, when we take our families to tourist parks, when we

---

**OUR GREATEST HOPE FOR IMPROVING THE ECONOMICS OF AGRICULTURE IN THE NEAR FUTURE LIES IN DEVELOPING MORE BIOLOGICAL CONTROLS OF PESTS AND DISEASES.**

---

play golf, when we buy gasoline for our cars . . . .

People use pesticides because they net an immediate economic return, estimated to be \$3 to \$5 per \$1 spent on the chemical agents and their distribution.

Biological control of pests — engineering an ecology favorable for the plants and animals we want to cultivate — is an attractive addition to the pest control arsenal. Per \$1 invested, biocontrol returns an estimated \$26 in benefits over five years, \$30 over ten. Equally attractive is the fact that the solutions are often permanent, often self-distributing, and frequently one-time costs.

Says Dr. K.R. Tefertiller, head of the statewide Institute of Food and Agricultural Sciences (IFAS): "Our greatest hope for improving the economics of agriculture in the near future lies in developing more biological controls of pests and diseases."

Consider what we spend now.

**INSECTS:** Damage and control cost Floridians \$1.3 billion a year. Figures from the Entomological Society of America break it down:

- \$386 million, termites;
- \$230 million, cockroaches;
- \$ 85 million, citrus rust mite;
- \$ 64 million, hornfly (a pest to cattle);
- \$ 57 million, mosquitoes;
- \$ 50 million, ornamental scale;
- \$ 45 million, fleas;
- \$ 37 million, mole crickets;
- and many other millions on other pests as well.

**PLANT DISEASES:** Annual crop loss to Florida's assorted rots, wilts, blights, rusts, mosaics, spots and smuts is about \$450 million and control costs about \$210 million, totalling \$660 million. Crops hardest hit include citrus, sugarcane, and vegetables.

**WEEDS:** Damage and control cost Floridians \$360 million, depending on cost of gasoline and herbicides. The top enemies: Hydrilla is number one and others in the top five are smutgrass, a pest on pastures, golf courses and lawns; sickle pod, a tall bean that makes harvesting difficult in row crops; and melaleuca (punk tree) and Brazilian pepper tree.

**NEMATODES:** IFAS Extension nematologist Bob Dunn says these microscopic worms cost Florida:

- \$63.9 million, in the citrus industry;
- \$ 6.7 million, potatoes, in the Hastings area alone;
- \$ 5.1 million, golf turf;
- \$ 4.4 million, soybeans;
- \$ 1.2 million, tobacco.

Those costs take us up to the \$90 million mark for nematodes, but it's hard to say how much the soil-borne pests cost us over all. Nematodes are fought with soil fumi-

*(continued on page 27)*

## LANTANA PEAT & SOIL

1123 State Road 7  
Boynton Beach, Fla.

**732-4116**  
**1-800-433-5552**

**STERILIZED SOILS • TOP DRESSING  
TOP SOIL • MULCH • POTTING SOIL**

*"Keeping Golf Courses Green"*



(continued from page 26)

gants which also combat fungi and several other enemies at the same time.

Pests also contributed to cost we all pay with our money and our concern: \$3.1 million already appropriated by Florida legislators to clean up wells known to be contaminated by EDB, which had been the main nematicide.

Some costs of pest control are hidden. For example, while our soil fumigation has been killing off the root-knot and sting and other enemy nematodes, we have also been killing off their enemies: fungi, other nematodes and bacteria. Likewise the use of pesticides in our citrus groves and tomato fields and landscapes. Possibly even in our homes. While fighting pests, we have sometimes made our pest problems worse.

However, with the addition of biological pest control to our pest control tool kit, we can seize the opportunity to rebuild the invisible ecology of living soil according to our desires, to structure the ecology of our landscape, to re-engineer the setting of our lives and of our food production — so long as we play by nature's rules. ■

## NEMATODE NEMESIS

The nematode may be brought to heel by an extract of crab shells.

Nematodes are tiny parasitic worms that dwell in the soil and cause an estimated \$3 billion of damage a year to

crops and gardens. Unlike other soil microbes, the nematode larvae contain a complex sugar called chiten, explains Robert Milch, the president of Igene Biotechnology Inc. in Columbia, Md. If extraneous chiten is mixed in the soil, it will trigger other soil microbes to produce an enzyme that destroys it. Thus, mixing chiten with soil sets off a kind of chemical warfare that destroys nematode larvae.

## THE PROTEIN SPURS THE GROWTH OF FUNGI AND OTHER MICROBES THOUGHT TO ATTACK ADULT NEMATODES.

Crab, oyster and clam shells are rich in chiten and Igene has found an inexpensive way to extract it, Dr. Milch says. After extracting residual meat from crab-shell wastes to produce a flavoring compound, Igene dissolves away the calcium with an acid. This leaves a chiten-and-protein mix that Igene has turned into a product it calls ClandoSan. The protein spurs the growth of fungi and other microbes thought to attack adult nematodes.

Igene plans to market ClandoSan later this year, after tests of its effectiveness are completed at Auburn University in Alabama and Hebrew University in Israel. Since chiten is a natural pesticide, formal federal approval may not be needed for ClandoSan, Mr. Milch says. Igene notes that most synthetic chemicals formerly used against nematodes have been banned because of environmental problems. ■



WAREHOUSE DISTRIBUTOR OF PARTS & ACCESSORIES FOR  
GOLF, TURF & INDUSTRIAL VEHICLES



**SAVE UP TO 40% ON TOP QUALITY  
REPLACEMENT PARTS TO FIT:**

**TORO • JACOBSEN • CUSHMAN • RYAN  
AND MANY OTHERS.**

All parts *guaranteed*. Call today for **FREE** catalog

**EMCO**

P. O. BOX 2426 • 57 CANTEE STREET • JACKSONVILLE, FLORIDA 32203

**FL TOLL FREE 1-800-342-0881**

# Why Play Golf?

By John Boardman,  
Keene Country Club, Keene, New Hampshire

To many people, we as superintendents, are in a very enviable position. We have free access to play at our own course and other courses which may not be accessible to the general public at any price. This is a benefit that many of us take for granted.

Playing golf is more than a fringe benefit for us. It plays an important part in our development in becoming better superintendents.

Maintaining a golf course provides an endless list of tasks that can be accomplished on a daily basis. We establish a set of priorities as to which tasks are most important to undertake. Often, we establish our priorities without fully considering those of the golfers. If we do consider them, we may not see their priorities as being important enough to take precedence over our own. This attitude can develop because we don't play enough golf to appreciate their positions. If we get out and play the game, we may find that certain practices are a little unfair and we should try to change them, or there may be areas on the course that deserve more attention. This will help develop a much better relationship with the people we work for.

Playing golf is a great way for us to take a slow, detailed look at our courses. Often, work routines take us around

the course via the quickest route. Or maybe we don't allow driving on the fairways so we stay off them too. Playing the course gives us a good look at each hole from tee to green.

Golfing is a great way to get to know someone. Any of us who have played with newcomers at our monthly meetings can attest to this. After one round of golf, you get the feeling that you know these people pretty well.

Golf is a great public relations tool to use with your membership, especially Board members. This is why our Superintendent Club Official Tournament is so valuable. We get to know our officials on a personal level and, more importantly, they get to know us on a level other than an employee who works on the course. Their opinions of us, as individuals, and, as a group, are elevated.

Playing with the Pro can be helpful to us. Few people communicate with the membership as much as the Pro does. Playing with the Pro is a great way to educate him about what's happening on the course, which, in turn, helps to educate the members.

An effective tool in motivating our own employees is to have them play golf also. If they can see the course from a perspective other than from a tractor, they can appreciate the course more and have a much better sense of purpose on their jobs.

While we have to be careful not to become overly involved in playing golf, we must keep in mind that it plays an important part in our professional growth and we should play as often as we can. ■

Golf Course & Athletic Field Planting  
Greens Renovation  
Row-Planting

1-800-841-6645

**Tifton Turf Farms**

P.O. Box 1912  
Tifton, GA 31794

Ga.-Grown & Certified  
Sprigs & Sod

# Cut With The Best.

*John Deere and Neff  
Machinery, your support team  
that stands above the rest.*

*With Neff, you get more than the  
best grounds care equipment.  
You get a team of professionals  
at each of our 4 branches  
dedicated to keeping your  
John Deere equipment where  
it's supposed to be – on the  
turf working efficiently sunup  
to sundown.*

*Cut with the best, and Neff  
will take care of the rest!*



**MIAMI**

4343 N.W. 76th Ave. (305) 592-5470

**WEST PALM BEACH**

3933 Beeline Hwy. (305) 848-6618

**ORLANDO**

4333 John Young Hwy. (305) 299-1212

**FT. MYERS**

2995 Hanson St. (813) 334-3627



**Sales and  
Service**





# Blazon<sup>®</sup>



SPRAY PATTERN INDICATOR

By Milliken Chemical

## All Spray Pattern Indicators Are Not Created Equal.



“I’ve just put my finger on the difference between Blazon<sup>®</sup> and the dyes being sold for spray pattern identification. Can you guess which finger?”

Blazon<sup>®</sup> is the only **NON-STAINING** and **INERT** spray pattern indicator in the world.

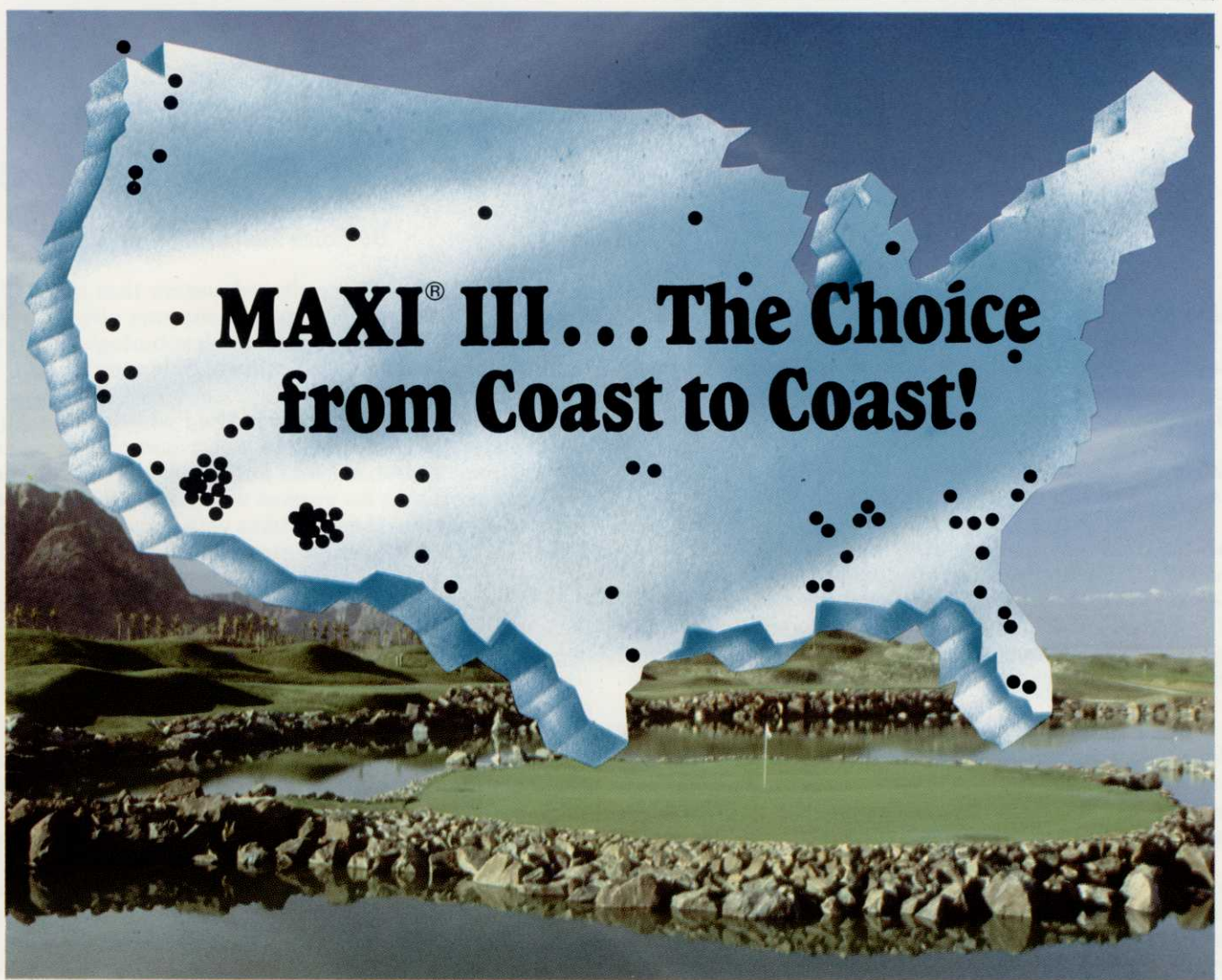
Your spray pattern indicator should be the least of your worries.

- \*Blazon<sup>®</sup> will not stain.
- \*Blazon<sup>®</sup> will not interfere with your pesticides.

There are many imitations, but only one original ... Blazon<sup>®</sup> by Milliken Chemical.



Milliken Chemicals, Division of Milliken & Company  
P.O. Box 817, Inman, South Carolina 29349, (800)845-8502 or (803)472-9041



Stadium Course, PGA West

## Golf's Premier Irrigation Control System

Repeatedly the choice of the world's leading architects and superintendents, MAXI® III from Rain Bird is recognized as golf course irrigation's most exciting and versatile computerized control system.

Sophisticated. Reliable. Powerful. MAXI® III offers state-of-the-art irrigation technology. An IBM computer, too. Not to mention the ability to handle a wide range of important functions. Lighting—security—and a host of other necessary operations.

Legends in the making—the great golf courses of tomorrow are being built today. And MAXI® III is there!

Controllers. Rotors. 50 years of golf course irrigation experience.

**Rain Bird — the choice from coast to coast**



**RAIN BIRD**

## IFAS Fire Ant Control Tests Look Good

By Julie Graddy

GAINESVILLE — A fungus that naturally occurs in fire ant nests in Brazil is extremely effective against the ants in lab tests here, making it a good biological control agent candidate, says a scientist at the Institute of Food and Agricultural Sciences (IFAS).

In lab tests, the fungi have killed 95 percent of the ants, says Dr. Jerry Stimac, IFAS insect ecologist.

"The fungi appear to be a timebomb in the nests," he says. "We've isolated several virulent strains of the fungi. When conditions are right, they may act as a plague in fire ant populations." Stimac has been working on the fungi for several years with Brazilian scientists in Sao Paulo and Mato Grosso, two Brazilian states.

Because of their aggressive nature and survival-oriented biology, fire ants are difficult to control with chemicals. "Over \$200 million has been spent in an unsuccessful attempt to control or eradicate them in the Southeast," says Stimac.

The ants only have to come into contact with the fungi for it to work, says the IFAS entomologist. "The fungal spores fuse to the ant's body, penetrate the body cavity, reproduce and burst back outside to form spores," he explains. The fungi are non-toxic to humans and other vertebrates.

Brazil is the presumed homeland for fire ants, and in areas where the fungi are found in nests, the ants are under control, notes Stimac. Stimac is currently working with Dr. Sergio Alves of the University of Sao Paulo to regularly monitor fire ant nests in the Mato Grosso in hopes of observing the plague-like quality of the fungus.

"Our next step is to find out if the fungi are suitable as a biological pesticide," says Stimac. Toward that goal, he and IFAS colleague Dr. Drion Boucias are culturing the fungi for treatment of fire ants in the laboratory.

Many fire ant colonies have multiple queens, all of which must be killed to kill the nest, Stimac notes. IFAS scientists will apply a solution of spores as a drench or powder over soil containing nests in the lab to discover what, if any, protection the colony uses to shield the queen against fungal contact. The big question is whether the fungus spreads within the nest to make it an effective control of multiple queen colonies.

"We have some reserved optimism because we've gotten such good first results, but ants are social insects. You never know how they'll act. But we're hopeful. These fungi seem to be the most promising development on the research horizon right now." ■

## Virus May Help Solve Blue-Green Algae Problem

By Edith Hollander

GAINESVILLE — The polluted waters that allow blue-green algae to flourish may also support viruses which kill the algae, says an aquatic microbiologist with the Institute of Food and Agricultural Sciences (IFAS).

Dr. E. J. Philips, a researcher in the Fisheries and Aquaculture Department, collects water samples from sewage systems, polluted lakes and waterways throughout the state searching for viruses which kill only blue-green algae. Philips tests these viruses with the algae in his lab, since the two rarely exist together in the water.

A grant from the U.S. Department of Agriculture is directed at Lyngbya, one type of blue-green algae found in Florida. "It forms a very dense, thick mat on the bottom of lakes, produces a bad odor and is reputed to produce toxic substances, Philips said.

Florida's growing population, coupled with its naturally warm climate and high rainfall, has increased the probability of blooms, Philips said. The algae blooms (high concentrations of algae) can physically clog lakes and waterways, emit foul odors, cause a bad taste to drinking water, and in some cases produce toxins dangerous to animals and man.

Algae breeding grounds are enhanced by sewage, runoff and industrial waste dumpage into lakes and canals. Light intensity, rainfall, temperature, carbon dioxide and oxygen levels also affect the algae.

Philips hopes viruses will biologically control the algae and replace or reduce the present use of herbicides and harvesting.

"A lot of blue-green algae are tolerant of herbicides, so a high concentration is used to achieve effective control," Philips said. "Herbicides are also general in their action, so they kill off good blue-green algae with the bad," he said.

Philips plans to expand the project to test other algae types. "We anticipate that through the course of the year we'll find a number of viruses that work on different species," Philips said.

Most lakes and waterways support different types of algae at the same time, Philips said. "For example, several dozen type of blue-green algae have been found in recent samplings of Lake Apopka, and Lake Okeechobee," he said.

"Our ultimate goal is to establish a collection of the major bloom forming species of blue-green algae," Philips said, "and use this as a basis for work on the development of biocontrol technologies." ■



# FROM TEE TO GREEN

## ACCESSORIES FROM STANDARD GOLF INCLUDE:

- BALL RACKS
- BALL WASHERS
- BENCHES (WOOD & METAL)
- CLUB WASHER
- CHAIN
- DRAG BRUSH
- FAIRWAY MARKERS
- FLAGS
- HAZARD MARKERS
- HOLE CUTTERS
- KOOLER AID WATER CONTAINER
- LITTER CADDIES
- FLAG STICKS
- PRACTICE GREEN MARKERS
- RAKES
- SIGNS
- SPIKE KLEENERS
- TEE MARKERS
- TEE TOWELS
- TEE CONSOLES
- TURF REPAIRERS
- AND MORE

Contact your Standard Distributor.  
THE STANDARD OF EXCELLENCE

**STANDARD**  
**GOLF** *ProLine*

Standard Golf Company  
Cedar Falls, Iowa 50613  
(319) 266-2638

# What Do You Do When Your Best Employee Flies the Coop?

By Mary Ann Allison and Eric Allison

*What you don't have to do is panic. Even if there isn't a successor in sight, there are six steps you can take to smooth the transition.*

When Russell James, vice president of corporate communications for Avis, lost one of his top training directors, he was left with a huge hole in his organization. A replacement was waiting in the wings, but James felt he needed another six months to a year to groom the person for the job. He didn't have that time.

James figured he had two choices: bring someone in from outside or do the job himself until the internal candidate was ready to step in. Both options seemed equally unattractive.

If you're lucky enough to have a well-groomed successor for every key position on your staff, then you'll probably never find yourself in a bind like James did. But even if you do end up at a temporary impasse, you needn't feel your hands are tied. There are a number of strategies you can put into action to keep the department on a steady course.

**1. TAKE THE PROVERBIAL BULL BY THE HORNS.** The departure of a key employee often brings out the deepest insecurities of those who remain. Some are afraid of losing power in an organizational reshuffle; others may fear that you'll bury them under a load of new assignments.

"The best way to handle the situation is to tackle it by communicating regularly with your staff," recommends Dr. Lynn Diamond, president of Innovative Information Techniques, Inc. As soon as the resignation is official, rally everyone affected. Round up the departing manager's peers, his or her staff, and any others within or outside the department who worked closely with the person.

Explain why the employee is leaving and where he or she is headed. Keep it upbeat. If you don't have a replacement for the job, announce that you will be setting up temporary reporting lines. Outline a timetable for reassigning tasks and responsibilities. And by all means, address any concerns that may crop up during the meeting; you don't want to fan any mutinous rumblings.

**2. DON'T LET THE LAME DUCK PERFORM LAMELY.** With the proper monitoring, a great deal can be accomplished in the short time the departing employee still has on the job.

**3. PART ON AMICABLE TERMS.** No matter how aggravated or snowed under you feel, fight the temptation to vent your frustrations on the "traitor" who's responsible for the headaches. After all, that person may someday become a valued addition to your professional circle.

**4. CONSIDER THE OPTION OF JOB REDESIGN.** Before making major staff changes or additions, seize the moment to evaluate whether the job description needs revamping.

**5. DIVIDE UP THE PERSON'S TASKS AND TEMPORARILY PARCEL THEM OUT TO OTHERS.** Analyze the departing person's attributes, skills, and knowledge as unique and separate elements, advised Diamond. Then canvass your department for people who can pick up the pieces.

**6. DON'T LET THE SEAMS SHOW.** If your department works closely with other groups within the organization, make sure everyone in those areas knows what is going on.

A final recommendation from Diamond: "Guard against magnifying the contributions of the person who has left." There's a strong tendency for the "halo effect" to materialize, whether the person resigning is a former U.S. president or an ex-employee. The sins or weaknesses of the former job occupant are forgotten while his or her strengths are put on an altar.

The physiological trap can make all applicants look inadequate or sabotage the new person on the job. It's all too easy, even during a well-planned transition, to feel that "we can't live without so and so." It isn't true, but the belief can make it reality. ■

**Sunniland**

**Don't Simply Fertilize Your Turf...Nourish It With Quality Nitroform Nitrogen**

- Even Sustained Growth
- Decreased Thatch Build-Up
- Slow, Predictable Release By Soil Bacteria To Provide Nitrogen When Most Needed
- Fewer Applications Per Year Are Required
- Resists Leaching Even In Sandy Soil
- Healthier Turf
- Nonburning And Nonstreaking
- Constant 38% Nitrogen
- Reduces The Risk Of Nitrate Contamination
- Better Root Development
- Better Water Utilization

Turf Gro Fertilizers, Pesticides  
Custom Application, Forklift Delivery

**Sunniland**  
**SUNNILAND CORPORATION**  
P.O. BOX 1697, SANFORD, FL 32772-1697  
TOLL FREE 1-800-432-1130  
Registered trademark of Schering AG, West Germany



## — Attention — SUPERINTENDENTS!

The Florida Turfgrass Association (FTGA) has a Superintendent Affairs Advisory Group! Let your voice be heard! Already information between the FGCSA and FTGA is being exchanged more freely. We encourage your participation. Any time you have questions or ideas, we want to know about them. Contact your local external vice president or any member of our advisory group. Any of these people will carry your message to the Superintendent Advisory Group Meetings.

Your state President and Secretary Treasurer have already been participating in our Research Development Council and recent Board of Directors' meetings.

We will keep *The Green Sheet* and *The Florida Green* informed on our actions affecting the superintendents.

There is something you can do now. Promote our Association membership to the FTGA non-members in your local chapter. They can benefit from the information we have to offer. Tell them we will contact them by mail soon. With the additional staff we have planned and well defined guidelines for our funding we can help you even more.

We are indebted to the superintendents for their work and contributions to FTGA! Mole Cricket research is currently underway by your efforts. \$20,000 has just been paid toward an ongoing University of Florida research project by Dr. G.C. Smart. The project is for an evaluation of natural enemies of mole crickets as biological control agents, including additional wasp species and parasitic nematodes. Total amount of money required to complete this two year project is \$80,000.

Superintendent Advisory Committee: Chairman Larry Livingston, Jeff Hayden, Mark Jarrell, John Luper, FGCSA External Vice Presidents. ■

## Research on Biological Control is Goal of Cooperative Agreement with Brazil

By Julie Graddy

GAINESVILLE — The Institute of Food and Agricultural Sciences (IFAS) has signed a five-year memorandum of understanding with the Brazilian Enterprise for Agricultural Research (EMBRAPA) for scientific and technical cooperation in biological control and related fields.

Dr. Ormuz Rivaldo, President of EMBRAPA, received a copy of the memorandum, in Gainesville recently (4/6). EMBRAPA is the equivalent of the United States Department of Agriculture's Agricultural Research Stations.

---

### WE'LL BE LOOKING FOR NATURAL ENEMIES IN THE BRAZILIAN HOMELAND TO CONTROL PESTS IN FLORIDA.

---

The memorandum is an umbrella agreement that enables IFAS researchers to work in EMBRAPA facilities throughout Brazil on any agricultural pest, according to Dr. James Davidson, IFAS Dean of Research. The agreement permits exploration for biological control agents in both countries and provides for the exchange of parasites, predators and pathogens of agriculturally important pests, he adds.

"Florida and Brazil are very similar in climate and crops they produce," says Davidson. "Because of that commonality, both countries also share many pests, some of which have been introduced accidentally. We'll be looking for natural enemies in the Brazilian homeland to control the pests."

The imported fire ant, which is believed to have been accidentally imported from Brazil, is the largest of ongoing biological control research here and in Brazil. Both countries also share other agricultural pests, including several soybean pests, the mole cricket, and a weed called Brazilian pepper. ■



## Your Sand Man

E. R. JAHNA IND., INC.  
LAKE WALES, FLA 33859-0840  
(813) 676-9431

"You wouldn't think such a little insect could make such a big difference...."

## **WEEVIL TO CONTROL WATER LETTUCE Will Be Released at Lake Okeechobee in April**

By Darcy Meeker

GAINESVILLE, Fla. — Troubled Lake Okeechobee will be the first place scientists will release a weevil to help control water lettuce.

Water lettuce (*Pistia stratiotes* L.) clogs some 7,300 acres of Florida waters, especially canals in south Florida, the Oklawaha River, the Rodman Reservoir, Lake Rousseau and Lake Okeechobee.

Australians already control water lettuce using the weevil (*Neohydronomus pulchellus*), which is native to Brazil, said researchers at the Institute of Food and Agricultural Sciences.

At IFAS on the University of Florida campus and in Ft. Lauderdale at the USDA Aquatic Plant Management Laboratory, scientists are rearing water lettuce weevils for release in late April.

"We ought to see a difference within a year," says research leader Dale Habeck, acting chairman of the IFAS entomology department. "It takes about a month for a weevil to go from an egg to an egg laying adult, so we'll have six to eight generations a year."

Young weevils tunnel through water lettuce leaves, turning them into lace, and adults also eat the weed.

"You wouldn't think such a tiny insect could make such a big difference," Habeck said, "but it does."

While water hyacinths and many other noxious water weeds had no natural enemies to keep them in balance when they came to Florida, water lettuce has been around at least since 1765 when biologist William Bartram noticed that they were common in the Florida waterscape.

Need to control water lettuce has come to a head recently because of Florida's increased population.

"In addition to increasing evaporation from waterways, and interfering with recreation, irrigation and water flow," Habeck said, "water lettuce hosts the larvae of a mosquito (*Mansonia titillans*) that is a particularly ferocious biter of man. These mosquitoes are potential transmitters of diseases."

The weed has been making headway wherever water hyacinths have been knocked back by chemicals and, recently, by biocontrols.

So water lettuce biocontrol research got funding from

the U.S. Army Corps of Engineers, both from the Jacksonville district office and from the Waterways Experiment Station in Vicksburg (Miss.).

By September 1985, the researchers had some of the weevils in their quarantined lab. In November 1986, permission came through for them to release the weevil in Florida.

"All we're waiting for now is to build up the population enough that we can release a significant number of them," said Habeck, collecting editor for the free IFAS publication "Biocontrol: Fighting Pests Nature's Way."

Weevil release will be coordinated by the Army Corps of Engineers.

Clearance to release water lettuce weevils came from a national review panel made up of representatives from USDA and other government agencies.

To get clearance, researchers had to demonstrate that the weevil would not turn its ravenous appetite on desirable plants in Florida's ecology.

"In view of the host-specificity exhibited in Argentina, Australia and in our labs, we feel that the weevil is safe to introduce into Florida," Habeck said. "When offered a choice, the weevils always fed on water lettuce. And eggs laid on other plants failed to hatch or the larvae died shortly after hatching."

Involved in the Army Corps of Engineers-sponsored project with Habeck are Catherine Thompson at IFAS in Gainesville, F. Allan Dray and Joe K. Balciunas at the IFAS Research and Education Center in Ft. Lauderdale, and Ted D. Center at the Agricultural Research Service USDA Aquatic Plant Management Laboratory, a Ft. Lauderdale branch of the Agricultural Research Service.

The next water lettuce enemy the researchers plan to investigate as a biocontrol is a moth whose caterpillar eats water lettuce. Host-specificity testing in quarantine has already begun. ■

Source: Dale Habeck, acting chairman, IFAS Entomology & Nematology Department, (904) 392-1901. Ft. Lauderdale contact; Ted Center, (305) 475-0541, USDA Aquatic Plant Management Laboratory. Army Corps of Engineers: Al Cofrancesco, (601) 634-3182, Waterways Experiment Station, Vicksburg, Miss. Juan Colon, (904) 791-2235, Jacksonville district P.A.O.

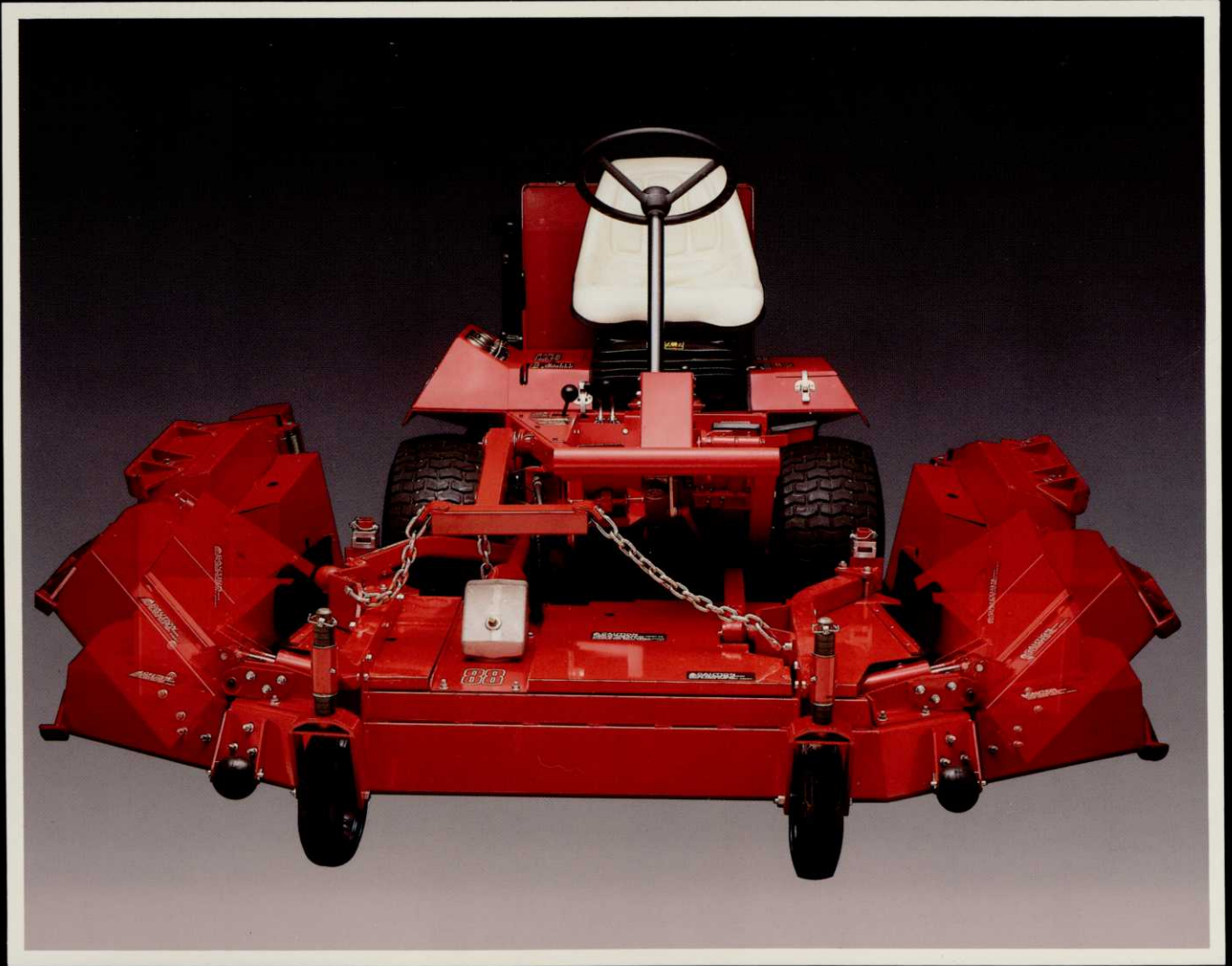


and  
**TORO**<sup>®</sup>  
present...

**TORO**<sup>®</sup>

# Triflex™ 88" Cutting Unit

For Groundsmaster<sup>®</sup> 322-D & 327



**The Triflex 88 is an 88", 72" or 54"  
variable width cutting unit  
with high quality rear discharge dispersion.**

# Increase productivity of your Groundsmaster® 300 Series



Groundsmaster 300 Series and Groundsmaster 72's have been the standard for 6 foot riding mowers for 15 years. Now you can increase productivity even further with the new Triflex 88" cutter deck. In fact, gain approximately 22% more productivity with the same transport ease of the 72" cutting unit.

Mate the Triflex 88" cutter deck to either water cooled diesel or gas powered prime movers for ample power and maximum productivity. The new Triflex 88" cutting unit is retrofitable to most Groundsmaster 72 models and current Groundsmaster 300 Series models.

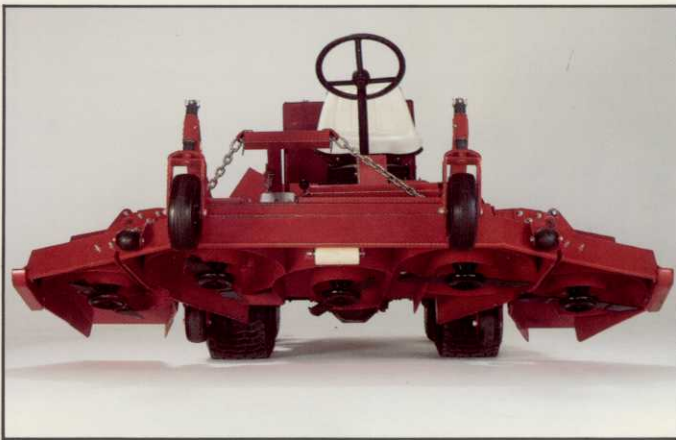
(See the Groundsmaster 300 Series literature for 72" cutting unit and accessory information.)

## With the New . . . Triflex™ 88" Rear Discharge Cutting Unit



For large acreage mowing, as with parks, school grounds, golf course roughs and other large commercial turf sites, where formal, controlled discharge of grass clippings is required, the Triflex 88" cutting unit will efficiently serve these area demands. In addition to the

productivity gains, you choose either 88", 72" or 54" width of cut — while on-the-go! Each wing deck is independently controlled hydraulically from the operator's position. Deck width can be altered for trimming applications and transport without ever leaving the operator's seat.



## High Quality Rear Discharge Dispersion

Five individual cutting unit cells with 19" blades provide high quality rear discharge dispersion. Grass is cut once and dispersed around and between the traction tires for a high quality finished appearance. A blade brake at the spindle of each wing stops the blade once the hydraulically lifted wing deck is raised — you continue to cut with the other cutting units without pause.

## Full Floatation Deck Design

Designed for controlled discharge of clippings to the rear with three chutes; right, left and center. Full floatation design suspended by two 10¼" front castor wheels and two 6" rear castor wheels. For a consistent cut and maximum contour following, wing decks are equipped with adjustable skirts, an anti-scalp cup located on each blade and three anti-scalp rollers on the center deck. Constructed of 11 gauge steel and is 5" deep. Five bladed front mounted rotary offset from outside of wheel 23" on the right, 20" on the left to allow alternate tire track positioning. The 88" wide deck can mow up to 4.9 acres/hour at 5.5 mph. Height of cut adjusts from 1" to 4" in ½" increments without tools. Lifts hydraulically for transport.



## Convenient Lift Controls

Wing deck lift controls are within easy reach of the operator as are all controls designed for operator ease and comfort throughout. Each wing deck is independently controlled. You choose either 88", 72" or 54" width of cut with no interruption to your mowing productivity.

## Groundsmaster 300 Series Gives You a Choice

The Groundsmaster 327 or Groundsmaster 322-D, whether 27 hp gas or 22 hp diesel, will equally provide durability and continual performance when matched with the Triflex 88" cutter deck, or the many other accessories available. In addition to reliability, the Groundsmaster 300 Series offers versatility with accessories like speed control, rotary broom, roll over protection system, cab and much more. Whether you utilize the new Triflex 88" cutting unit or accessorize for year 'round performance, the Groundsmaster 300 Series is a proven performer under the most demanding conditions.



# Groundsmaster® 300 Series Specifications\*

<b>GROUNDMASTER 327 PRIME MOVER — GAS (MODEL NO. 30781)</b>	
<b>ENGINE</b>	Continental 4-cylinder, 4 cycle, water cooled, forced recirculating system. 27 hp, electric start. 51.6 cu. in. (846 cc) displacement. Gear driven oil pump for full pressure lubrication and replaceable oil filter. 3 quart (2.8 liter) oil capacity with filter. Forged steel connecting rods, replaceable cast iron wet cylinder liners. External mechanical governor provides rapid load response, maintains speed to 3200 rpm. Mechanical fuel pump, heavy duty remote mounted air cleaner. Extra large muffler for reduced noise level. Optional Spark Arrestor Muffler, Part No. 24-8610.
<b>FUEL CAPACITY</b>	8.5 gallons (32 liters) gasoline.
<b>CONTROLS</b>	Hand operated throttle, choke, PTO and hydraulic implement lift.
<b>GAUGES &amp; ENGINE PROTECTION SYSTEMS</b>	Hour meter, ammeter, water temperature gauge and high temperature engine shut-off. Oil pressure warning light and buzzer.
<b>ELECTRICAL FEATURES</b>	12 volt, 42 plate, 45 amp-hour capacity battery. Dash mounted ignition switch, 30 amp alternator, seat switch, PTO and traction interlock switches.
<b>WEIGHT</b>	1240 lbs. (562 kg) prime mover.
<b>GROUNDMASTER 322-D PRIME MOVER — DIESEL (MODEL NO. 30782)</b>	
<b>ENGINE</b>	Mitsubishi, Model K3D-61TG, 3-cylinder, 4 cycle, 59.7 cu. in. (979 cc) displacement, vertical cylinder overhead valve water cooled diesel engine with centrifugal water pump. 22 hp at 3600 rpm. Three start assist glow plugs; heavy duty 12 volt gear reduction starter. Forced feed lubrication with Trochoid oil pump, 4 quart (3.8 liters) oil capacity with replaceable filter. Forged I-beam connecting rods, cast iron cylinder head and block; Bosch M type fuel injection pump, 12 volt electric fuel pump, hand primer pump. Internal self-lubricating mechanical governor provides rapid load response, maintains speed to 3200 rpm. Roosa-Master water separator, heavy duty remote mounted air cleaner, and extra large spark arrestor muffler for excellent silencing.
<b>FUEL CAPACITY</b>	8.5 gallons (32 liters), No. 1 or No. 2 Diesel Fuel.
<b>CONTROLS</b>	Hand operated throttle, PTO, glow plug switch and hydraulic implement lift.
<b>GAUGES &amp; ENGINE PROTECTION SYSTEMS</b>	Hour meter, ammeter, water temperature gauge, high engine temperature shut-off, and electric fuel gauge. Oil pressure warning light and buzzer. Glow plug indicator.
<b>ELECTRICAL FEATURES</b>	12 volt, 550 amp, cold cranking performance at 0° F (-18° C), maintenance free battery. Dash mounted ignition switch, 35 amp. alternator, 40 amp. manual reset circuit breaker. Seat switch, PTO and traction interlock switches.
<b>WEIGHT</b>	1000 lbs. (454 kg) prime mover.
<b>SPECIFICATIONS COMMON TO GROUNDMASTER 327 AND 322-D</b>	
<b>RADIATOR</b>	Mid-mounted industrial radiator with tube and fin construction; 7 fins per inch. Approx. 6 quart (5.7 liter) capacity. Stamped brass top and bottom tanks.
<b>TRACTION DRIVE</b>	Variable speed, axial piston hydrostatic transmission mounted on Dana GT20 axle — 20.9:1 ratio. Single foot pedal control of forward/reverse ground speed. 25 micron replaceable filter. Lubrication, SAE 10W30 SF-SC engine oil, approximate 5 quart (4.7 liter) oil capacity.
<b>GROUND SPEED/CLEARANCE</b>	0-9.5 mph (0-15.3 km/hr), infinitely variable. Ground clearance 7.5" (19 cm).
<b>TIRES/WHEELS/PRESSURES</b>	Two rear steering tires 16 x 6.50 x 8, tubeless ribbed, 4-ply rating. Two front traction drive tires 23 x 8.50 x 12, tubeless, 4-ply rating. Demountable drop center rims. Recommended tire pressure 10-15 psi (69-103 kPa) depending on mowing conditions. Optional extra width 23 x 10.50 x 12 tubeless 4-ply rating tire and rim, Part No. 36-1050, applicable only to side discharge cutting unit, Model No. 30721.
<b>MAIN FRAME</b>	All welded formed steel reinforced with square and rectangular tubing.
<b>BRAKES</b>	Individual 7" x 1.75" (17.8 x 4.4 cm) drum type wheel brakes and parking brakes on front traction wheels. Dynamic braking through traction drive.
<b>STEERING</b>	Automotive steering gear assembly. 15" (38 cm) steering wheel.
<b>SEAT</b>	Optional: High back cushion seat Model No. 30785, or deluxe adjustable suspension seat, Model No. 30786.
<b>IMPLEMENT DRIVE</b>	1 1/8" (2.9 cm) - 20 splined PTO shaft is driven by a tight-slack double "A" section, torque team V-belt.
<b>CERTIFICATION</b>	Certified to meet ANSI specifications B71.1b-1977, and applicable Federal and State OSHA regulations based thereon.

## Triflex™ 88" Cutting Unit, Model No. 30715

<b>TYPE</b>	88 in. (224 cm) width of cut, five blade, front mounted rotary. 54 in. (137 cm) width of cut, three blade center section. Two 17 in. (43 cm) width of cut wings; 71 in. (180 cm) width of cut with one wing up. Rear discharge; three chutes, right, left, and center. Disperses clippings around and between the traction tires.
<b>MOWING RATE</b>	Mows up to 4.9 acres/hr (1.98 hectares/hr) at 5.5 mph (8.9 km/hr). Up to 22% more productivity than current 72 inch (183 cm) cutting units.
<b>TRIMMING ABILITY</b>	Trims on both sides, zero uncut circle to right and left (with wheel brakes). Deck offset from outside of wheel to trim side of wing deck is 23 in. (58 cm) on the right, 20 in. (51 cm) on the left to allow alternate tire track position. Deck is offset 1.5 in. (3.8 cm) to the right of centerline.
<b>HEIGHT OF CUT CONSTRUCTION</b>	1-4 inches (2.5-10 cm) adjustable in 1/8" (1.3 cm) increments with spacers on the castor shafts. 11 gauge steel, 5 in. (13 cm) deep, welded construction and reinforced with 10 gauge channel.
<b>CUTTER DRIVE</b>	PTO driven gearbox with 1.26:1 spiral bevel gears. "BB" hex section belt to center deck spindles, "A" section belt to each wing deck. 1 in. (2.5 cm) diameter spindle shafts mounted in two greaseable tapered roller bearings (greaseable from top of deck)
<b>BLADES</b>	Five 19 in. (48.3 cm) long, 1/4 in. (6.3 mm) thick, 2 1/2 in. (6.3 cm) wide, heat treated steel blades.
<b>BELT IDLERS</b>	Self-tensioning idlers.
<b>WING DECKS</b>	Wings can be raised individually from the operator's seat for transport or cutting with either wing and center or the center deck only. Wings cut from level to approximately 15 degrees up. Further lift disengages the blade and applies a blade brake.
<b>CASTOR WHEELS/ ANTI-SCALP DEVICE</b>	Two 10.25 in. (26 cm) front castor wheels and two 6 in. (15 cm) rear castor wheels. Deck wings equipped with adjustable skids. Anti-scalp cup located on each blade. Three anti-scalp rollers on center deck. Optional: Pneumatic Wheels, P/N 54-8810.
<b>DECK COVERS</b>	Easy to remove shields. No tool hand knobs provided.
<b>COUNTERBALANCE WEIGHT</b>	105 lbs. (46.8 kg) total weight required. (Rear Weight Kit, P/N 24-5780; 35 lb. (19.8 kg) weight per kit).
<b>WEIGHT/DIMENSIONS (APPROX.)</b>	500 lbs. (226.8 kg) plus tractor belly shield and three rear weights. 93 in. (236 cm) width overall, 73.5 in. (186.7 cm) in transport.
<b>BELLY SHIELD</b>	Belly shield included to deflect clippings from the tractor radiator.
<b>CERTIFICATION</b>	Certified to meet ANSI specifications B71.4b-1984 and applicable Federal and State regulations based thereon.

For further information on Toro Groundsmaster 322-D and Groundsmaster 327, its deck options and accessories, refer to the Groundsmaster 300 Series sales specification.

(Not retrofitable to Groundsmaster 72, Model No. 30773.)

\*Specifications and design subject to change without notice. "Toro" and "Groundsmaster" are registered trademarks of The Toro Company, 8111 Lyndale Avenue South, Minneapolis, Minnesota 55420.

**COMMERCIAL PRODUCTS**

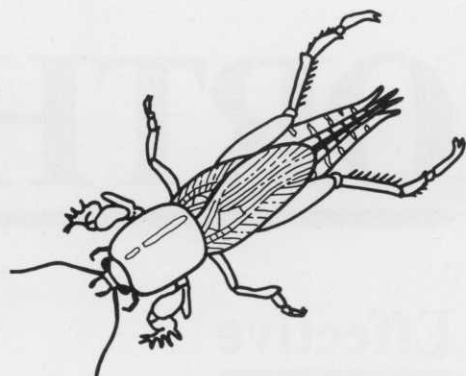


**THE PROFESSIONALS  
THAT KEEP YOU CUTTING.**



# ORTHENE<sup>®</sup>

## 75 S Soluble Powder



## Now Labeled for Mole Crickets on Turf

### Keep mole crickets off your turf

Now ORTHENE 75 S Soluble Powder, the spray that's been effective for years against a broad spectrum of foliage-feeding insects, has been cleared for control of mole crickets on turf under a Federal label.\*

### Fight pests that bug you most

If you're responsible for the care of a golf course, park, playground, polo field or picnic area, ORTHENE 75 S Soluble Powder can arm you and your turf against the pests that bug you most.

Round out your turf insect program by controlling leafhoppers, fire ants and mole crickets all with one spray—ORTHENE 75 S.

### Give turf two kinds of fighting protection

ORTHENE 75 S kills turf pests on contact and by ingestion. Then, working as a systemic, it gives long-lasting protection by eliminating insects as they feed.

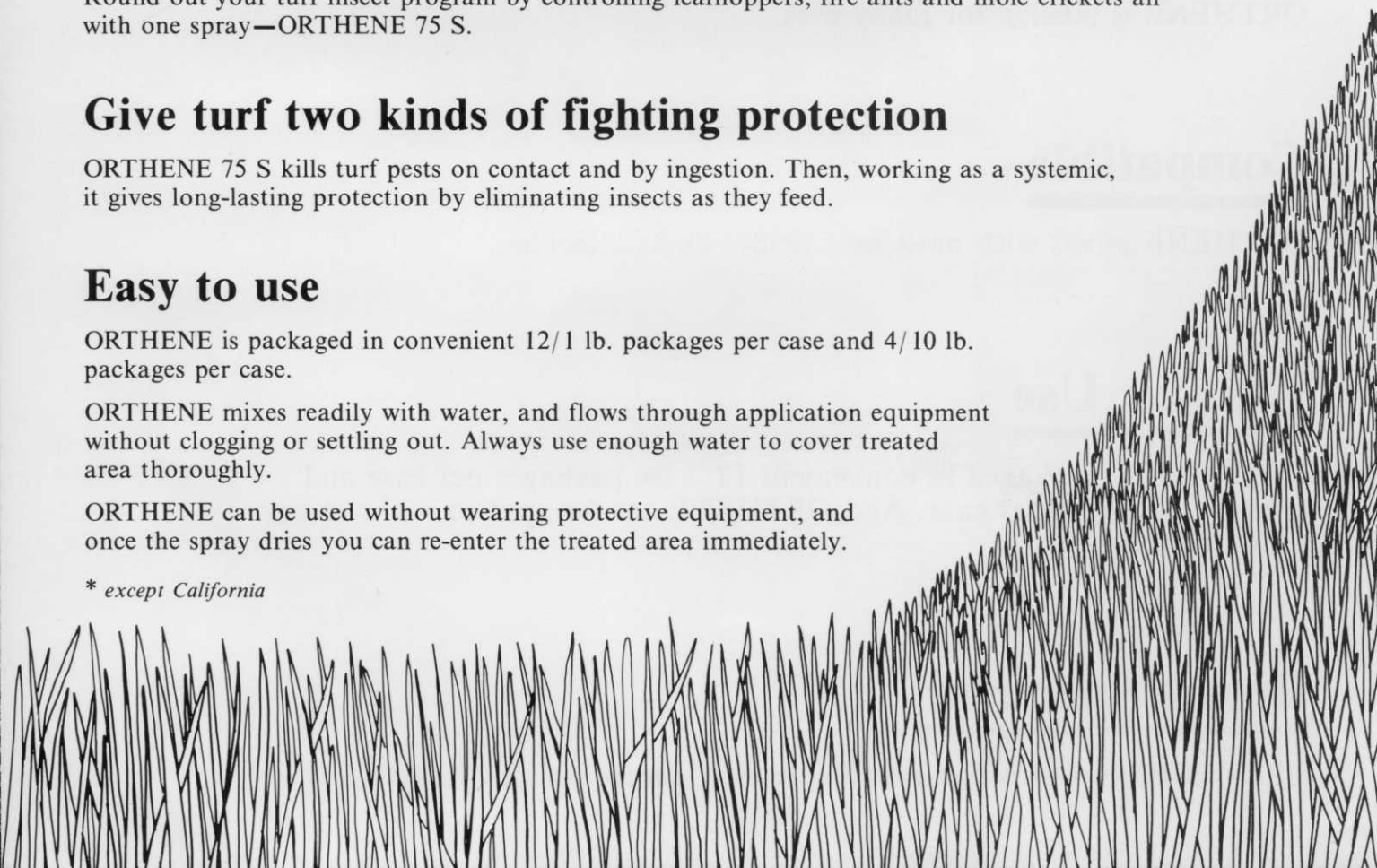
### Easy to use

ORTHENE is packaged in convenient 12/1 lb. packages per case and 4/10 lb. packages per case.

ORTHENE mixes readily with water, and flows through application equipment without clogging or settling out. Always use enough water to cover treated area thoroughly.

ORTHENE can be used without wearing protective equipment, and once the spray dries you can re-enter the treated area immediately.

\* *except California*



# **ORTHENE<sup>®</sup>**

---

## **Effective**

ORTHENE gives broad spectrum control of turf insects.

## **Economical**

ORTHENE is the most economically-priced product per acre of any product currently available for insect control on turf, regardless of the pest.

## **Versatile**

ORTHENE is labeled for many uses.

## **Compatible**

ORTHENE mixes with most insecticides and fungicides.

## **Easy to Use**

ORTHENE is packaged in convenient 12/1 lb. packages per case and 4/10 lb. packages per case. And ORTHENE can be applied without any protective equipment.

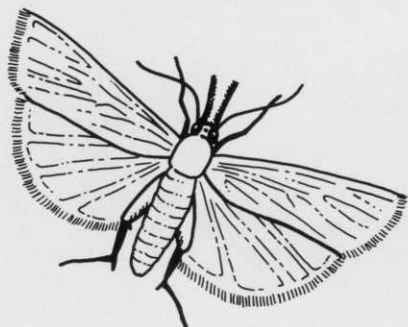
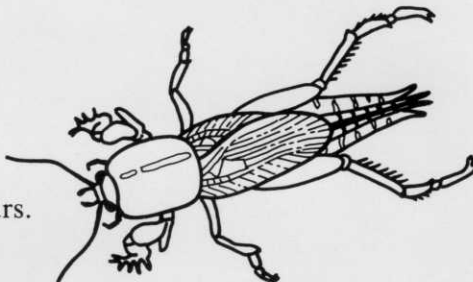
## **Broad Spectrum**

ORTHENE gives effective broad spectrum control of turf insects.

# Controls tough turf pests

## Mole Crickets

- Apply as mole crickets begin to appear.
- Apply ORTHENE at 2.66 - 5.2 lbs. per acre.
- Apply after an irrigation.
- Apply in late afternoon or early evening hours.
- Apply in sufficient water to cover.
- Do not irrigate after application.



## Sod Webworms

- Apply as sod webworms begin to appear.
- Apply ORTHENE at 1 1/3 to 2 3/4 lbs. per acre.
- Apply in sufficient water to cover.

## Leafhoppers

- Apply as leafhoppers begin to appear.
- Apply 2 3/4 lbs. per acre.
- Apply in sufficient water to cover.



## Imported Fire Ants



### Dry Method—Mound Treatment

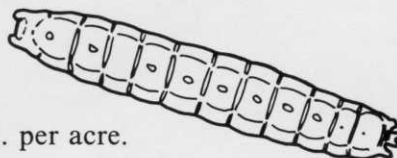
- Evenly distribute 1 to 2 teaspoons over mound.
- Apply early morning or late afternoon.

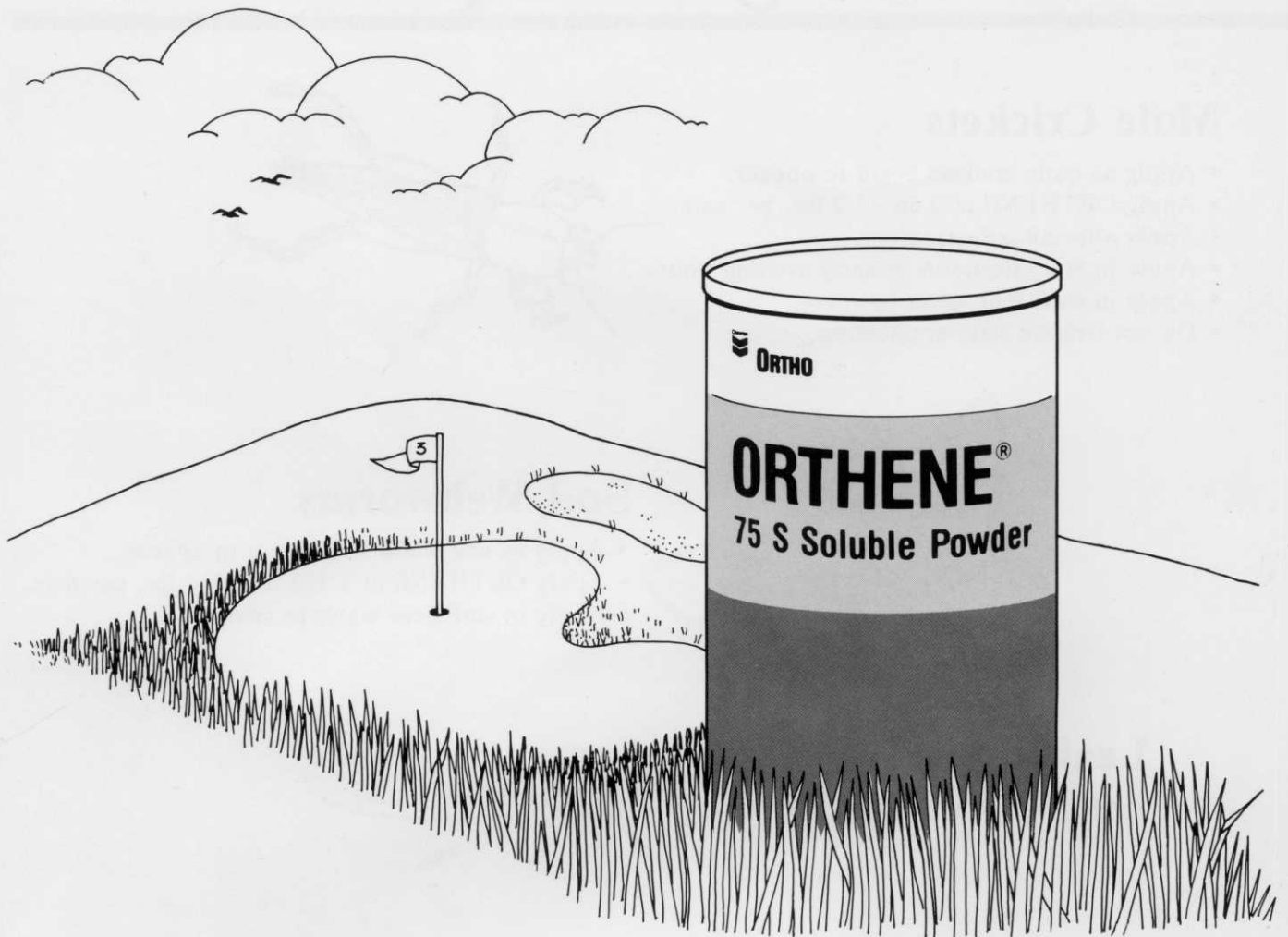
### Drench Method—Mound Treatment

- Mix 1 oz. in 5 gallons of water.
- Apply 1 gallon of mix to each mound area by sprinkling the mound until wet and treat a 4 foot diameter circle around the mound.

## Cutworms

- Apply as insects begin to appear.
- Apply ORTHENE at 3 1/4 to 6 2/3 lbs. per acre.
- Apply in sufficient water to cover.





**ORTHO**

**Chevron Chemical Company**  
Agricultural Chemicals Division  
575 Market Street  
San Francisco, CA 94105

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

Do not allow livestock to graze treated areas and do not feed treated grass to livestock.

Copyright © 1987. Chevron Chemical Company.  
All rights reserved. 8717 ORT-45.

EXCEL

The best-looking fairways start with XL preemergence herbicide. Because to apply XL is to excel in your weed control.

With just one application, you can keep your fairways free from crabgrass and goosegrass throughout the season—four months or longer.

Your control's not only longer with XL, it's stronger, too. Stronger

than oxadiazon against crabgrass. And just as strong or stronger against goosegrass over a longer time. These aren't just empty claims. They're facts proven by research trials across the country.

And when late summer or early fall comes, you can maintain your high standards of excellence in weed control. Just reapply XL. And keep your fairways free from *Poa annua*



and other winter annual broad-leaves.

No other herbicide excels like XL because no other herbicide is formulated like XL. XL stays only where you put it. It won't wash out, even in heavy rainfall. And once activated, it forms a vapor zone just below your turf to prevent weed breakthroughs better and longer than anything else.

Start making your fairways the best-dressed there are anywhere. Excel with XL. Also available in granular fertilizer combinations from leading formulators. See your Elanco distributor. Or call toll-free: 1-800-ELANPRO. In Indiana, call collect: 317-261-6102.

Elanco Products Company  
A Division of Eli Lilly and Company  
Lilly Corporate Center  
Dept. E-455, Indianapolis, IN 46285, U.S.A.



# XL

**For longer-lasting, broad-spectrum  
weed control, excel with XL.™**

# Don't just take our word for it.

For warm-season superintendents, weed and grass problems come in many forms. They also come at different times of the year. So timely application of an effective broad-spectrum product is vital if problems like crabgrass, goosegrass, *Poa annua*, chickweed and henbit are to be eliminated.

To date, course superintendents throughout the south have discovered that Elanco XL can keep fairways, roughs, green slopes and tees looking good year round. Here's what three of them had to say about XL's performance this season:

"I never went completely with XL until this year when I incorporated it with 6-9-27 fertilizer. But in past years, I've used it by itself in test areas, and the results have been spectacular when you compared the treated areas with the check areas.

"I plan to keep using it as long as it continues to give results."

*Joy Rabon, Superintendent  
Azalea Sands Golf Course  
North Myrtle Beach, South Carolina*

"We use XL for preemergence control of *Poa annua* in the Bermudagrass, but mainly to control the perennial ryegrass that tends to be tracked around.

"Without XL, we'd have trouble. But we put it down in mid- to late-November and get relatively good control through the winter."

*Whit Derrick, Superintendent  
Sugar Mill Country Club  
New Smyrna Beach, Florida*

"I've had excellent control with XL. I mean excellent! This golf course has traditionally had a weed problem; and it's been that way as long as I can remember.

"In fact, I grew up on this golf course so I know its history. And I can honestly say XL has made the

difference like night and day.

"I can't say enough about the way it controls the goosegrass either. This year is the first year I didn't go with a second application of XL. Instead, I followed it with Surflan, and the program is working like gangbusters.

"Another thing about XL is that it has been cheaper to use than some of the other products on the market that have actually been less effective. It's unbelievable the way XL has turned this course around."

*Ted Daum, Superintendent  
Mayfair Country Club  
Sanford, Florida*

Whether your situation calls for a spring application of XL for grassy weeds or a late summer/fall treatment for winter annual broad-leaves, why not give XL a try on your turf. It might just turn your course around, too.



**ELANCO**

## Specialty Products

Elanco Products Company  
A Division of Eli Lilly and Company

Lilly Corporate Center  
Dept. E-455, Indianapolis, IN 46285, U.S.A.  
XL™—(benefin + oryzalin, Elanco Products Company)  
Refer to the XL label for complete use directions.



**When the  
motion picture  
“Caddy Shack”  
blew up a  
Florida golf  
course....**



Photo © 1980 Warner Bros. Inc.



Photo © 1980 Warner Bros. Inc.

## DeBRA helped put it back together.

Because that's what we do best. Selecting the right equipment for the right job at the right price.

After other companies have come and gone with a lot of empty promises, DeBRA will still be around helping you with the proper turf and industrial equipment, and people and professional services in the fields of grounds maintenance. A wise man once said, "don't be penny wise and pound foolish." Which means what may appear to be a money-saving decision on your part today, may blow up on you in the future. That's why you need DeBRA. Because we follow through.

The equipment or service you need isn't the same as everybody else's. That's why DeBRA selects the quality equipment you need and backs it up with over \$1 million in parts inventory. In addition, DeBRA offers the best equipment consultants in the industry. So you get exactly what you need when you need it. And only DeBRA features 20 trained mechanics with Mobile Service Vans — for on-the-job repairs, thus eliminating down-time. We even offer lease and finance programs to suit your every need.

So when you've got a job to do, call one of DeBRA's 7 convenient Florida locations. We've been around for over 40 years. And we'll help you get it all together.

# DeBRA

# DeBRA

## Turf & Industrial Equipment Company

**Hollywood, FL**  
5921 North Oak Street  
33021  
(305) 987-1400

**Stuart, FL**  
3913 Bruner Terrace  
33497  
(305) 288-4838

**Tampa, FL**  
6025 U.S. Highway 301  
33610  
(813) 621-3077

**Sarasota, FL**  
510 Cattlemen Road  
33582  
(813) 377-5081

**Orlando, FL**  
3418 N. Orange Blossom Trail  
32084  
(305) 291-8323  
1-800-368-8873

**Ft. Myers, FL**  
2857 Hanson Street  
33901  
(813) 332-4663

**Jacksonville, FL**  
6123-5 Phillips Hwy.  
32207  
(904) 733-3115



## Slow-Release Nitrogen Fertilizers For Turf

FLORIDA WEST COAST  
C. LESTER McMULLEN  
1569 OAK LANE  
CLEARWATER, FLORIDA 33516  
(813) 531-7171

NORTH & CENTRAL FLORIDA  
DWIGHT "BUTCH" SINGO  
802 LIVE OAK LANE  
OVIEDO, FLORIDA 32765  
(305) 365-2923

FLORIDA EAST COAST  
W.E. "BILL" RAYSIDE  
970 S. PATRICK CIRCLE  
WEST PALM BEACH, FL 33406  
(305) 684-6958

2121 3rd STREET S.W.  
WINTER HAVEN, FLORIDA 33880  
(813) 293-3147  
1-800-282-9588

ESTECH BRANDED FERTILIZERS  
PROFESSIONAL PRODUCTS DIVISION

SELVITZ ROAD  
FT. PIERCE ROAD  
(305) 464-3511  
1-800-432-2661

# Slow-Release Nitrogen Fertilizers For Turf

## DETAILED SPECIFICATIONS

### Fairways

PRODUCT ANALYSIS	BAG WT.	FT. COVERS	RATE LBS/A	lbs NPK/M			NUTRIENT SOURCES			SLOW REL. NIT.%	COMMENTS	
				N	P	K	N	P	K			
13-2-8	50	6500	335	1	.15	.62	4.20% 4.00% .44% 4.36%	Ammoniacal IBDU WIN UREA WSN CSRUN	triple super	Sulphate	30%	Mg 2.0%, Mn 1.0% Fe 1.0%
15-0-15	50	7500	290	1	0	1	2.50% 7.50% 4.50% .50%	Nitrate Ammoniacal IBDU WIN UREA WSN	—	Sulphate	30%	Mg 1.8%, Mn 1.0%, Fe 1.0%
15-0-15	50	7500	290	1	0	1	5.00% 4.50% 5.00% .50%	Ammoniacal IBDU WIN CSRUN UREA WSN	—	Sulphate	63%	Mg 1.2%, Mn 1.0%, Fe 2.0%
16-4-8	50	8000	272	1	.25	.50	1.25% 10.75% 3.60% .40%	Nitrate Ammoniacal IBDU WIN UREA WSN	triple super	Muriate SPM	23%	Mg 1.16%, Mn .45%, Cu .09%, Zn .08%, B .03%, Fe 1.24%
16-4-16	50	8000	272	1	.25	1	3.50% 6.50% 5.40% .60%	Nitrate Ammoniacal IBDU WIN UREA WSN	DAP	Muriate SPM	34%	Mg 2.40%, Ma 1.57%, Fe Chelate .06%
18-4-6	50	9000	242	1	.22	.33	10.00% 7.20% .80%	Ammoniacal IBDU WIN UREA WSN	DAP	Muriate SPM	40%	Mg 1.50%, Mn .95%, Cu .08%, Zn .06%, B .02%, Fe 1.00%

### Greens and Tees

PRODUCT ANALYSIS	BAG WT.	FT. COVERS	RATE LBS/M	lbs NPK/M			NUTRIENT SOURCES			SLOW REL. NIT.%	COMMENTS	
				N	P	K	N	P	K			
8-0-8	50	4000	12.5	1	0	1	7.20% .80%	WIN WSN	—	SPM	90%	Mg 4.00%, Mn .39%, Fe .49%
8-1-3	50	4000	12.5	1	.13	.38	2.60% 4.50% .90%	Ammoniacal WIN WSN	Sludge	SPM	56%	Mg 5.00%, Mn .39%, Fe .49%
8-1-8	50	4000	12.5	1	.13	1	2.60% 4.80% .60%	Ammoniacal WIN WSN	Sludge	SPM	60%	Mg 4.00%, Mn .38%, Fe .40%
15-0-15	50	7500	6.67	1	0	1	3.70% 9.60% 1.70%	Nitrate WIN WSN	Sludge	Nitrate SPM	64%	Mg 1.00%, Mn 1.00%, Fe Chelate .03%
17-1-10	50	8500	5.88	1	.06	.59	2.50% 1.50% 10.50% 2.50%	Nitrate Ammoniacal WIN WSN	Sludge	Nitrate SPM	62%	Mg 1.00%, Mn .50%, Cu .07%, Zn .06%, B .02%, Fe Chel .03%

IBDU WIN IBDU Water Insoluble Nitrogen  
 UREA WSN Urea Water Soluble Nitrogen  
 CSRUN Coated Slow Release Urea Nitrogen  
 WIN Water Insoluble Nitrogen  
 WSN Water Soluble Nitrogen

# SULFUR NUTRITION ON GOLF COURSES

By Paul J. Eberhardt, PhD  
IAS Laboratories

Plants absorb sulfur as the sulfate ion. If applied as elemental sulfur it must first be oxidized by solid organisms into the sulfate form before being utilized by plants. Elemental sulfur is also beneficial as an amendment but we will leave that for further discussion. For now just consider sulfur from the nutritional standpoint.

Sulfur deficiency is often mistaken for nitrogen deficiency in areas where it occurs. Plants become uniformly chlorotic, stunted, and spindly. However, since sulfur does not easily translocate, the symptoms are first noticed in the young leaves versus the older leaves for nitrogen deficiency.

Sulfur deficiencies are rare in Arizona since the irrigation water often contains sufficient sulfate ion to supply the plant needs. There are selected areas of Arizona where little or no sulfate is found in the water and response to sulfur has been found.

Since sulfur is a constituent of three essential amino acids — cystine, cysteine, and methionine — and it is necessary for protein synthesis, it is no wonder that a deficiency exhibits the above symptoms. In plant analysis, a ratio of 10:1 for total N to total S is generally considered adequate for best growth.

Sandy soils, low in organic matter are most likely to show sulfur deficiency. Environmental factors can increase or decrease the likelihood of sulfur deficiency depending on circumstances. For example, elemental sulfur will not oxidize properly under saturated (waterlogged) conditions. Instead, hydrogen sulfide (rotten egg smell) may be produced. Temperature, pH, soil organisms, and fineness of the particles or elemental sulfur also influence the ratio of oxidation.

**THIOBACILLUS** organisms are generally the main genus of organisms responsible for sulfur oxidation. Oxygen is an absolute necessity for these organisms in order to change elemental sulfur to sulfate. Even then, the rate of oxidation can vary from 4 to 12 weeks or longer depending on the species present. In other words, all soils do not show different rates of oxidation.

Maximum oxidation of sulfur to sulfate occurs at field capacity moisture. Above or below this level the oxidation of sulfur is impeded. Obviously surface application of elemental sulfur is seriously slowed in its oxidation rate.

Most of the sulfur oxidizing organisms are more active in acid soils than in alkaline soils. Since most of our soils are alkaline, the rate of oxidation will be slower than

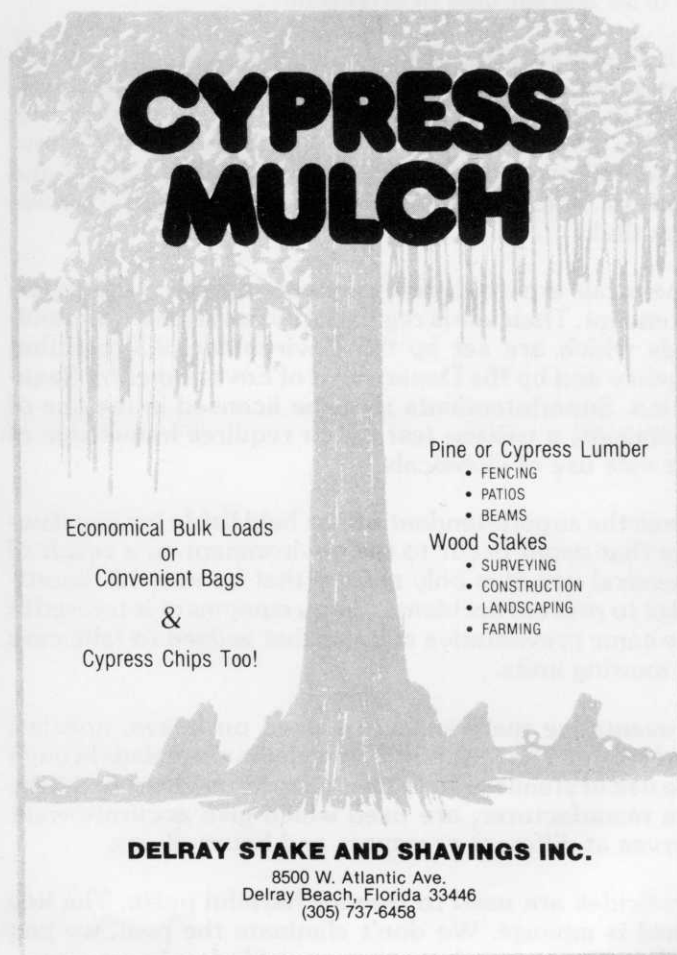
expected, especially if applied during the cooler part of the year. Optimum temperature for oxidation is between 27° and 35°C.

One of the most important factors affecting the sulfur oxidation is the size of the elemental sulfur particles applied. Large particles of sulfur (5-10 mesh) oxidize very slowly and less than 3% was oxidized after 1 month. Compare this to a nearly 82% oxidation rate for particle size 120-170 mesh.

As a rule of thumb, use sulfur that passes a 16 mesh screen 100%, and 50% should also pass a 100 mesh screen.

There are other products and fertilizers containing sulfur that can be used in place of elemental sulfur. Generally, these products are higher in price but sometimes easier and more convenient to apply. Fertilizers containing sulfate will not affect the pH of the soil like elemental sulfur or the poly sulfides with the exception of ammonium, aluminum, and iron sulfates. Remember, it is during the oxidation process that the pH is lowered. If oxidation does not occur, the pH will not be lowered.

Since grasses can more easily extract sulfate ion than broad leaf plants, sulfur deficiencies will be rare in turf. However, when present, they can be difficult to diagnose visually, since they are not expected. An inexpensive analysis on soil or water can remove this from the unknown list of nutrients that can affect the quality of a course. ■



## CYPRESS MULCH

Economical Bulk Loads  
or  
Convenient Bags  
&  
Cypress Chips Too!

Pine or Cypress Lumber

- FENCING
- PATIOS
- BEAMS

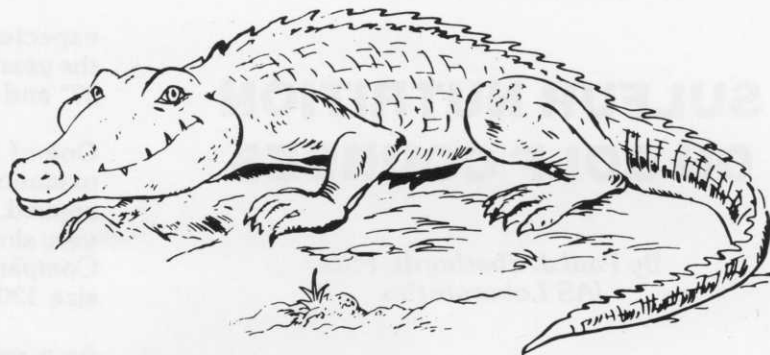
Wood Stakes

- SURVEYING
- CONSTRUCTION
- LANDSCAPING
- FARMING

**DELRAY STAKE AND SHAVINGS INC.**  
8500 W. Atlantic Ave.  
Delray Beach, Florida 33446  
(305) 737-6458

# The Gator Growls

By Norman E. Carmouche



## WITCH HUNT

I, along with most superintendents, have read several horror stories recently concerning so-called "killer courses" in which superintendents are no better off than the witches of Salem several hundred years ago.

My first reaction to these stories was anger. I still don't understand how such completely erroneous statements could be put in print, not by a scandal sheet, but by a respected golf magazine.

Then, after I had a chance to cool down, it scared me to think of the tremendous up-hill battle we superintendents have facing us. With the ever-increasing emphasis being placed on environmental issues, the public questions everything; and rightfully so. Because our profession deals with chemicals which, if misused, have the potential to do harm to the environment, we can expect to draw a great deal of attention.

It is important, therefore, to get the message across to the public that golf course superintendents are interested in protecting the environment, too. We have to be; we live with the environment on a daily basis. Without good soil, water, air, and beneficial insects, fungi and bacteria, we would be unable to keep our courses beautiful.

Chemicals are a necessary economic tool for the superintendent. Their use is regulated by governmental standards which are set by the Environmental Protection Agency and by the Department of Environmental Regulation. Superintendents must be licensed in the use of chemicals, a written test which requires knowledge of the safe use of chemicals.

Since the superintendent will be held liable for any damage that might occur to the environment as a result of chemical use, it is only natural that he uses his knowledge to prevent accidents. Spray equipment is treated in the same preventative manner that is used to take care of mowing units.

Preventative maintenance is used on hoses, nozzles, and valves. The life of spray nozzles is extended through the use of stainless steel tips. Graphs, made available by the manufacturer, are used which give accurate wear curves at different pressures and hours of use.

Pesticides are used to manage harmful pests. The key word is manage. We don't eliminate the pest, we just reduce the populations to acceptable levels.

An often overlooked chemical that is used more frequently than any other is fertilizer. As much care is taken when measuring and calibrating for fertilizer applications as is taken when measuring and calibrating for pesticide applications. Too much of one nutrient can cause soils to become so imbalanced that beneficial organisms will not survive.

Or consider, for example, a pond that is constantly getting the excess nitrogen of a fairway that is over-fertilized. The nutrients in the pond will become so high that the aging process becomes accelerated. Soon the pond will become uninhabitable for anything.

Superintendents are aware of the precious balance that nature has created. In the golf course maintenance business, too much of a good thing, i.e. fertilizer, insecticide, fungicide, herbicide, can do more harm than good.

Due to the high cost of chemicals today, many problems on a golf course are treated on a curative basis as opposed to a preventative basis. This has had considerable effect on the amount of chemicals used. Not only do superintendents use fewer chemicals today than 10 or 20 years ago, the products on the market now have lower residuals so the effects are much shorter in duration.

Golf courses are also providing communities with an alternative to dumping treated waste water in rivers and bays. Many courses now use waste water for irrigation, and many more courses will use it in the future.

Superintendent associations around the country create funds for researching safe solutions to problems. Dr. Milch of Igene Biotechnology Inc. in Columbia, Maryland is experimenting with an enzyme from crab shells that he hopes will eventually be used as a biological control for nematodes. There are studies being made with certain harmless bacteria to biologically control the mole cricket. And, of course, the search is ongoing for heartier strains of grasses that are more capable of resisting pests and disease than those grasses being used today.

The Golf Course Superintendents Association of America is on the right road with its new public relations campaign. Hopefully they will be able to alleviate some of the public's fears and concerns about the use of chemicals on golf courses.

Just because superintendents have to use chemicals to maintain healthy turf doesn't mean we are the enemy. It's time the witch hunt ended. ■



## Helpingstine Named National Sales Manager for Woodace Products

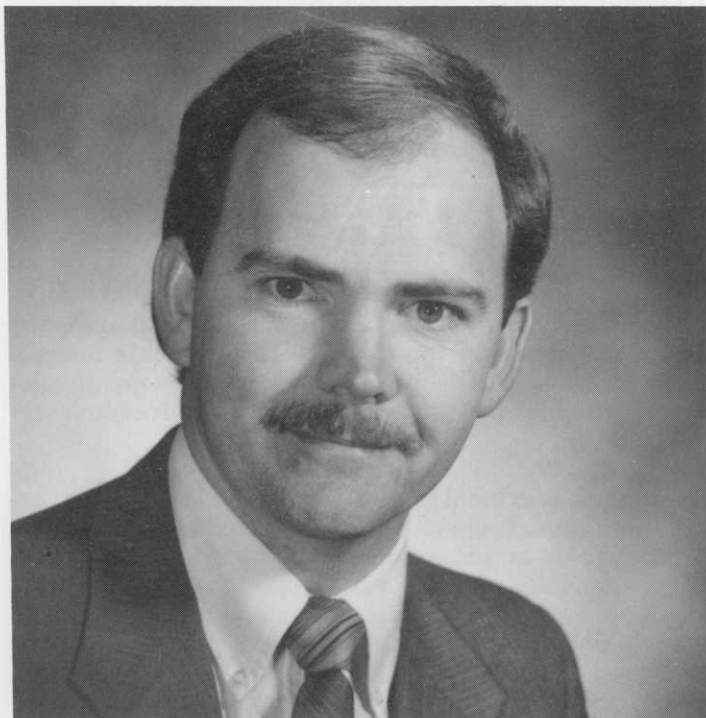
Richard K. (Rick) Helpingstine has been named National Sales Manager for Woodace products by Irvn B. Stacy, III, Director of Marketing, Specialty Products division of Estech Branded Fertilizers.

Helpingstine is a native of Centralia, Illinois, and graduated from Southern Illinois University with a degree in Business Administration.

He joined Estech in 1983 as the Product Promotions Manager and was promoted in 1985 as the Woodace Products Manager. Prior to coming to Estech, he had fourteen years' experience in the wholesale nursery and landscape business.

Woodace products are a complete line of ornamental nursery and greenhouse fertilizers featuring long-lasting IBDU Briquettes, IBDU, Estech, and Perk. In his new assignment, Helpingstine will be responsible for the marketing of the complete line of ornamental fertilizers as well as the development of a nationwide sales organization to call on both distributors and growers.

Helpingstine is married and has two children. He will continue to be located at the Estech headquarters in Fairview Heights, Illinois. ■



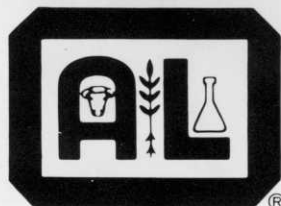
*Rick Helpingstine*

## WE HELP SOLVE PROBLEMS

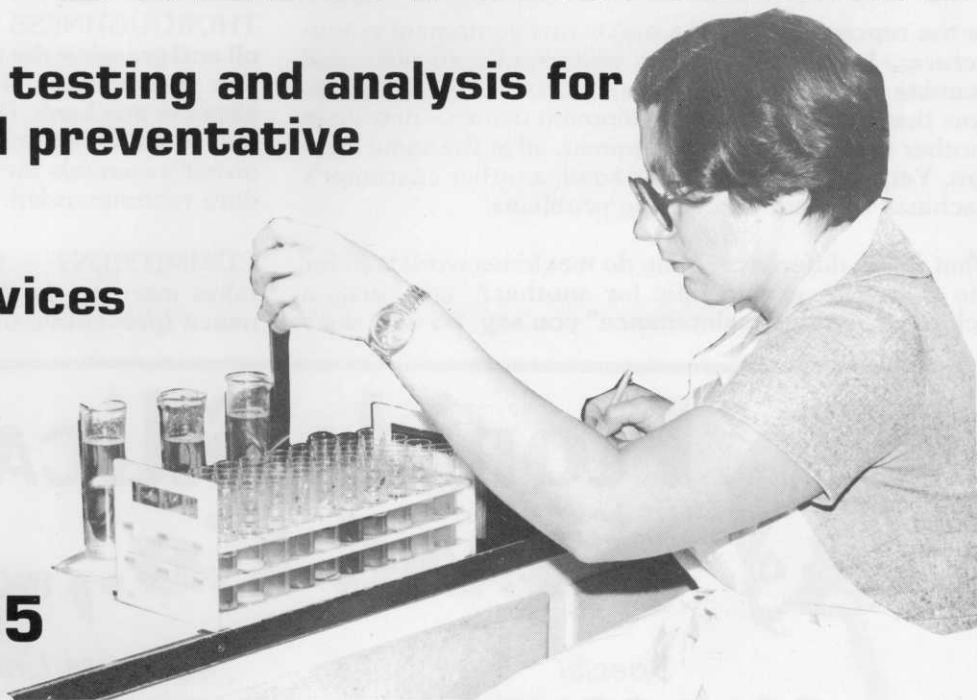
with dependable testing and analysis for  
emergencies and preventative  
maintenance.

- \* Consulting services
- \* Soil, plant and water analysis
- \* Fast service

Call us today  
**305/972-3255**



**A&L Southern Agricultural Laboratories**  
1031 West Copans Road, Building D, Suite 8  
Pompano Beach, FL 33064



# PREVENTIVE. MAINTENANCE:

## Another Freedom to Enjoy

By Michael L. Sheffield  
Regional Sales Manager  
Ransomes, Inc.  
One Bob-Cat Lane  
Johnson Creek, Wisconsin 53038

You may remember from history a collection of writings by Thomas Paine entitled, "Common Sense," commenting on the issues of the day. These comments helped shape opinions and decisions which played a major role in the future of a young country and the freedom we enjoy today.

Though not as critical to the liberties of a free nation, the "common sense" I speak of is critical to the "freedom" of all purchasers of turf maintenance equipment. Freedom from expensive breakdowns, lost productivity, idle manpower as well as undue frustration and stress is a freedom we can enjoy with just a touch of common sense.

Most of us are familiar with the term preventive maintenance. Certainly all of us agree with the theory. Where we may differ in in the application, i.e. when, how often, how much, etc. One thing we should agree on, by virtue of our common sense, is that preventive maintenance is a necessity.

As the representative of a major turf equipment manufacturer, I have the unique opportunity to view and examine a wide variety of equipment. Common problems that I see in our own equipment usually show up in another manufacturer's equipment, all at the same location. Yet, going just down the road, another customer's machines may not exhibit any problems.

What is the difference? Why do machines work well for one customer, problematic for another? "Obviously a lack of preventive maintenance" you say. So why does

the customer with the problem swear on his grease gun that he does indeed, perform proper maintenance?

Using our common sense, let's examine and agree upon some simple issues. Before we can find a solution, we must identify and isolate each problem regarding proper equipment care.

**ATTITUDE** — "What does attitude have to do with preventive maintenance?" you may ask. In one word, everything. How do you (and your crew) really feel about the equipment you are using? Do you view your machinery as sophisticated, well designed proper work tools, or just another object of your day's dreary routine? Do you respect and try to understand your machines, or loathe them?

**RECORD KEEPING** — Do you, or your mechanic, write down a daily log of the maintenance or repairs done to each machine? If you think you are too busy, or that records are not necessary, consider this. Would you continue to use the services of a doctor who refuses to keep records of your visits or diagnosis?

**PLANNING** — How would you expect your crew to perform needed work if a plan for each day, week and month were not organized? Just as you plan for tomorrow's work, plan for tomorrow's maintenance.

**SERVICE SCHOOLS** — Whenever service schools are offered, do you take advantage of them? If so, do you go to participate as well as to learn? Everything we learn, we learn from someone else. Sharing your knowledge with others, as well as learning, makes you a contributor to your chosen profession.

**THOROUGHNESS** — Most people think changing the oil and greasing the zerks is about the extent of preventive maintenance. Think of your equipment just as an airplane mechanic thinks of his. Every work performed has a life threatening consequence to it. Search the owner's manuals for every possible maintenance procedure recommended.

**COMMITMENT** — Good intentions are great — but it takes more to do the job. How committed to maintenance (preventive or otherwise) are you? Do you per-



# Florida Silica SAND Co., INC.

Special  
**GOLF COURSE  
MIXES**

*Sterilization Available*

Complete Line of  
**NURSERY AND  
LANDSCAPE**

*Materials*

Dade County  
**949-3521**

Broward County  
**923-8323**

Since  
1948

form a daily checklist? Are you dogmatic about how often and how thorough maintenance is performed? Are you willing to pull a machine from its days work to take care of its needs, just as a sick employee would not be expected to work?

Common sense tells us not to expect more from something than we are willing to give. Do you feed and bathe your body daily? Do you expect to live in a clean and healthy environment? Why not lavish the same attention on your equipment?

Turf maintenance equipment, by nature, is expensive and sensitive. It's working environment is dusty, dirty, humid, wet or dry, impregnated with chemicals and fertilizers. Subject to constant jolting and vibration, operator inexperience and/or abuse, components eventually loosen and wear. That is why a *daily* checklist is important to follow.

Preventive maintenance and common sense go together. Examine your attitude and learn to respect your equipment. 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. Once you've decided to develop a proper preventive maintenance program, carry through and do it. Use your common sense and enjoy 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

## CONFERENCE & SHOW October 11-14

*The Conference...* Jerry Clower, noted country comic and former fertilizer salesman from Yazoo City, Mississippi, will entertain Monday afternoon's attendants.

The conference committee has planned essentially the same format of last year.

FTGA funded research reports will be given Monday morning. The three educational seminars Tuesday will encompass *golf turf, lawn and commercial turf, and principles of turfgrass management.*

The popular three day workshops will cover six subjects instead of four. To do this, three subjects will be presented two days. The third day three different subjects will be covered. Wednesday morning may be given over fully to the exhibits and the workshops.

---

### WE WON'T GIVE AWAY ALL OUR SECRETS, BUT THERE IS A HINT OF A VERY LIVELY GRAND OPENING FOR FTGA '87.

---

*The Show...* More has been added to enhance the show this year. This year aisle signs and a carpeted center aisle in the exhibit hall have been added. Once again we promise a top professional presentation of turfgrass exhibitors from all over the country. We won't give away all our secrets, but there is a hint of a very lively grand opening for FTGA '87.

*The Special Events...* Look for some changes and additions to the social events you have come to expect and look forward to. ■



#### PUMP MOTOR TROUBLE?

We're specialists in electric motor repair. From .5 to 500 horsepower, we can fix ANY motor. So, if you have pump motor trouble, call us and we can help solve your problem.

FOR 21 YEARS, "FAST SERVICE, NO MATTER HOW LONG IT TAKES"

Factory authorized warranty service for U.S. Electric and Newman Vertical hollowshaft turbine pump motors.

**BELLE GLADE ELECTRIC MOTOR SERVICE**

900 N.W. 13th Street — Belle Glade, Fla. 33430 — Area Code 305 - 996-6739



# WASPS and NEMATODES

## Used in Arsenal Against Turf-Chomping Mole Crickets

By Edith Hollander

Biological control may produce an inexpensive and ecologically sound answer to a \$30-million-a-year problem with mole crickets.

Mole crickets damage thousands of acres of private and commercial property throughout Florida each year, destroying root systems and seedlings while feeding and tunneling underground. Spring and summer are their most active seasons.

Scientists with the University of Florida's Institute of Food and Agricultural Sciences (IFAS) are focusing on biocontrol — using the mole crickets' natural enemies to

control the problem.

Biological control of the cricket is the cheapest and most permanent solution, said Dr. J.H. Frank, mole cricket research coordinator with IFAS. Once established, the natural enemy becomes a part of the environment, continuously killing mole crickets and controlling their numbers, Frank said.

However, because of Florida's diverse climate, no one solution will work everywhere in the state. Researchers are working with a number of natural enemies in an effort to address the problem complicated by the different conditions.

"At the present time, insecticides and baits are the best way of controlling mole crickets," said Dr. Don Short, an IFAS entomologist. When used properly, these will provide some control, he said. This is the only method used presently.

Most of the biocontrol research focuses on two natural enemies — a nematode and a parasitic wasp. Because the natural enemies, like the mole crickets, are native to South America, arrangements have been made with South American researchers to provide samples and data.

The nematode research is nearest to completion, with final testing to begin this spring. Nematologist Dr. Grover Smart is trying to determine the best method of introducing the nematode into the environment. Smart is testing two methods — incorporating nematodes instead of poison into mole cricket bait and injecting nematodes directly into the ground with a water injection system. Smart hopes the baits work best as this would produce immediate contact between the two when the mole cricket eats the nematode bait.

The main problem with the nematode is keeping it in a moist environment long enough to ensure contact with the mole crickets. Smart is trying to create a moister bait solution to prolong the nematode's life from 24 hours to 48 hours.

Dr. Fred Bennett, graduate research professor and entomologist, has been working with parasitic wasps, in particular the *Larra bicolor* species. This wasp, which was established through a 1981 Ft. Lauderdale area release, has not yet survived in colder regions of the state.

Bennett will be in Bolivia this spring to study this and other species of parasitic wasps. The wasps have been supplied to Bennett through a cooperative agreement with a researcher in Bolivia. Research has been difficult, however, because of seasonal differences and lab problems. "We hope to get additional strains and species of *Larra* and any other information on mole crickets," he said. "Releases will not happen until we are certain that the organisms won't adversely affect the environment," he adds.

A tachinid fly, various fungal pathogens, viruses and a bombardier beetle are some other hopefuls. ■

### OUR NAME AND THE BEST KNOWN NAMES IN TURF EQUIPMENT TOGETHER SINCE 1932

Distributors for:  
Toro Mowers & Turf Equipment  
Toro Turf Irrigation  
Toro String Trimmers  
Billy Goat Vacuums  
Cushman Turf Care System  
Ryan Turf Care Equipment  
Mitsubishi Tractors

HMC String Trimmers  
Power Trim Edgers  
Lely Spreaders  
Standard Golf Supplies  
Florida Turf Sprayers  
Broyhill Sprayers  
Olathe Turf Equipment

# ZAUN

Jacksonville  
1741 Hamilton St. 32210  
(904) 387-0516

Orlando  
11405 Rio Grande Avenue 32085  
(305) 841-8460

That's a promise only one product can make, and that product is Rubigan.

Weigh the benefits for yourself:

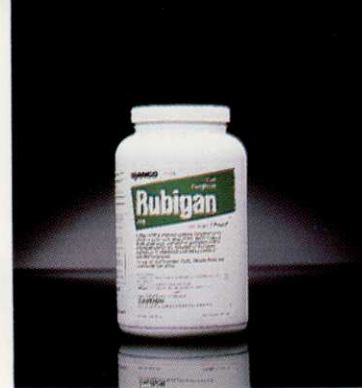
- Guaranteed *Poa annua* control
- Safety to Bermudagrass and overseeded ryegrass
- Normal germination of overseeded ryegrass
- No need to deactivate with charcoal
- *Poa annua* control that lasts all season
- Fungicidal activity

The benefits of Rubigan that you don't get with any preemergence herbicide—and it's guaranteed.

For more information, contact your distributor or write:

Elanco Products Company  
A Division of Eli Lilly and Company  
Dept. E-455, Indianapolis, IN 46285, U.S.A.

Rubigan®—(fenarimol, Elanco Products Company)



# Rubigan® saves overseeded Bermudagrass from *Poa*. **GUARANTEED.**

**TREATED**

**UNTREATED**

# New Company Takes Over Existing Club in Wellington

By Cheryl Jones

**JAMES BRANSTROM, CGCS,  
EXCITED ABOUT NEW OWNERS  
PLANS FOR EXPANSION**

A search for the perfect property took several years. It has culminated in Landmark Land Company, Inc., a California-based real-estate development company, purchasing Palm Beach Polo & Country Club — a posh development which has earned an excellent reputation in our country for its top-notch polo facility. The seller was Gould, Inc. of Rolling Meadows, Illinois. The purchase price for this prized property was reported to be in excess of forty million dollars. Palm Beach Polo & Country Club is located in Wellington, a fast growing area in the western part of Palm Beach County.

---

## **LANDMARK'S REPUTATION PRECEDED THEM, AND THE OUTLOOK FOR THE FUTURE OF PALM BEACH POLO & C.C. IS BRIGHT INDEED.**

---

Polo is not the only thing that Palm Beach Polo and Country Club does, and does well . . . .

In addition to its 11 polo fields, stadium with seating capacity of 10,000, polo clubhouse and stables, its approximately 1650 acres houses a golf clubhouse and two 18-hole golf courses. One was designed by former TPC and U.S. champ Jerry Pate; the other by noted golf course architect George Fazio. The Pate course was opened in December 1984, and the Fazio course a decade earlier.

Tennis is another important facet in this major development. One can lob a ball around on any of the 17 courts and relax afterwards in the tennis clubhouse. For those preferring a less physically strenuous sport there is a championship caliber croquet field which has hosted NCAA and international matches.

The property currently has about 800 homes and condominiums, and some commercial property.

The acquisition of Palm Beach Polo & Country Club is a bit out of the norm for Landmark. As a rule, the company will build its own developments from open land. The only other established property Landmark has purchased is Mission Hills in Rancho Mirage, California. In both cases, the prime location and extraordinary quality of

the existing facilities were strong selling points.

One benefit that came with the purchase is 260 experienced employees. All former Palm Beach Polo employees stayed with the club and are new employees of Landmark. No heads rolling here. 260 experienced people who already know the ups, downs, ins, and outs of the clubhouses, fields, courts, and courses will negate any need for Landmark to bring in and train a new crew. Staff morale is high and optimistic.

When a new company takes the reins, most people wonder what changes will be made. Though polo is the major focus, the golf end of Palm Beach Polo & Country Club will definitely not fall by the wayside. Landmark is already well-known in the world of golf. Several of their high-quality courses have been sites of major tournament play. These include:

- Oak Tree Golf Club in Edmond, Oklahoma, site of the 1984 U.S. Amateur Championship and future site of the 1988 PGA Championship.
- La Quinta Hotel Golf and Tennis Resort in La Quinta, CA., site of the 1985 World of Golf Cup and '86 PGA Cup Professional Championship.
- Mission Hills Country Club Old Course of Rancho Mirage, CA., site of the 1976 World Cup of Golf and the Davis Cup, and annual host of the Nabisco-Dinah Shore tournament.
- and of course, PGA West of La Quinta, CA., site of the '86, '87 and '88 Skins Game, the '86 PGA Club Professional Championship and '86 Wilson Cup Professional Classic, the '86 PGA Tour Qualifying School, and future site of the 1990 PGA Cup Matches and 1991 Ryder Cup Matches.

Palm Beach Polo & Country Club seems to be headed in this same direction, as they hope to attract tournament play. Golf course Superintendent James Branstrom, CGCS, says he's excited about the possibilities. Landmark's reputation preceded them, and the outlook for the future is bright indeed. According to Branstrom, one of the first things that Landmark did was to increase his operating budget by a whopping 20%. 1987's budget stands at one million dollars. Among other things, this increase will mean some new equipment for Branstrom's department. In the last two years, the former owners understandably did not want to invest a lot of money in property they were going to sell, and now under new ownership these needs will be met.

*(continued on page 45)*

(continued from page 44)

Mr. Branstrom has been the superintendent at Palm Beach Polo & Country Club for nearly six years. With the help of assistants John Littrell and Dave Blasiman, and a crew of 28, he maintains approximately 220 acres of land for 400 members. It has been maintained at championship play quality, and one of Branstrom's (and Landmark's) goals is to bring in a major PGA tournament event. The club has already been the site of the Izod International Pro-Am Tournament and the Palm Beach County Ladies Amateur Tournaments, aside from the regular club championships and club-pro tournaments.

One way this may be achieved is the construction of a new golf course! Big changes are in the cards for Palm Beach Polo & Country Club. Noted architect Pete Dye and his son will oversee the construction of 9 new holes and the remodeling of the front-nine of the Fazio course. Scheduled for completion in late spring 1988, the "Dye 18" will bring to 45 the number of playable holes at this time next year. Plans for the Fazio back-nine are to remain the same this season, but who knows what the future will bring? The enthusiasm level is so high at the club that it would not surprise this writer to learn that it will be considered in the near future for major PGA tournament play. Stay tuned . . .

The golf course maintenance department will be controlled locally by a golf committee consisting of Landmark Corporation of Florida's President Chris Cole and Palm Beach Polo & Country Club executive vice-presidents Steve Braley and John McClure. Between new construction, reconstruction, and daily maintenance, Palm Beach Polo & Country Club will be a busy and exciting place to be this coming year . . . one that James Branstrom, CGCS, and his staff are eagerly looking forward to. Look for BIG things to happen in the future at Palm Beach Polo & Country Club! ■

## Lofts Establishes Pro Turf Division

Bound Brook, NJ — Lofts Seed Inc., world's largest marketer of turfgrass seed, has formed a specialized division expressly to serve turf professionals.

Lofts' Professional Turf Division is headed by Dr. Richard Hurley, Lofts Director of Research and John Morrissey, Executive Vice President, and backed by a staff of professionals. Their combined experience in the turf industry totals more than 150 years.

As experienced turf professionals, the members of Lofts' Professional Turf Division are available to assist people in the turf industry in attaining maximum turf results. As an example, they'll help choose the most appropriate varieties for troublesome areas or provide the technical support needed to solve complicated turf problems.

More can be learned about Lofts Professional Turf Division by contacting Lofts Seed Inc., Bound Brook, NJ 08805, (201) 356-8700 or (800) 526-3890. ■



SERVING ALL OF FLORIDA

with

INSECTICIDES, HERBICIDES, FUNGICIDES  
& APPLICATION EQUIPMENT



"DESIGNED  
FOR  
THE TURF  
INDUSTRY!"

**SOUTHERN MILL CREEK  
PRODUCTS CO., INC.**

Dade  
635-0321

Tampa Office  
1-800-282-9115

Florida wats  
1-800-432-8717

## get out of the water

Weeds grow all the time, even when you don't have time for them.

We specialize in aquatics. We have the people, the equipment, the know-how and the time to do it right.

When we manage your water and shoreline areas, you spend your time on more important things. You know that your lakes are in the best possible hands.

*Serving golf courses and green spaces throughout Florida.*

**FLORIDA AQUATIC**

Professional Lake Management

1637 N.W. 38th Avenue

Ft. Lauderdale, FL 33311

FLORIDA TOLL FREE (800) 432-1349



# Fast Weather Service: A MANAGEMENT TOOL

By Michael Cade

AVON PARK — Bob Barben studied the weather map on a computer screen in his office at Avon Park. He could see that within two hours a heavy rain storm would hit his citrus grove at De Soto City where his oldest son Bobby, was about to apply fertilizer.

Barben called Bobby on the radio and told him to wait. He saved \$3,000 that day and about 20 tons of fertilizer that would have been washed away.

Keeping fertilizers, pesticides and herbicides out of Florida's lakes and streams is but one way growers use satellite weather imagery. The imagery now all comes from one GOES satellite, but, another GOES is scheduled for launch at Cape Kennedy. GOES stands for Geostationary Operational Environmental Satellite.

Florida growers receive GOES imagery and National Weather Service data through Florida Agricultural Service and Technology Inc. in Alachua, Fla.

Dr. John Gerber, who helped develop FAST, demonstrated the weather forecasting system at the Florida Agribusiness Computer Short Course and Trade Show Feb. 27-28 on the University of Florida campus.

Gerber, a climatologist with the Institute of Food and Agricultural Sciences, said farmers who develop their own weather forecasts have an extra edge in making daily management decisions.

"A forecast might say chances of rain today are 60 percent," Gerber said. "What it doesn't say is when that 60 percent is likely to occur. It may be the chances of rain before lunch are zero and after lunch are 60 percent.

"Maybe you need a window of four to six hours to apply a herbicide in order for it to be effective," Gerber said. "With satellite imagery, you can find thunderstorms, see where they're developing and watch their movement."

Television forecasts are general and can't make predictions for specific farms, Gerber said. But with FAST, agricultural managers can better answer the question, "What's going to happen right here?"

FAST, a non-profit company, grew out of a NASA-funded technology transfer project at the University of Florida, Gerber said. Farmers first used the technology experimentally in 1983. FAST now has its own CYBER computer and is governed by a board of private agricultural businessmen.

---

## **SUPERINTENDENTS WHO DEVELOP THEIR OWN WEATHER FORECASTS HAVE AN EXTRA EDGE IN MAKING DAILY MANAGEMENT DECISIONS ON FERTILIZER & PESTICIDES.**

---

Barben, chairman of the board, said FAST has about 90 subscribers. About 35 are heavy users and two to three new firms are joining each month.

"Each of us use the thing in a different way," Barben said. "The other night I was carefully watching the temperature because we wanted to turn on our microjets before it got to 36 degrees. If it gets down to 32 degrees, they'll freeze up.

"But it's not just for freezes," Barben said. "Those of us who grow citrus look at it as another management tool."

Orange-Co. in Lake Hamilton uses all phases of FAST's weather service, from minimum temperature reports to infrared thermal maps, and stores the information on floppy disks.

Mike Twyford, special projects supervisor, said studying the historical record of temperatures throughout the citrus belt during the season helps Orange-Co. decide when and where to buy fruit.

"It gives us a good overall impression of what went on besides what individual grove owners can tell us," he said.

Twyford said the futures market, played hourly, also is heavily dependent on weather.

"Anytime you have information that shows the entire citrus growing region, and given a clear and accurate report of what's going on temperaturewise, that'll help decisions throughout the company whether they be in crop estimates, future prices or whatever," he said.

Ron McLeod of Tropicana Products Inc. in Bradenton said FAST is especially useful to Tropicana's fruit coordinator, who projects the number of loads of fruit that will arrive at Tropicana each day.



(continued from page 46)

"If he knows it's going to rain in a certain area, he knows he's not going to get as many (loads) as projected," McLeod said. So then he can make an adjustment and notify manufacturing that the earlier projection won't be met.

"When there's a freeze forecasted, the zone-by-zone analysis is something we really rely on heavily," McLeod said. "That's something we really enjoy." But while FAST is useful, it's not perfected.

"We do encounter some breakdown," McLeod said. "Just this week, we received a message that it was not operational for a couple of days. Sometimes it can be a little aggravating."

Barben acknowledges that some customers have dropped the service because at times they were unable to get information when they needed it due to telephone transmission problems.

"I don't blame them for getting aggravated," Barben said. "I've been so aggravated, I can't stand it."

"But every few weeks I feel like we've made some progress," Barben said. "Control Data is helping us just any way they can. I think someday we're going to have something we can be proud of."

"We had a piece of equipment to start with that had a big chiller associated with it," Baben said. "Everytime that these people would get a surge on their electrical lines, why it could have put their computers out of business."

Those problems were solved, Barben said, and FAST has since switched from a CYBER 730 mainframe computer to an 830 mainframe that has added safety features.

Barben said that in addition to weather information, FAST will be offering any number of other services in the future. CAMP Inc., an electronic trading service for produce, is using FAST's mainframe computer and a University of Florida data base, now in the experimental stage, is scheduled to be linked to it in nine months to a year.

Then agricultural users will have immediate access to a vast amount of information and research data offered by IFAS, Barben said.

Despite FAST's problems, Barben said the company has a good future.

"We didn't have the money or manpower to market it properly, so we've had to crawl," Barben said. "Farmers are very conservative individuals. A lot of them are just hard-sell."

"We've been taking the people that are movers and shakers and are willing to try something new," Barben said. "I think at some point in the future some of these people are going to be surprised at what it (FAST) can do for their business." ■

Equipment needed for FAST weather service:

- 1) IBM/PC compatible monitor

- 2) Color monitor
- 3) 1200 baud modem for telephone hook up

FAST provides the software.

Cost of using FAST:

Commercial: \$1200 subscription; \$50 a year membership fee.

Farm: \$600 subscription; \$50 a year membership fee.

State: \$1200 subscription; no membership.

For more information contact:

FAST, Inc.  
P.O. Box 550  
Alachua, FL 32615  
(904) 462-3492

Mr. Robert J. Barben  
President, FAST Board  
304 S. Delaney Ave.  
P.O. Box 1056  
Avon Park, FL  
(813) 453-3659

Dr. John F. Gerber  
Director  
IFAS Grants Office  
University of Florida  
2014 McCarty Hall  
Gainesville, FL 32611  
(904) 392-2356

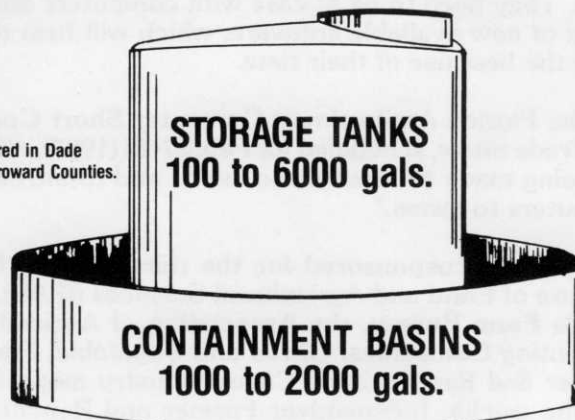
## Containment Basins<sup>\*</sup> for liquid fertilizer/pesticide storage. Statewide delivery. Order today!

We are your direct source for tanks of all sizes, spray guns, nozzles, hose and more. Send today for your free products flyer!

**CHEMICAL  
CONTAINERS, INC.**

P.O. Box 1307 Lake Wales, FL 33859  
Telephone (813) 638-2117

\* Required in Dade  
and Broward Counties.



# WOMEN . . .

## An Agricultural Asset Not Yet Fully Recognized

By: Catherine C. Elverston

GAINESVILLE — When you think of a family farm, you probably have an image of a man plowing the fields and tending the livestock and while his wife runs the household, tends the dooryard garden, and gathers the eggs.

“Well, not so, nowadays,” says Dr. Christina Gladwin, professor in the University of Florida’s Institute of Food and Agricultural Sciences (IFAS).

“Women spend more hours on the farm than men.”

The current farm crisis threatens to put between 13 and 33 percent of the nation’s farmers out of business, says Gladwin, a small farm management specialist in the IFAS food and resource economics department, and a growing number of farm wives are taking on comanagement of the farms while their husbands seek off-farm work to help sustain sagging incomes.

A recently completed IFAS survey, shows that the average farm wife works a 77-hour week compared to her husband’s 62-hour work week. With modern conveniences, household chores take only 26 hours a week of the wife’s time—50 years ago, it was 50 hours a week. The rest of her time is divided into 22 hours of farming, 17 hours of off-farm work, and 12 hours in the family garden.

“Unfortunately,” says Gladwin, “these women feel isolated from production and marketing information, which their husbands obtain through the traditional network.

“Since generally it is likely to be the women who keep the records, they need this information also.

“Women,” says Gladwin, “need to keep abreast of the times. They need to be at ease with computers and be aware of new available software, which will help them make the best use of their time.

“At the Florida Agribusiness Computer Short Course and Trade Show, scheduled for Feb. 27-28 (1987), efforts are being made to meet these needs and to introduce computers to farms.”


The show is cosponsored for the third year by UF’s Institute of Food and Agricultural Sciences (IFAS), the Florida Farm Bureau, the Association of Agricultural Computing Companies, Citrus and Vegetable, Florida Grower and Rancher, and Citrus Industry magazines, and the weekly Independent Farmer and Rancher. It offers hands-on computer instruction, courtesy of Tandy Randy Radio Shack.

Also, Gladwin says, IFAS offers some 50 software programs, free for the copying to those who bring diskettes—all run on the IBM compatibles and the DEC Rainbow 100. Disks and user manuals can be purchased for a nominal fee.

These programs provide efficient monitoring of such farming techniques as chemical fertilization and pesticide spray calculations.

An aid to bookkeeping is the FARMMGR (Farm Manager Decision Support Budgeting and Financial Statement Analysis) and UFBUD (University of Florida Agricultural Budget Generator). A Citrus Grove Records System program is available as well (for Apple II+ and Apple IIe only).

Tutorials for these programs will be offered at the Computer Short Course. ■



**South Florida Turf Products**  
INC

---

DICK BESSIRE	ED HAITHCOCK
WILL CORDER	DARRYL REJKO
SUNNY SMITH	

---

**1-800-432-2214      305-746-0667**

---

**Distributors for  
Howard Fertilizers**

**QUALITY FERTILIZERS & CHEMICALS  
FOR THE TURF INDUSTRY**

---

P.O. Box 8081  
Jupiter, Florida 33468

# Food Sufficiency in Africa Depends on Women Farmers

By: J. P. Owusu-Ansah

For the first time, an African country is sending a woman cabinet minister to the University of Florida's Institute of Food and Agricultural Sciences (IFAS).

IFAS experts say the Sept. 17 visit from Cameroon's Minister for Women's Affairs shows that U.S. and African officials are beginning to realize that Africa won't solve its food problems without solving problems for its women farmers.

"Women in Africa perform 60 to 80 percent of the food farming responsibility, sometimes including initial clearing of the land," said Dr. Doris Tichenor, director of the IFAS home economics department, who recently returned from Cameroon.

Cameroon's Aissatou Yaou is coming to the United States in search of programs which can help women farmers and small agricultural producers in her West African nation.

"Women are Africa's primary food producers. They work 10 to 15 hours a day on farming, marketing, cooking, child-care and other domestic labor, compared to seven to eight hours a day by men," added Dr. Anita

Spring, who directs UF's Women in Agriculture Program.

"African women have been in agriculture all the time. By raising the productivity of their agricultural and domestic labor, women can have more time to participate in the lucrative forms of rural economic activity."

In recent years the government of Cameroon has embarked upon projects that aim at improving the conditions of women food producers in the rural areas.

The University of Florida is part of it through a five-year \$16 million contract between the U.S. Agency for International Development and UF's Institute of Food and Agricultural Sciences.

"A major constraint of women food farmers in Africa is the stereotype that farmers are always men," said Spring, who since 1979, has been involved in agricultural programs in several African countries, including Cameroon.

"Women's contributions have been overlooked because they grow food only to feed the family, not to make  
(continued on page 50)

**CERTIFIED-QUALITY GRASSES**

Tifway	Tifdwarf*
Tifway II	Tifgreen*

\*GREENS QUALITY

Golf Course Sprigging  
Golf Course Row-Planting  
Green Renovation  
Athletic Field Construction and Planting

**NEW SOD FARM**

**southern turf nurseries**  
"THE PROFESSIONAL TURF PEOPLE"

P.O. Box 1459, Lake Wales, Florida 33853  
Bill Wilson, Division Manager  
1-813-537-2149 or 1-800-282-4635 In Florida

(continued from page 49)

profit," Spring said.

"Consequently, men, who grow commercial crops, have a monopoly over technology, economic resources, and family incomes."

Spring said technology available to women farmers is traditional and not very productive. Women do hand-hoeing to produce the family's food, and often provide a surplus for sale in local market's, she said.

To break the chains of forced dependence on backward technologies, rural Africa women would have to earn substantially more money, Spring said.

Tichenor agreed. "To raise women's agricultural productivity, it would be necessary for women to have the right to land ownership.

"Women should have access to credit facilities, fertilizers, pesticides, improved storage, and field-to-house transportation."

Dr. Elizabeth Bolton, a UF home economics specialist coordinating Madame Yaou's visit, said "African leaders must recognize the strengths and needs of the traditional farming systems on which they have so long relied.

"We hope that Madame Yaou's visit would bring home to local and international agricultural experts that the cheapest and most reliable method of increasing domestic food supply is the improvement and expansion of traditional women's sector." ■

## Jacobsen Introduces New Diesel-Powered Greens King® IV

Jacobsen has introduced the industry's first diesel-powered riding triplex greensmower that combines added economy, power, and performance of a diesel with the traditional Greens King® cutting quality.

The Greens King® IV cuts fuel costs virtually in half when compared to a gasoline engine, while providing extra power for climbing and cutting. The liquid-cooled 3-cylinder, 16.5 horsepower diesel engine also provides longer engine life.

The Greens King® Diesel also has full-floating and pivoting cutting units that hug the ground and steer through turns without marking or scuffing the turf. The Jacobsen 9-blade reels have power backlapping as standard equipment for keeping the blades sharp with less effort. An optional variable speed control valve lets the operator select the precise ground speed and frequency of cut for consistent greens while still allowing full speed for transport.

The company's new Turf Groomer® greens conditioner attachment is also available with the Greens King® IV Diesel to promote faster, truer, healthier greens without lowering the cutting height.

An optional electronic Performance Monitor digitally displays the engine speed, ground speed, reel speed and frequency of cut at the touch of a button for a consistent cut from one green to the next.

Dynamic braking slows the Greens King® IV down when the operator lets up on the pedal.

The lightweight design and even weight distribution of the Greens King® IV Diesel, combined with smooth, wide pneumatic tires, virtually eliminates compaction and tire marks for a superior finish.

The Greens King® IV Diesel is comfortable and convenient to operate. A choice of three optional padded seats is available for maximum comfort while mowing. A padded, rectangular steering wheel reduces operator fatigue and makes following the cutting line easier. The conveniently-located controls give the operator easy command over the entire machine.

A wide range of attachments and accessories is available to match individual applications, such as solid and grooved rollers, brushes, spikers and vertical mowers.

Free demonstrations of the new Greens King® IV Diesel with Turf Groomer™ attachment are available through Jacobsen Distributors. ■

**ALMAR**

Quality  
Service  
Economy

**CHEMICAL CO., INC.**

P.O. BOX 18101

TAMPA, FLA. 33679

CALL COLLECT 813-839-3363

GREEN MASTER • SOMETHING SPECIAL • FOAM GARD • RUST BUSTER • BEAUT GREEN • PENETROL • KICK IN THE GRASS • TURF IRON • SUPER WET • EV R GREEN • TURF KOTE • WATER PENN • SCRAMP • KNOCK'M DED • GRIME OFF • GREEN LAPPING SOAP • RUST BAN • GREEN MASTER • SOMETHING SPECIAL • FOAM GARD • RUST BUSTER • BEAUT GREEN • PENETROL • KICK IN THE GRASS • TURF IRON • SUPER WET • EV R GREEN • TURF KOTE • WATER PENN • SCRAMP • KNOCK'M DED • GRIME OFF • GREEN LAPPING SOAP • RUST BAN

# Students Learn Turfgrass Maintenance At Jacobsen's College Student Seminar

Thirty-eight college students from all over the U.S. recently attended a College Student Seminar at Jacobsen Division of Textron Inc., Racine, WI.

The students were chosen from applicants who are studying Turfgrass Maintenance and Management or related fields.

During the 5-day seminar, students attended workshops on engine and machine maintenance, lectures on management, equipment selection, hydraulics, budgeting, financing and leasing, the future of municipality turf management, sports turf management and scheduling of golf course personnel and equipment.

Students gained hands-on experience with several pieces of Jacobsen turf maintenance machinery during a field day at Racine Country Club.

A panel discussion gave students the opportunity to ask the experts many questions pertaining to the Turfgrass Management field. Panelists included: Danny Quast, Superintendent for Milwaukee Country Club in Milwau-

kee, WI; Dr. Kent Kurtz, Professor of Turf Management at California State Polytechnic University; Monroe Miller, Superintendent of Blackhawk Country Club in Madison, WI; Domenick Ventura, Director for Kenosha County Parks, Kenosha, WI; Woody Voight, Superintendent for Saukville Country Park System, Saukville, WI; and Dennis Wilms, Superintendent of Racine Country Club.

Students toured the Jacobsen plant facilities in Racine and participated in a demonstration of the company's CAD/CAM (computer-aided design) system which showed how new technology speeds the development of new products in the turf care industry. They also saw a demonstration of Jacobsen's REACT system which is a computer-link system between Jacobsen and its Distributors for fast, easy ordering of replacement parts.

Jacobsen has sponsored and organized the College Student Turf Seminar for the past 19 years. It is the most extensive program of its type, and has proven to be very helpful to those wishing to pursue a career in Turf Management. ■



*The Jacobsen College Student Seminar Class of 1986 recently completed a 5-day program at Jacobsen Division of Textron Inc., Racine, WI. Thirty-eight students from around the U.S. attended the seminar which included workshops, lectures, discussions and hands-on equipment operation. All of the attending students are studying Turfgrass Maintenance and Management or related fields.*

# Compatibility of Pesticides & Fertilizers and Tank Mixture Problems

By R.W. Miller and J.F. Wilkinson\*

Mixing pesticides and/or pesticides and fertilizers in spray tanks reduce labor and equipment costs and in some cases, increase the effectiveness of the products. Unfortunately, mixing chemicals also may reduce the effectiveness of some materials and may cause damage to the target plant. There are no simple guidelines to use in mixing turfgrass chemicals. Good judgment and a great amount of caution are the best methods to avoid problems from tank mixtures of chemicals.

## LEGALITY OF TANK MIXTURES

The Environmental Protection Agency has rules that tank mixtures of pesticides and fertilizers are permissible provided that:

1. The label of any produce in the mixture does not state that the pesticide should not be used in mixtures.
2. The use of the mixtures otherwise conforms to all other label restrictions.

The EPA has considered requiring a label for tank mixtures but wisely decided against it because of the inconvenience and unnecessary expense to consumers. It is likely that tank mixtures will remain legal unless problems develop from widespread misuse of them. Some states require that commercial applicators label tank mixtures of chemicals, however, this process seldom involves more than a simple reporting system in which the applicator registers his intent to use the mixture or mixtures, pays a small registration fee, and reports the content of the mixture on the customer invoice.

## TYPES OF TANK MIXTURES

Today, with the vast number of pesticides and pesticide formulation, there are an almost endless number of combinations that someone may wish to use. General classifications are:

1. Mixtures of fungicides
2. Mixtures of insecticides
3. Mixtures of herbicides
4. Mixtures of fungicides and insecticides
5. Mixtures of fungicides and herbicides
6. Mixtures of herbicides and insecticides
7. Mixtures of fungicides, herbicides and insecticides
8. Mixtures of fertilizer and any one of the above chemicals or combinations of chemicals

## COMPATIBILITY OF TANK MIXTURES

When pesticides are used in combinations or in a mixture, numerous problems may arise. In such cases the components of a mixture are compatible if they can be used together or incompatible if problems develop from using the combination. If two or more pesticides can be used in combination without impairment of toxicity, physical properties of plant safety, they are compatible.

## PHYSICAL OR CHEMICAL INCOMPATIBILITY

When mixing two or more pesticides reduces the effectiveness of one or all components, the mixture is chemically incompatible. Most organic fungicides and insecticides should not be combined with alkaline compounds with a pH higher than 7.0. Alkaline reactions significantly reduce the effectiveness of carbamate fungicides and the insecticidal value of some compounds.

For this reason, lime for the control of algae should not be used with maneb fungicides such as Fore, Manzate, Tersan LSR and Dithane M-45. This is also true for Dyrene, Zineb, Thiram, Captan and most organic insecticides.

Dinocap (Karathane), suggested for the control of powdery mildew, is chemically incompatible with Sevin and oil-base sprays.

Chemical incompatibility is frequently the cause of poor performance of multiple pesticide combinations. Other problems may be excessive foaming, salting out, unstable mixtures, and the formulation of gelatin-like materials. Before combining any pesticides, read the label on

(continued on page 53)

**FLORIDA  
BLUEGRASS**<sup>T.M.</sup>

Spray Pattern  
Indicator Dye

Gives you  
efficient, precise  
control of your  
spray programs.

**Du Cor Chemical**  
1011 Lancaster Road  
Orlando, FL 32809  
Call collect  
(305) 859-4390

Specialized Chemicals for the Turf Grass Industry

(continued from page 52)

the package or container. If information on compatibility is not specified, it is wise to avoid combination of products until other investigations are completed.

#### PHYTOTOXIC INCOMPATIBILITY

When two or more compounds used in combination result in plant injury, they are incompatible because of phytotoxic effects. Mixing organic fungicides with emulsifiable concentrates (EC) insecticide formulations with xylene as the solvent, may cause plant injury. When combining fungicides with liquid insecticides, check the label for compatibility and avoid problems of plant injury. When combining pesticides or unknown compatibility, it is always good to try them first on an expendable turf area before use on large turfgrass areas.

#### PLACEMENT INCOMPATIBILITY

Incorrect placement of pesticides is frequently the reason for poor disease and insect control. Placement incompatibility is less obvious than some other types of incompatibility and is sometimes overlooked. When two or more chemicals are used together and applied in one operation, each must end up in the proper place if it is to do the job for which it is intended. Some fungicides are protectants and must be uniformly distributed over the leaf surfaces to protect against invasions of pathogens such as *Piricularia* (Gray leafspot) and *Helminthosporium* leafspot of turfgrasses. Failure to establish a foliar blanket of fungicide protection results in poor control of destructive turfgrass diseases. In order to be effective, insecticides for grub control must be washed off the grass into the soil. Therefore, a combination of Maneb (Tersan LSR) for the control of leafspot and Diazinon for grub control is ineffective because of placement incompatibility.

Another example of placement incompatibility is broad-leaf weed control materials mixed with insecticides that should be watered into the grass or soil.

#### TIMING INCOMPATIBILITY

Another type of incompatibility sometimes overlooked is the need to apply each component of the mixture at the proper time. An example of this type of incompatibility is the use of a pre-emergence herbicide for crabgrass control and an insecticide for grub control. If the herbicide for crabgrass control is applied at the proper time, the insecticide for grub control will not be effective because the application is made too early in the year.

#### DAMAGE POTENTIAL OF MIXTURES

Although a combination of materials is compatible, its use increases the probability of turfgrass injury compared to using each component a few days apart. This additive effect occurs if each component is applied separately at one time or if they are applied in a mixture. Under adverse conditions, such as high temperatures or moisture stress, a mixture of chemicals, safe to use under good conditions, may cause injury. There is no replacement for common sense in determining when mixtures can be used without undue risks.

(continued on page 54)

# ARBOR

TRANSPLANTERS  
INC.

WPB • 732-2211

BOCA • 499-4461



**OUR BIG MOUTH SPADE OPENS WIDER  
TO MOVE MORE OF THE TREE!**

## Lakes have feelings too. Treat 'em right.

#### WE PROVIDE:

- aquatic weed and algae control
- lake clarification
- fountains, parts and installation
- fish stocking
- aquascaping
- free estimates

Service Locations Statewide

**1-800-637-5240**

## The Lake Doctors, Inc.

Aquatic Management Services

(continued from page 53)

Because you have successfully mixed chemicals in the past is no guarantee that you can continue to in the future. Active ingredients are seldom incompatible. It usually is the chemicals used to formulate the product and formulation change from time to time.

### COMPATIBILITY TESTS

The first thing to do to determine compatibility is to read the label. If the label states that the pesticide should not be mixed, discard the idea. However, the label will not always tell you if it can be mixed with other chemicals. In these cases, first make a jar test. Simply make the mixture in a quart jar and observe what happens over the next half hour. If unusual separation or settling out of materials occur, it probably is not wise to make the mixture.

The second test is to first try the mixture on a small area of grass where you will not be disturbed if problems occur. You always should follow this procedure when using a mixture for the first time.

Compatibility charts are available from several sources and serve as a valuable aid. They are not all inclusive and they do not include all formulations of a product. It is wise to use the grass test even if the chart shows the mixture to be compatible.

### PRECAUTIONS FOR MIXING PESTICIDES

1. Never mix pesticides in concentrated form. Mix them in the tank already filled with water and with the agitation system running.
2. Do not mix organic fungicides with other pesticides that contain xylene as a solvent.
3. When mixing pesticides of different formulation, the order of mixing should be wettable powders followed in order by flowable products, water soluble powders, surfactants and emulsifiable concentrates.
4. Do not mix pesticides with materials that cause high tank pH levels without thoroughly investigating compatibility.
5. When using a pesticide mixture for the first time, do a jar and a grass test before using the mixture on critical grass areas.

6. When tank mixing pesticides and fertilizers, use urea in preference to other water-soluble nitrogen sources.

\*R.W. Miler is currently with Chemlawn Corp., Columbus, OH; J.F. Wilkinson is with Old Fox Lawn Care, East Providence, RI. ■

from Florida Turf Digest, Vol. 3, No. 5, May 1986

## Superintendents to Participate in New Championship

Golf course superintendents are pleased to be involved with PGA professionals, manager and presidents of the nation's country clubs in a national golf championship recently created by the John Deere Company.

The announcement was made by Riley L. Stottern, CGCS, president of the 7,000-member Golf Course Superintendents Association of America (GCSAA), with headquarters in Lawrence, Kan.

The event — the John Deere/PGA Professional-Superintendent Championship — will feature four-man teams competing in a scramble format at the 41 PGA Sections throughout the country.

Qualifying is scheduled between June and September, with the 36-hole Championship in November. The date and site will be announced later. Teams will be made up of the PGA Professional, the club's course superintendent, club president and club manager.

"It is gratifying, and fitting," observed Stottern, "that superintendents are recognized as among the most important people in the game of golf. It is they who make and keep our nation's golf courses playable. Many superintendents play golf frequently not only because they enjoy the game and are good, but also because they know it is the best way to understand how to keep their courses in the best possible condition. "GCSAA thanks John Deere for its development of the tournament. Our members are looking forward with great enthusiasm to playing in it with the PGA professionals, club presidents and managers, who also are so essential to the game and industry."

Gary Gottschalk, manager of John Deere's Golf and Turf Division, said the firm is "excited about the concept. This program provides an opportunity for the club professional and club superintendent to play together on a team with other club officials. I am not aware of any other competition like it." ■

(305) 581-0444

**SPREAD-RITE, INC.**  
CUSTOM SPREADING  
FERTILIZER • DOLOMITE • ARAGONITE

LAMAR SAPP

5500 S.W. 3rd STREET  
PLANTATION, FL 33317

**Profanity Makes  
Ignorance Audible**



# Turf Nematode Control Update

Nematodes commonly contribute heavily to decline of turf in Florida. On the other hand, weak turf growth is often blamed on nematodes without reason except that no other cause is recognized. Correct diagnosis is clearly necessary before deciding to apply a nematicide, since the treatments are generally noxious, expensive, or both. Nematicides vary in effectiveness against different kinds of nematodes, and not all nematicides can be used in all sites.

## DIAGNOSIS

**Above ground symptoms:** wilting and slow recovery from wilt, chlorosis, decline, or "melting out," weed invasion, irregular shape and slow spread of affected area, usually without abrupt borders.

**Root symptoms:** roots shorter and with fewer branch roots than healthy roots, darker in color, sometimes with swollen root tips or short brushes of lateral roots at root tip; reduced root system does not hold soil core or plug together.

---

## REDUCING NEMATODE POPULATIONS IN ESTABLISHED TURF IS PRESENTLY POSSIBLE ONLY BY USE OF NEMATOCIDES.

---

Previous history may indicate nematode problems which are apt to recur at a particular location.

Nematode sample analysis in a laboratory determines the kinds of nematodes and the relative numbers of each present per unit of soil (100 cc, pint, kilogram, etc.) present in the sample when it is processed. Most laboratories will also indicate in a general way whether the population detected is likely to significantly affect the crop for which advice was asked.

It is up to the turf professional to combine the evidence from all of these sources to assess the likely role of nematodes in a particular situation and the probability that treatments which can be used in that situation will be effective. "Threshold" or "action" levels for several kinds of nematodes on local turf species may be found from many different sources. However, NO magic numbers of any nematodes can be set as automatic cut-off levels, above which treatment is justified and below which it is not. Environmental factors, including the level of management, other pests and pathogens, and weather drastically affect how seriously nematodes stress turf. Aesthetic standards and budgets determine how much

demand will be tolerated before expensive pesticides will be applied.

Reducing nematode populations in established turf is presently possible only by use of nematicides. All those now registered for use on any turfgrass in Florida are very toxic organon-phosphate pesticides, applied to the turf in granular or sprayable liquid formulations. All are carried through the soil dissolved in soil water; a limited amount of irrigation or rain is needed to carry the active ingredients into the turf root zone from a surface application, yet too much water can leach the material too deeply to inhibit nematodes in the root zone. This wastes the cost and effort of application and may contribute to environmental pollution.

**NAMCUR 10G.** 2-1/3 to 4-2/3 lbs. per 1,000 square feet or 100 to 200 lbs./acre. only this formulation of Namacur will be registered for turf as soon as existing supplies of Namacur 15G have been used. May be used on golf courses, cemeteries, sod farms, industrial grounds, parkways roadways: Do not use on residential lawns or public recreational areas other than golf courses. Namacur products are generally the most broadly effective nematicides now available for Florida turf.

**NAMACUR 15G.** 1.5 to 3.0 lbs./1,000 square feet or 68 to 134 lbs./acre. Sites and limitations are as for Namacur 10G., above.

**DASANIT 15G.** 1.5 to 3.0 lbs./1,000 square feet or 68 to 134 lbs./acre. May be applied to commercial turf such as  
*(continued on page 56)*



## The sign of a proven winner

At Northrup King, we're as uncompromising about turfgrass as you are. That's why every Medalist® Brand Turf Product goes through years of pre-testing in the lab and in the field.

Our grasses establish fast, mow well and stand up to weather and disease. And each one is specially formulated for your climate and geographic area.

If you want to seed with a proven winner, talk to your Northrup King distributor today. For more information call (612) 593-7333. Or write Northrup King Medalist Turf Products, P.O. Box 959, Minneapolis, MN 55440.

**NK**  
NORTHROP KING

(continued from page 55)

sod farms, golf courses, and cemeteries; do not use near human dwellings.

**MOCAP 10G.** 5 to 7 lbs./1,000 square feet or 200 to 300 lbs./acre. May be applied to commercial turf such as golf courses, sod farms and cemeteries; may be used on home lawns only by certified commercial applicators. May be applied to bermuda, zoysia, St. Augustine, centipede, and bahia grasses. Effective against sting, awl, spiral, and some other ectoparasitic nematodes, but erratic in control of lance, root-knot, and and other endoparasitic species.

**MOCAP EC.** 2/3 to 1 pint/1,000 square feet or 3.5 to 5 gallons/acre. Do not use on home lawns. May be applied to commercial turf such as golf course, sod farms, and cemeteries. This formulation has the same limitations of effectiveness as the 10G. Foliar application with IMMEDIATE irrigation to wash Mocap EC from the foliage may result in serious injury to foliage.

**SAROLEX EC.** 1.5 to 2.5 pints/1,000 square feet or 8.2 to 13.6 gallons/acre. May be used on turf and lawns, including home lawns; has limited effectiveness against sting and few other ectoparasitic nematodes, with little or none against lance, root-knot, and other endoparasitic species.

(Dr. Bob Dunn, Extension Nematologist, Entomology and Nematology News, Volume 10, Number 3: May, June 1984.)

## Pesticide Exposure Shown Despite Protective Clothing

Recent University of California research has shown that pesticide applicators may be getting unsuspected levels of skin exposure to pesticides. Six workers, operating tractor-powered rigs to spray a diazinon/oil mixture in a pear orchard were studied. Each worker wore long trousers, a shirt, overalls, boots, a hat, rubber gloves, and either a respirator or a plastic mask. Despite these precautions, the detection systems showed that pesticide had penetrated the protective clothing and droplets had reached the skin through openings around the wrists and necks of the workers.

To measure the exposure, a fluorescent whitening agent was mixed with the pesticide. After the spraying was over the workers took off their clothing, the researchers then shone long-wave ultraviolet light (black light) on them.

The fluorescence glowed wherever the pesticide had reached the skin, and the researchers photographed the workers with a television camera equipped to operate in extremely low light. Then a computer translated the TV image into digital information, computing the relative exposure levels of each skin area according to the

brightness of its fluorescence. The detection system cannot yet measure the exact quantity of pesticide that reaches each spot of skin.

The scientists, Richard A. Fenski, John T. Leffingwell, and Robert C. Spear, are with the Department of Biomedical and Environmental Health Science (sic) at U.C. Berkeley. They described their experiments at an American Chemical Society meeting recently in St. Louis, Mo. Their findings raise questions concerning protective clothing to be worn by pesticide applicators and call into question previous methods of predicting and detecting contamination. (This story is based on a story from the San Francisco Chronicle by David Perlman Science Editor) *The IPM Practitioner* vol. VI, No. 5. ■

CHEMICALLY SPEAKING  
September 1984



### RETENTION PONDS ARE AN ASSET TO YOUR PROPERTY.



Otterbine fountain aerators can turn your aquatic problems into an aesthetically pleasing addition to your property. A variety of spray patterns are available. Serving all of Florida with sales, service, and installation.

**Aqua-Ject, Inc.**

1-800-654-5176

Big Tree Center • Suite 104 • 1958 Highway 427 N. • Longwood, FL 32750 • (305) 260-0966  
Jacksonville Deerfield Beach

# PRECISION SMALL ENGINE COMPANY

2510 N.W. 16th Lane • Pompano Beach, FL 33064

Local 305-974-1960

Toll Free 1-800-345-1960

**KOHLER**  
engines



**HONDA**  
Engines & Parts

★ TELEDYNE  
CONTINENTAL RENAULT

**CUSHMAN**  
OMC - Lincoln

**Onan**  
Engines & Parts



**KUBOTA**

**TORO**

Replacement Parts

**JACOBSEN**  
Replacement Parts



**MITSUBISHI**  
Engines & Parts

★ TELEDYNE  
WISCONSIN

**GOODYEAR**  
INDUSTRIAL TIRES



Hedge Trimmers- Blowers  
Backpack Sprayers- Brush Cutters

Power Trim **BOTAG**

Edgers & Mowers

**igloo.**  
Industrial cooler

**Aladdin.**  
Blades

**YAMAHA**

Golf Car  
Replacement Parts



**Kawasaki**  
Engines & Parts

**CLOVER**

Reel Sharpening  
Compounds  
Premixed & Dry

Warehouse Distributor of Engines, Parts and  
Accessories for Golf, Turf, and Industrial Vehicles

• CALL FOR FREE CATALOG •

# JUPITER HILLS: Site of U.S. Amateur Championship

By Irene Jones

## DICK HERR, JUPITER HILLS AND FLORIDA — THREE WINNERS

When the United States Golf Association chose Jupiter Hills Country Club, Jupiter, Florida as the site for The U.S. Amateur Championship, August 25-30, 1987, they picked three winners. Namely: Dick Herr, Jupiter Hills and Florida. Dick Herr, Superintendent at Jupiter Hills is excited about his course being chosen to host this prestigious golfing event, in fact, this will be the first time in the 87-year-history of the U.S. Amateur Championship, that it is being held in Florida.

Dick is ready to show off his course to the 288 top rated amateur golfers who qualified for this event, as well as to the countless number of golfing fans who will be viewing the action in person or via the media coverage. "The golf course crew, as well as myself, consider our course the best."

The "very private" Jupiter Hills Club offers its members two completely different 18-hole courses; The Hills and The Village. In fact, this will be their first major tournament. And while that is true, it is also true that Dick Herr

and Jupiter Hills have both achieved a vast amount of experience and recognition in our industry.

Designed by the world renowned golf architect, George Fazio, Jupiter Hills has a reputation for excellence throughout the entire state of Florida. The club also ranks high in national opinion. Fazio has worked with and retained the natural intrinsic design of The Hills course by using to its full advantage the up to 80 foot elevation of the sand dune on which the course was constructed. This gives the golfers a variety of shots as they are faced with uphill, downhill and sidehill shots to the greens.

Because of the natural terrain George Fazio chose to give The Hills "a Carolinas look" rather than Florida. There isn't even one palm tree to be found on this course, which was first opened for play in 1969.

The second 18-holes at Jupiter Hills is The Village course. This course is a little flatter, but according to Dick Herr, "it is a tougher driving course." The Village is said to be reminiscent of an English inland course, with homesites blended into the rustic setting.



Hole No. 18, Par 4, 423 yards. Second shot to very elevated green.

Dick Herr will be bringing some 37 years of knowledge and involvement with the game of golf into getting Jupiter Hills ready for the U.S. Amateur Championship's 87th tournament. "I started out caddying, playing golf and mowing greens at the age of ten-years-old for The Logan Sport Country Club, in Delphia, Indiana. When I was 17 and still a senior in high school, the professional golfer at the club was killed in a car wreck and I was offered the head professional job upon graduation." Dick stayed at The Logan Sport Country Club for five years.

"At the end of those years I had a choice to make between joining the Pro Tour or becoming a teaching pro. I decided on teaching and accepted a position at an executive course in Delphia, Indiana. I stayed at this course for 15 years, eventually becoming a superintendent and teaching pro."

Dick first came to Florida and worked for George Fazio for one season in 1980. "I really loved Florida and I really enjoyed working for Mr. Fazio, so I moved down to become superintendent at the Jupiter Hills Club in 1981. And with my family all grown now and living up in Indiana I can put the majority of my time and effort into the Jupiter Hills Golf Course. I just love my course and that's where I usually stay."

An interesting feature at Jupiter Hills is their Bent greens. Dick said he enjoys working with Bent grass. "I always enjoyed a challenge and I believe that Bent creates the best putting surface. When we first put in the greens we would go out each morning just to see if they were still surviving. Now they are not only surviving, they are thriving and healthy. Yes, they do require more attention and careful maintenance, but to me they are worth all the extra."

Dick maintains the two courses at Jupiter Hills, The Village and The Hills, with the help of an assistant, John Sibley, Jr., who he describes as "a first class assistant." A secretary, Kim Moore, who makes all the record keeping a lot easier. A good foreman, Mark Marc Matteson and a crew of from 20 to 25 members.

Dick's boss, and the President of Jupiter Hills Club, Mr. John "Jack" Diesel says, "If you have good people you have to pay in order to keep them." And Dick believes now that his people could not go out anywhere else and find a more liveable wage or better benefits.

What specific things will be done in preparation for the U.S. Amateur Championship? "In general it will require a lot of extra work for the crew, up to 16 hours of work per day right before and during tournament play. All golfers will go off the Hills Course, play will start at 7am on August 25th and last until almost dark. Both courses, The Village and The Hills will be used for play. The United States Golf Association, in preparation for tournament play, has requested a 6' intermediate rough cut around the fairways at 1 1/4". The fairways will be 5/8", with the rough cut at 2". The greens will measure 9 1/2" on the stimp meter and will be a tight 1/8" cut.

Jupiter Hills is ranked somewhere around 41 in Golf Digest but after this tournament Dick Herr sees that ranking set at a higher position. And according to an article which *The Palm Beach Post* ran on May 26, 1987 entitled *Jupiter Hills Could Deceive In Amateur*, and I quote, "Situated on a ridge near the ocean in South Martin County, Jupiter Hills offers one of the more striking settings for a Florida golf course. The par-3 ninth hole, for example, requires a 192 yard shot that must carry over vegetation to an elevated green. A flat pitch-and-putt course, Jupiter Hills is not."

Florida courses will host 12 professional tournaments this year. In fact a major championship tournament, The PGA Championship, will be held just down the road from Jupiter Hills, at the PGA National Golf Course, where Luke Majorcki is superintendent, on August 6-9, 1987.

The USGA, perhaps paid the best compliment to Jupiter Hills by not asking for any major changes to be made before the tournament. "We're sure it's going to be a good test," said P.J. Boatwright, executive director of the USGA. ■



Hole No. 11, Par 3, 198 yards. A beautiful sight from elevated tee to well trapped green with water along right side and back of green.



# NEW ERA OF AG MICROBIOLOGY

Scientists are finding more ways to put microorganisms to work for crop producers

**M**icroorganisms, the tiny workhorses of agriculture, are on the verge of having a much greater impact on crop production.

This new era of ag microbiology got its start in the 1950s, when scientists began making major strides in unraveling the secrets of molecular genetics. Knowledge of heredity and microbiology has been exploding ever since. This growing knowledge base has helped scientists develop more useful strains of naturally occurring microorganisms. What's more important, it has made it possible to create man-made microorganisms.

With genetic engineering, microbiologists are now able to move genetic material from one cell to another, and even from one species to another, to modify organisms for specific uses. The first generation of microorganisms produced in this way were merely laboratory oddities. Today, however, some man-made microbes are being used commercially. Many more are undergoing final tests and could soon be sold to crop producers or other potential users.

**Microbes make medicine.** Pharmaceutical-industry researchers were among the first to develop commercial man-made microorganisms. For example, several years ago they

engineered a new bacterium that now manufactures most of the insulin used to treat diabetes.

Meanwhile, other researchers have been making headway with microbes that have potential utility in crop production.

One of these scientists is Steven Lindow, a microbiologist with the University of California at Berkeley. Lindow has been working with man-made bacteria that can help prevent frost from forming on fragile crop blossoms. So far, the po-

might someday be used to boost crop yields or kill weeds.

A microbe that's already being used by some crop producers is the *Bacillus thuringiensis* (Bt) bacterium, which produces a toxin that kills certain insects. U.S. and Canadian farmers now use more than \$20 million worth of Bt-based insecticides each year.

One problem is that existing commercial Bt insecticides lose their poisonous effects after exposure to only a few hours of direct sunlight. So the products usually have to be sprayed on crops several times during the growing season. However, scientists are overcoming this problem, and also making other improvements in Bt-toxin technology.

"We're using genetic engineering to improve Bt insecticides in three basic ways," says Holly Hauptli, a scientist with Calgene, Inc., Davis, Calif. "The first approach is merely to do a better job than Mother Nature at designing the bacteria themselves."

Toward that end, scientists are developing Bt strains that survive longer in the field. They're also trying to discover or develop strains that are effective against insects for which no toxic Bt strains are now known.

While these efforts haven't yet led to commercial products, a second approach has been more successful. Scientists at Mycogen Corporation, San Diego, Calif., have used genet-



Bacteria carried in the bodies of nematodes killed this gypsy moth caterpillar in less than 48 hours.

tential usefulness of the bacteria has been demonstrated only in the laboratory. Court orders obtained by environmentalists have delayed field testing. However, Lindow hopes to field test the bacteria this year.

Scientists say there are many other ways microbes, or products made by them, might be used in crop production. One approach would be to harness bacteria for manufacturing enzymes and other products that regulate plant growth. These

Tsuneo Kaneshiro is studying rhizobia bacteria that give soybean plants an extra growth boost.

ic engineering to endow other species of bacteria with the ability to produce the Bt toxin.

Mycogen scientists modify *Pseudomonas fluorescens* (Pf) bacteria by inserting genetic material from Bt bacteria that codes for production of the Bt toxin. When caterpillar insects such as cabbage loopers or cotton bollworms consume the Bt toxin in the Pf bacteria, the insects die.

**Light resistant.** The toxin produced by the Pf bacteria isn't damaged by sunlight, says Andrew F. Barnes, operations manager for Mycogen. The Pf cells are treated with heat and chemicals in a patented process that further preserves Pf cell walls. The process protects Bt toxin from the field environment. The man-made Pf bacteria remain poisonous in the field long enough to provide some full season protection against caterpillar insects. The product could be offered for sale in 1989. The U.S. Environmental Protection Agency has allowed Mycogen scientists to test the man-made bacteria's toxic effects in the field. According to Barnes, all the bacteria have been killed before leaving the lab, so there's been no chance of their getting loose in the environment and reproducing.

Monsanto Co. scientists are using a slightly different variation of this approach. They're transferring the genetics for Bt-toxin production into *Pseudomonas* bacteria that are normally associated with the roots of corn plants. The idea would be to apply live bacteria as a seed coating at planting time. Theo-

retically, the toxin-producing bacteria would grow along with the roots and would be effective in controlling corn rootworms.

**C**algene's Holly Hauptli says a third approach to improving Bt-toxin technology is to endow living plant cells with the ability to produce the toxin. In theory, for instance, corn plants with the Bt-toxin gene would be able to resist feeding by corn borers. If such plants could be developed, they could be used in conventional breeding programs to produce commercial corn hybrids with corn-borer resistance.

This third approach is more difficult than either of the first two. It's not easy to manipulate the genetic material of complex plant or animal organisms. However, Hauptli points out that scientists are having some success with this kind of genetic engineering. For example, researchers have recently transferred the genetic material for Roundup herbicide resistance from bacteria into plants. Now plant breeders are trying to make this trait commercially useful.

Even more familiar to most farmers than Bt bacteria is the rhizobia family, which lives in nodules on the roots of legume plants and fixes nitrogen.

Tsuneo Kaneshiro, a scientist at USDA's Northern Regional Research Center, Peoria, Ill., has recently demonstrated that certain rhizobia can also provide other benefits for growing

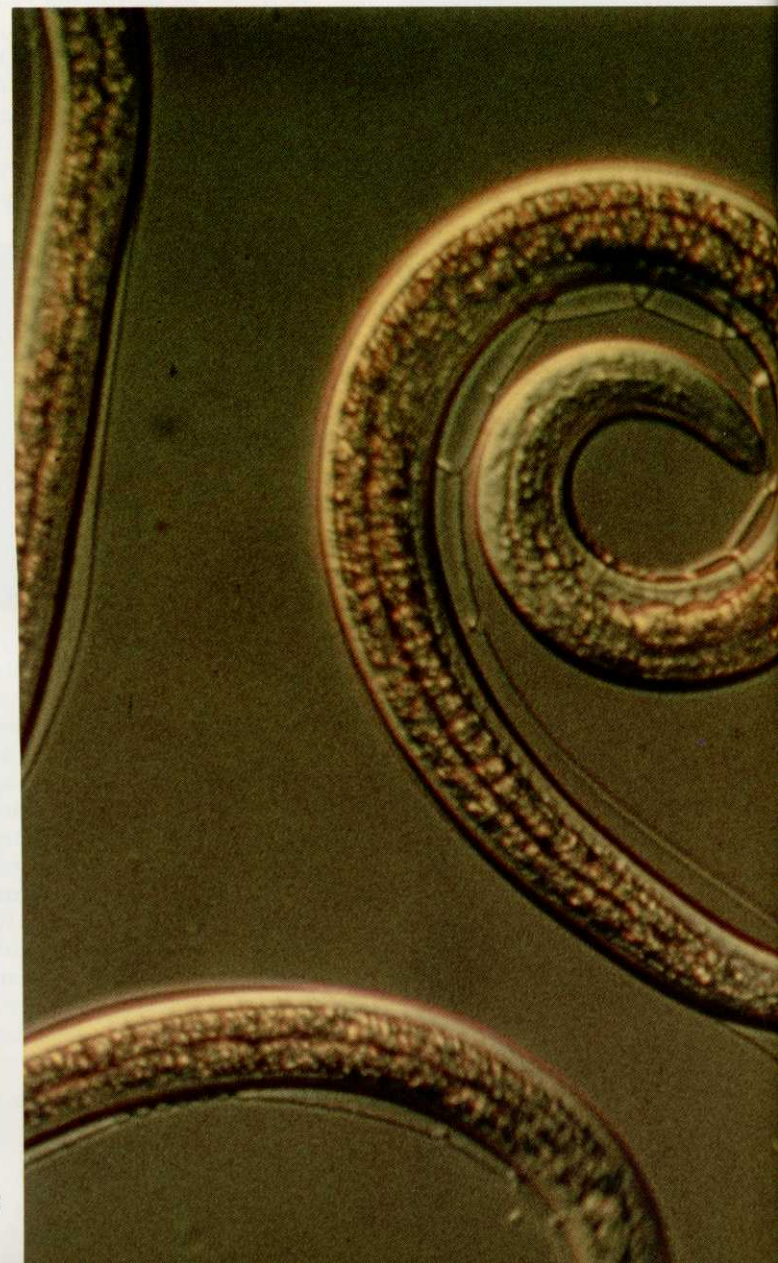
plants. Kaneshiro is studying bacteria treated in the laboratory to encourage genetic variation. One rhizobia variant, in addition to fixing nitrogen, also produces an enzyme that helps convert tryptophan into a growth regulator called indoleacetic acid. The acid stimulates plant growth over and above that which can be attributed to nitrogen fixation.

Other scientists are working with rhizobia strains that already exist in nature. For example, David Hume and his colleagues at the University of Guelph in Ontario recently tested a newly discovered naturally occurring strain. Soybeans treated with this strain yielded 9 percent more than soybeans treated with commercially available strains.

The Guelph scientists are also field testing naturally occurring bacteria that show a remarkable ability to protect crops from fungus diseases. "The bacteria protect the plants because they tie up iron in the root zone," Hume says. "Pathogens don't multiply as readily because they can't get enough iron. These bacteria help protect crops from take-all, pythium, fusarium, and rhizoctonia."

**Special delivery.** It's not enough, of course, to come up with microbes that are beneficial to plants. Scientists also have to come up with ways to get the microbes in the right place at the right time. Trevor Suslow, a researcher with Advanced Genetic Sciences, Oakland, Calif., has recently discovered naturally occurring strains of

*Trevor Suslow applied bacteria to transplants in the left tray to protect the plants from some diseases.*





*Pseudomonas* bacteria that attack the organisms responsible for certain plant diseases. In addition, he has gotten around the delivery problem. He injects a water solution containing the bacteria into the growing medium used in the greenhouse to produce transplants. "The same environment that keeps transplants alive is great for microbes," Suslow says.

Advanced Genetic Sciences has tested the treatment in cooperation with Growers Transplants, Salinas, Calif. Suslow says the treatment helps control pythium and fusarium. Treated transplants grow faster in the greenhouse and have higher survival rates when set out in

*Steinernema* nematodes control several insect pests, including black vine weevils in horticultural crops.

the field. Treated transplants also grow faster in the field. In fact, treated lettuce and celery have been ready for harvest two and a half to three weeks earlier than untreated plants.

Harnessing fungus organisms for crop production is another aspect of ag microbiology's new era. Researchers are working with fungus strains that help protect crops from drought, salinity, and poor soil fertility. These organisms aid plants by enhancing uptake of moisture and nutrients. They are already being used commercially, for instance, to increase survival and speed growth of tree transplants on poor soils, according to D.H. Marx, a USDA plant pathologist at the University of Georgia.

In the future, farmers might

be able to take advantage of other fungus strains, like the ones Richard Thomas and Robert Ames are studying at USDA's Western Regional Research Center, Albany, Calif. These fungi, which grow in association with plant roots, improve soil structure and might someday be used to help control soil erosion.

**Friendly nematodes.** Many farmers are accustomed to protecting crops from nematodes. However, certain strains of these organisms do no harm to crops but do attack spiders, insects, and other crop pests, says Harry Kaya, an entomologist and nematologist at the University of California, Davis.

According to Kaya, scientists have only recently begun to study how nematodes attack insects. *Steinernema* and *Heterorhabditis* nematodes are known to carry insect-killing bacteria in their bodies. The nematodes enter insects through natural body openings, then release the bacteria. While inside the nematodes, the bacteria are inactive. But they become active in insect tissue and can kill an insect within 48 hours.

One of the first private firms to offer nematodes for insect control is Biosis Company, Palo Alto, Calif. Art Kushner, marketing manager for the company, says Biosis plans to sell nematodes to control insect pests of artichokes this year. The company has found a way to

Fungus organisms growing on onion sets in these chambers are able to improve soil structure.

mass-produce nematodes and keep them alive during shipment. The nematodes are applied so they accumulate at the base of leaves, where life-giving moisture collects.

In research done in cooperation with Biosis by Jan Jackson, a USDA entomologist at Brookings, S.D., nematodes were effective in controlling corn rootworms. But it took 5 billion nematodes per acre to do the job.

Biosis is also working on ways to use nematodes for controlling navel-orange worms in almonds, wireworms in sugarbeets, gypsy moths in forests, and household pests such as cockroaches. Another promising opportunity exists in lawn care. Biosis has an agreement with CHEMLAWN to develop nematodes for controlling white grubs, mole crickets, and cutworms in grass sod. This control would reduce the need to apply conventional pesticides where people and pets play.

Ag microbiologists are active on other fronts, too. Some are working with microbes that make better hay and silage. Some are concentrating on microbes used in manufacturing cheese and wine, as well as other foods and beverages. Then there are the growing number of uses for microbes in livestock production. (That's a whole other story.) In addition, scientists will probably find some uses for microbes that can't even be imagined today. It's easy to see why experts are claiming that the new era of ag microbiology is just beginning.



Reprinted with permission, *The Furrow*, John Deere & Co.

# Establishing a Disciplinary System FOR Golf Course Maintenance Crews

The performance of any organization is affected by employee acts as trivial as tardiness or as serious as drunkenness or fighting on the job. Often times the problem of discipline is as hard to deal with as it is necessary to face. Your effectiveness as a leader of your organization is determined a great deal by how you handle discipline problems.

Only a fair and consistent system of discipline and dismissal procedures provides a stabilizing force in employee control. Employees must understand that rules are made to be enforced, and that the company is not afraid to fire those who refuse to follow them. Unfortunately, many of us lack a standardized system for dealing with employee behavior problems. A standardized system is particularly needed when dealing with a relatively high turnover work force like we find on most golf courses.

Without a uniform policy for handling discipline problems, there are four problems which usually appear:

**PARTIALITY** - It is only natural to be more lenient with good workers or ones the manager is friendly with. But the surest way to make behavioral problems worse is to discipline some employees and not others.

**INCONSISTENCY** - Without guide lines for discipline, consistency of action is impossible. The word soon gets around and leads to further trouble.

**USE OF DISCIPLINE FOR PUNISHMENT** - The only constructive purpose for discipline is prevention, not punishment. It should be used to prevent the recurrence of behavior problems, not to get revenge. By misdirecting his efforts, a manager can create rather than solve problems.

**FAILURE TO TAKE ACTION** - Even when discipline is clearly called for, a manager or supervisor may fail to take action:

1. To avoid the unpleasant experience
2. Because he may fear being "tagged" as hard nosed
3. In an attempt to delay action by claiming lack of time
4. Because the employee realizes the offense and will not repeat it.

But, failure to deal with problems promptly often results in implied acceptance or approval of the offense. This will result in increased occurrences and the manager will lose control of one of his most important responsibilities.

## MANAGER'S RESPONSIBILITY

It is up to management to create an effective and workable discipline policy. Management must also see to it that discipline is enforced consistently and impartially. By equal enforcement of standards, giving adequate warnings, and allowing warned employees the chance to redeem themselves, the organization can demonstrate that employee discharges are not done as vindictive punishment for past mistakes, but as preventive actions.

## DISCIPLINE POLICY

The best approach to discipline is one in which the employee experiences the offense and its resulting discipline as one related event. Punishment is not given for moral reasons, but because a rule has been violated; the discipline is directed at the act, not at the person.

Not all offenses should be treated alike. Offenses fall into three categories according to the appropriate discipline action. The following is a partial list of common offenses to show how they fit into the three categories.

1. Offenses resulting in immediate discharge:
  - \* Theft
  - \* Fighting
  - \* Refusal to Work
  - \* Willful destruction of Property
  - \* Gross Insubordination
  - \* Falsifying time cards
  - \* Under influence of drugs
2. Offenses resulting in a written warning with immediate suspension or discharge for a second offense:
  - \* Careless or improper use of company property
  - \* Sleeping on the job
  - \* Two days absence without notice
  - \* Failure to comply with an order, rule or regulation
3. Offenses resulting in an oral warning for first offense, a written warning for a second offense, and suspension or discharge for a third offense:
  - \* Tardiness
  - \* Unauthorized absence from job or work area
  - \* Foul or abusive language
  - \* Inefficiency, incompetence, or negligence in the performance of duties.

The above list is meant to be suggestive, and each golf course should tailor its disciplinary policy to suit its needs and circumstances. Once the disciplinary policy, guidelines, and action have been determined, they should be

*(continued on page 65)*

(continued from page 64)  
widely posted and publicized.

## LEVELS OF DISCIPLINE

There also must be uniform procedures for administering discipline on each of the four levels - oral reprimand, written warning, suspension, and discharge.

### THE ORAL REPRIMAND

The most crucial aspect of the oral reprimand is how it is conducted. It must be delivered in private immediately after the infraction has occurred. Any delay could give the impression that the offense was condoned. The atmosphere should be non-punitive and informal, and the offender should be given the chance to tell his side of the story and explain the facts as he sees them. The supervisor should point out the problems that have arisen or will occur as a result of the infraction. A good rule of thumb is to address the offense, rather than the person who committed it.

When the supervisor has compared the facts of the offense with the employee's account of it, he should inform the employee of the resulting decision. This may include any expected improvement in the employee's performance, any assistance the supervisor plans to give the employee in correcting the problem, any penalty to be imposed, and the follow-up action that will be taken.

The supervisor should not be angry, hostile or sarcastic, but must be firm, show concern, and be clear about the response given to the infraction. It must be pointed out that the reprimand is not given because higher management expects it, but because of the employee's obligation to the supervisor and to the organization as a whole.

After the reprimand has been given, the supervisor should make a note for the employee's file of what was discussed and when.

### THE WRITTEN WARNING

When a written warning is called for, it should be preceded by an interview similar to the oral reprimand, differing only in that the employee is told at the conclusion of the interview that a written warning is to be issued. The written warning should include a statement of offense, an identification of the rule that was broken, the consequences of continued infractions, any commitment on the employee's part to correct his or her behavior, and any follow-up actions to be taken. The employee should be given the original and asked to sign the personnel file copy. If he or she refuses it, a notation to that effect should be made on the copy.

### SUSPENSION

A suspension notice should be issued only after a disciplinary interview has been conducted. For minor infractions, suspension is appropriate only after a record or oral and written warnings has been established. For major infractions, of course, suspension is

warranted without a record of prior offenses.

Suspension is used instead of dismissal when management feels that the employee is sincere about wanting to correct his behavior. It is also used when management feels a dismissal would not be upheld if taken into arbitration.

### DISCHARGE

For offenses other than those that call for immediate discharge, management should not resort to dismissal unless all other problem-solving and disciplinary efforts have failed. Once the decision to discharge an employee is made, it is best for him or her to leave as soon as a written notice of dismissal (contains similar information to the written warning) can be prepared and presented to the employee. If the violation is so flagrant that the offender must be discharged on the spot, the written notice can be sent later.

### CONCLUSION

An effective, formal discipline system has obvious advantages for management, and even for the disciplined employees themselves. Good employees like to know where they stand, what the rules are, and how the company feels about their performance. They like to know that the disruptive behavior of others will not go uncorrected. They like a just system aimed at prevention rather than punishment.

J.N. DeBra - DeBra Equipment

*The above material is not all my original material. It is from notes and articles that I have accumulated. I hope you will find some helpful and thought provoking ideas for your unique situation.*

*J.N. (Jud) DeBra is Vice-President of DeBra Turf & Industrial Equipment Company and President of DeBra Equipment Company, Incorporated. Jud received a B.A. at Furman University, an M.H.A. at Duke University and has done further graduate business studies at Georgia State University and University of South Florida before joining the DeBra companies in 1968.*



# Everglades Golf Course Supt's Assn.

5/8/87

On behalf of the membership of the Everglades chapter, allow me to extend a special thank you to all the supplier agencies that donated time and money to the poa annua this year. Without your help we couldn't host such a successful tournament each year!

Thank You,  
*Guy Redden*  
*Bob Sheehy*  
Everglades Board of Directors

Agronomic Resources  
Almar Chemical Co.  
Ameraquatic, Inc.  
Andy's Plant Aids  
Aquatic Systems  
B & W Golf Cars  
Central Fla. Turf  
DeBra Turf & Ind.  
DuCor Chemical  
Elanco Products  
E.R. Jahna Inds.  
Estech Branded

E.Z.Go Textron  
Fla. Irrigation  
Gator Pumping  
Hector Turf Inc.  
Lesco Inc.  
Lewis Equipment  
Liquid AG Syst.  
Neff Machinery  
New Wesco Inc.  
A.M. Scott & Sons  
Prince Contracting  
Rhone Poulenc  
S. Fla. Liqua-Tech

Southern Mill Creek  
Sunniland Corp.  
Swiftline Trucking  
Woodbury Chemical  
Bill Branch Chev.  
South Seas Plantation  
Naples Beach Club  
Nutri-Turf Inc.  
Van Waters & Rogers  
Total Tree Care  
Pursley Turf Farms Inc.  
Golf Car Carriages Inc.

NEW BOOK DOCUMENTS THE FALLACY OF THE  
POLITICAL MYTH OF AGRICULTURAL CHEMICALS  
AS CANCER CAUSING AGENTS

Rachel Carson was a dedicated scientist. There was room for little else in her life. During most of her career, she enjoyed an impeccable reputation among her peers.

Toward the end, she "cracked". Turning from fact to doomsday theory, she published *Silent Spring* in the early 1960s. As a result, she died lonely, discredited and forgotten by her colleagues.

But she spawned a "new school" of negativism that continues to gain momentum as it affects the lives of every resident of Planet Earth. Under the umbrella of "environmentalism", such words as contamination, carcinogen and pollution have become everyday expressions in our vocabulary.

New national and state governmental bodies like the Environmental Protection Agency and Occupational Safety and Health Administration drain our tax "contributions". Organizations like the National Institute of Environmental Health Sciences and the National Institute for Occupational Safety and Health provide jobs for persons rejected by the scientific community. Groups like the Audubon Society and Sierra Club have "conned" journalists and gained a platform for "issues" far beyond their ken and "far out" from the worthy purposes for which they were established.

The net result has been an ill-informed and disillusioned public.

Finally, after 20 years of chaos, an all-encompassing synopsis has emerged to help swing the pendulum back to the middle and bring these issues into rational focus.

With the publication this Summer of *The Apocalypitics*, Edith Efron points out the following:

- Most causes of cancer occur naturally. Man-made chemicals and other products contribute very little to this health threat.
- Projections linking cancer in laboratory animals to humans are not scientifically valid. The only way to properly evaluate this is to study man himself.
- By "laying the blame" on pesticides and other chemicals, science has been corrupted, and the public deceived by unqualified politicians who want to regulate business.
- Lazy journalists have perpetuated the myth by not bothering to investigate all sides of the controversy.

In reviewing this monumental compilation for Science, Bruce Ames, chairman of the Department of Biochemistry at the University of California, points out that "the rates for most types of cancer are declining. Only a small

fraction of human cancer appears to be due to occupation or pollution. Since the incidence of carcinogens in the natural world is very high, it is not sensible to try to regulate very low levels of man-made carcinogens.

"We are eating 10,000 times more natural toxic chemicals made in large amounts by plants to keep off insects and other predators than we are of man-made pesticide residues. Thus, the risk from man-made carcinogens is tiny compared to that from natural carcinogens.

"We need some Edith Efrons to remind us that the increased health and wealth that industrial society has brought us has come from not being unreasonably fearful about new technology," Ames concludes.

Carcinogen consultant William Havender adds in *Fortune*, that of the tens of thousands of chemicals produced by modern industry, only 10 can cause cancer in both animals and humans. One (arsenic) is carcinogenic in man, but not in animals. Of those that cause cancer in animals, evidence linking incidence in humans is not clear.

But, "every uncertainty in animal tests is resolved against the chemicals. The deck is deliberately stacked in every way imaginable."

Let's hope this definitive work rocks some complacent boats and helps bring this issue back into a sane perspective. If you can't find a copy in your bookstore, I'll be glad to loan mine. The line forms to the rear.

**DOUGLASS  
FERTILIZER, INC.**

••• SPECIALIZES IN •••

**DIRECT APPLICATION  
OF LIQUID FERTILIZER  
SUSPENSIONS AND  
FERTIGATION  
FORMULATIONS  
FOR GOLF COURSES**

**CONTROLLED RELEASE &  
SLOW RELEASE NITROGEN  
NOW AVAILABLE IN**

••• **LIQUID** •••

**CALL 305-322-0443**

P.O. BOX 2811  
LAKE MARY, FLORIDA 32746

# Letters to the Editor

Dear Dan;

I want to impose, and ask you to add 2 more names to the list of guys that receive "The Florida Green." Dan, this publication is 'ONE REAL DANDY.' I look forward to getting it — and when I do receive it, I read it from Cover to Cover.

1. A life long PAL of mine — Floyd Farley, Cathedral Drive #45-55, Sedona, Arizona 86336. Floyd is a past president of the 'Golf Course Architects Society of America.' Done some 70 plus courses out here in the middle west — he has left some Real Great Lay-Outs — 'A True Master at his Profession.' And he can still play golf — at age 79, he is still playing to a 7 handicap at his home club in Sedona, Arizona — he owns an absolute PERFECT GOLF SWING.

2. Please add my son Craig Metz on the mailing list for 'The Florida Green' — Craig is with Tom Fazio the past 3 yrs., doing his major finish work — he is finishing up a job at Vero Beach at present — and then he goes over to the Orlando Area for a couple of jobs that Tom Fazio has going at this time. Do look Craig up if you get in his area

— I would certainly like for him to meet you. Mail Fla. Green to him at — Craig Metz, 17755 Federal Hiway, Jupiter, Fla. 33458. Please send him a copy of this last issue.

Dan — drop me a note — I'd love to hear from you.

With Warm Regards,  
Dick

PS — please send copy of this past issue to Floyd Farley.

Dear Sandra:

How exciting to see The Plantation Golf & Country Club on the cover of *Florida Green*. And, of course, this cover was even more exciting because it folded out.

Your story was just as terrific. It was readily apparent that you spent quite a great deal of time with Eddie.

As you know, a community is only as good as its staff. We believe The Plantation has one of the best.

Thank you for all your hard work on the story. We really do appreciate such good coverage. I hope we can work together on another story sometime soon.

Sincerely,

PEARSON, THOMAS/LEVY KING & WHITE

Beth Hardy  
Public Relations Account Manager



## SUPERIOR TURF CARE PRODUCTS AND SERVICE

SINCE 1923



TOLL FREE  
1-800-432-3413

Atlantic-Florida  
East Coast Fertilizer & Chemical Co.  
P.O. Box 1488 Homestead, Fla.

- Fertilizer
- Pesticides
- Micronutrients



MUIRFIELD VILLAGE GOLF CLUB • DUBLIN, OHIO

# These Special Places Rate Special Fertilizers... **PAR EX**<sup>®</sup> Professional Products.

The grass and grounds of these famous places are just as important as the structure or complex itself. That's why knowledgeable turf superintendents insist on specially formulated PAR EX Professional Products.

IBDU releases nitrogen slowly, earlier in the spring, evenly through the summer, and carries nitrogen response later into the fall.

Famous places like the park surrounding the St. Louis Arch, Deere & Company Corporate Headquarters and 53 of the nation's top 100 golf courses\* are currently using PAR EX Professional Products. These include Muirfield Village Golf Club, Jack Nicklaus' home course, as well as most of the other courses he has designed.

Shouldn't you consider PAR EX with IBDU for your special place? Contact a PAR EX distributor and let him recommend a PAR EX program just for your grounds.

PAR EX and IBDU are products of Estech, Inc. Professional Products Division, P.O. Box 512, Winter Haven, FL 33882-0512.

\*As listed by Golf Digest Magazine



THE GATEWAY ARCH • ST. LOUIS, MISSOURI



DEERE & COMPANY CORPORATE HEADQUARTERS • MOLINE, ILLINOIS

## PAR EX<sup>®</sup> with IBDU<sup>®</sup>

PAR EX and IBDU are registered trademarks of Estech, Inc.



The commitment continues.

**LESCO**

has been committed to serving the nation's golf courses for 25 years.

With the introduction of the LESCO 300 Greensmower and LESCO 500 Fairway Mower, the commitment continues.

Manufactured at our 175,000-square-foot facility in Sebring, Florida, the LESCO 300 and 500 mowers offer upgrades and features unparalleled in the industry.

Larger engines for added power and less vibration . . . power steering for better maneuverability . . . improved filtration for minimized downtime . . . easy access to valve spools for more convenient servicing.

And LESCO builds its mowers using only the highest quality components. Char-Lynn® . . . power steering; TRW/Ross and Nichols . . . traction drive motors; Gresen® . . . valve banks and reel motors; Barnes . . . pumps; Aeroquip . . . fittings and hydraulic hoses; Kohler and Onan . . . engines.

And we stand behind our product with parts and service. Utilizing a fully computerized parts inventory and distribution center, our service department personnel are able to respond to customer inquiries quickly and efficiently.

We offer a warranty on parts and a credit for labor costs for one year . . . same day shipment of all replacement parts . . . and a toll-free hotline to our service manager.

Consider, too, that LESCO manufactures and sells direct to the user. That allows us to use top-of-the-line components, incorporate the exclusive features our customers want and still sell our mowers at a very attractive price.

The LESCO mowers . . . exciting and innovative.  
Yours is waiting! To order or arrange for a demonstration, call toll free.

(800) 321-5325  
NATIONWIDE

(800) 362-7413  
IN OHIO



**LESCO**  
1962 **25** 1987  
YEARS

SERVING THE GREEN INDUSTRY

20005 Lake Road  
Rocky River, OH 44116  
(216) 333-9250