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Toro NSN is the leading dedicated computer hardware/software support network in the irrigation industry with over 2,000 satisfied customers. With a microsoft-certified staff of licensed irrigators, NSN can help with the central system troubleshooting, systemoperation advice, extended warranties and system upgrades.

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Centrell

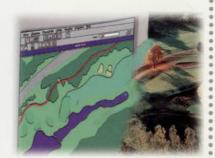




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*For E-Series™ OSMAC® and Network LTC™ Plus field hardware.



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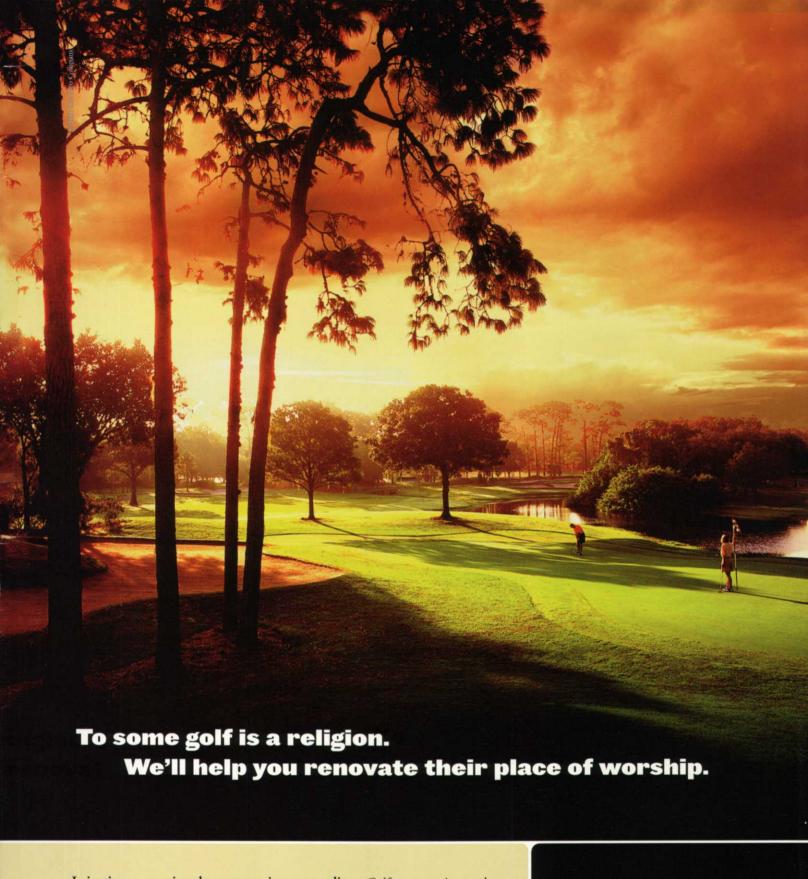
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Number of Stations Per Satellite	8 to 48 in 8-Station Increments	16 to 64 in 8-Station Increments
Number of Irrigation Programs	12	8
Number of Start Times Per Program	12	12
Optional Surge Protection Packages	Yes	Yes
Current Detection	No	Yes
Hand-Held Radio Capability	Yes	Yes









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No. 6, Binion's Bluff," Southern Dunes G&CC

SPRING 2001

President Cary Lewis says we are going to have to manage our golf courses with less water. The only question is, who's going to control how and when we get it: you or the other guys?

Joe Ondo's unprecedented service of 14 consecutive years as external vice president for Central Florida followed by four years of rotating through the chairs has brought him the FGCSA's highest award, The Distinguished Service Award.

Southern Dunes G&CC north of Haines City is a classic links-style course lying gently on central Florida's sandy ridge. It features 187 bunkers, all filled with native soil.

PROFESSIONAL DEVELOPMENT SELLING STORIES AND HITTING CURVES 34

Superintendent John Cunningham of Martin Downs says his annual Turf Field Day is a great way to sell the maintenance story to his members. More than 150 attended this year. USGA agronomist Chris Hartwiger says superintendents who emphasize playability over presentation are more likely to keep their jobs in tough economic times.

Managing nitrogen on the golf course is as much a political issue as it is an agronomic one, and this issue's Hands On section has some help on both fronts.

Don Benham, FTGA director of public affairs, uses his inaugural *Florida Green* column to enumerate the ways our two organizations can accomplish more together than separately. Regulators are willing to listen to the industry... if its members will only speak up, says Joel Jackson. First concept plan for the turfgrass plots at UF/IFAS's new Pine Acres center south of Gainesville already has researchers and regulators drooling.

USGA Green Section's Shelly Foy describes a high school turf and landscape management program. UF's Dr. Grady Miller contrasts Best Management Practices for Golf Courses with the Audubon Cooperative Sanctuary Program guidelines.

Dr. Rick Brandenburg, extension entomologist at North Carolina State University and recipient of a major USGA grant, summarizes progress in the industry's battle against mole crickets, the most challenging pest it faces.

About the use of trade names: The use of trade names in this magazine is solely for the purpose of providing specific information and does not imply endorsement of the products named nor discrimination against similar unnamed products. It is the responsibility of the user to determine that product use is consistent with the directions on the label.

The Florida Green

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Marie Roberts, Association Manager 1760 NW Pine Lake Drive Stuart, FL 34994 561-692-9349 800-732-6053 Florida WATS s it ever going to rain again in Florida? We have experienced droughts in Florida before but this year just may be the most devastating from our industry's view. The effects are being felt everywhere and will likely continue.

It has been known for several years that our population growth alone will put severe pressure on our potable water supply. With that growth the use of water we have become accustomed to will change. Our industry will be

> facing some tough situations and, without question, tightening of the existing water rules and laws are on the horizon.

Each area of Florida will have its specific challenges due to the diversity of water supply resources in each district. We can no longer sit back and hope that someone will look out for our water needs. I think we would all agree that a dependable source of irrigation supply is

paramount for our success as turfgrass managers. There are many things we can do to help improve our chances of survival. Believe me, survival may just be what is in the near future if we don't get some relief on many of our golf courses.

I have just heard a frightening story at our national convention. As I understood it, a water management district in New Jersey determined to respond to a drought condition by making an example of the golf courses. They decided it would be a good political move to drastically reduce the amount of water they would allow golf courses. Golf courses are very visible and the district felt it needed to make a statement, and of course everyone knows they must be using all the water.

In reality it was discovered all the green industries were only using .1 percent of the water and golf courses specifically were only using .003 percent of the total water consumed in the state!

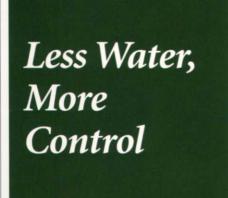
Now I ask you, how fair is that and what good would that really do to conserve the water supply? Is that scenario too far-fetched for us in Florida? I don't think so if we are not involved in our water management districts decision making process.

Some of our members have realized the need to be involved; one is Stuart Bozeman in the Seven Rivers Chapter. Stuart has been attending the SWFWMD meetings on a regular basis, letting management officials know that we are smart managers of water and we follow sound scientific and agronomic irrigation practices. The equipment we use to apply the required irrigation is state of the art and many courses even have weather stations on their property to help determine the irrigation needs.

Stuart has suggested the district consider changing the way it restricts golf course water usage. He suggested instead of restricting us to days of the week that a percentage reduction from the annual permitted amount would make more sense. For example under a phase-one restriction the user would be required to reduce 10 percent; under phase two, a reduction of 15 percent from the permitted amount. This allows the superintendent to determine where and when to apply the irrigation to best suit the needs of the turf.

He brought this idea to the FGCSA Board of Directors and we felt this does make a lot of sense. I sent a letter recommending and supporting this concept to the governing board at SWFWMD. The letter has already received their attention as I have received phone calls from SWFWMD to discuss our proposals. They have questions on how much more could we cut if the drought worsens and about the timing of implementation. These are valid questions, but It is through our involvement that we can make a difference and help them make informed decisions instead of radical regulations.

I thank Mr. Bozeman and applaud his efforts to get involved. He has made a difference. I ask all of you to think about this and help us. Get involved. Get informed and make a difference.



PRESIDENT'S MESSAGE



Cary N. Lewis, CGCS



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The Cushman Turf-Truckster is the industry's first fully automatic, heavy-duty turf vehicle. Also available with a 4-speed synchronized transmission, the Turf-Truckster is geared to tackle your toughest assignments. A truckload of attachments and 3- and 4-wheel configurations make it the most versatile heavy-duty utility vehicle on turf. A rated capacity of up to 2,850 lbs., self-adjusting hydraulic brakes and your choice of three powerful engines make it extremely rugged and dependable – which makes your purchase decision that much easier. So, to automatically shift your operation into high gear, come in or call today.

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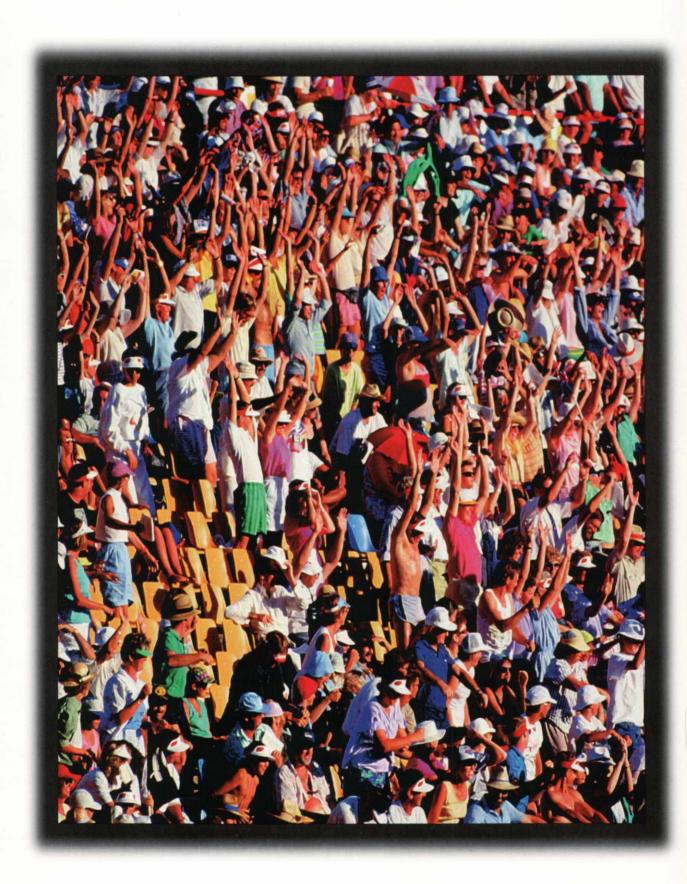
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Thanks to all of you who voted us **number one** in mole cricket control. (And it was, pretty much, all of you.)



In just a few short years, the vast majority of you have come to depend on Chipco® Choice™ to take care of one of your biggest problems: mole crickets. In fact, in a recent GCSAA study*, you chose Chipco Choice over the second-place

product by a margin of more than 2 to 1. And it looks like you're pretty pleased with the job we've been doing, too, since a whopping 91% of you rated Chipco Choice as "excellent" in efficacy.

To be honest, our overwhelming popularity does make sense.

After all, Chipco Choice has several very attractive qualities, if we do say so ourselves:

For instance, there's the unique mode of action of our amazing active ingredient, fipronil. (Fipronil works two ways, killing mole crickets both through ingestion and through contact.)

Then there's the long residual control — six months with just one application. And the low-dose efficacy: Just one pound of our fipronil works as well as 200 pounds of an organophosphate.

All in all, Chipco Choice offers a combination of benefits that no other mole cricket insecticide can match. A winning combination, you might say. In fact, that's just what you did say.



^{*} Superintendents were surveyed as part of the 2000 GCSAA Plant Protectant & Fertilizer Usage Study.







Joe Ondo, CGCS, left, receives his FGCSA Distinguished Service Award from FGCSA Director of Communications Joel Jackson, CGCS, at the 2000 Crowfoot Open banquet in August. Photo by Stuart Leventhal.

DISTINGUISED SERVICE AWARD

FGCSA Honors Joe Ondo's Years of Service

haven't checked the Guinness Book of Records, but I can go by my own eyewitness experience to verify that Joe Ondo, CGCS has one of the longestrunning records of service and FGCSA Board Meeting attendance of any active superintendent.

In recognition of his devotion and dedicated service to his peers through his board service and committee work, Ondo was selected as the recipient of the FGCSA's Distinguished Service Award for 2000. The award was presented at the 24th Annual Larry Kamphaus Crowfoot Open last August at the Bay Hill Club in Orlando.

Ondo wasn't out to set any records. He only volunteered his time and energy because he loves this business and the game of golf and he respects the pioneering work done by those who paved the way for the rest of us.

After an unprecedented 14 years as the external vice president for the Central Florida chapter, Ondo then rotated through the chairs of the state association becoming the 17th FGCSA president in 1997. Ten years prior to that, Ondo had served two terms as the president of the Central Florida chapter from 1985 to 1987. For the past 10 years he has chaired the FGCSA golf committee, coordinating the selection of the FGCSA's No. 1 team to represent the state at the annual GCSAA Golf Championship.

Ondo's quiet, unassuming manner belies the passion which he harbors for his profession and the game of golf. He is an avid reader and collector of books not only on turf management but also on course design and histories of the profession and the game itself. Those who have competed against him on the course how consistent his swing and his temperament are under fire.

Because he plays a lot of amateur golf in the central Florida area, Ondo gets asked a lot of questions from golfers about their courses and their superintendent's methods. Ondo politely tells them that it wouldn't be ethical for him to second guess his peer's decisions and he steers them around to the fact that they need to talk to their own superintendent instead of asking a stranger about their courses.

Ondo is a consistent contributor to The Florida Green sharing his hands-on experiences at the Winter Pines Golf Club where he has been the superintendent since 1979. He praises the work of his tight-knit crew of eight that helps him keep the course in great shape even under the pressure of more than 85,000 rounds a year.

Ondo also appreciates the strong working relationship with his owner Ed McMillin and the Club President and General Manager Jon McMillian. Along with Head Golf Professional John Pohira, this team consistently provides an outstanding public golf facility to Orlando area residents.

I offer my own personal congratulations to my long time friend and golf partner for many a G. C. Horn Memorial Tournament.



The Gang's All Here... Finally

Timing is everything! During our cover story visit for the Winter issue, the Olde Hickory G&CC maintenance staff was too busy to stop for a photo session. Superintendent John Stach sent in this picture to be sure the staff got it's well deserved recognition for a job well done. Photo by John Stach.

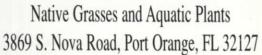






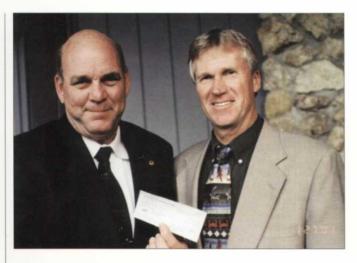
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Everglades GCSA Research Donation

FGCSA President Cary Lewis, CGCS, left, accepts a \$4,000 check for the FGCSA Turf Research Fund presented by Everglades Chapter External Vice President Dale Walters, CGCS at the FGCSA winter board meeting in Orlando. Photo by Joel Jackson.

Smokin' Joe you're a great guy, a true professional superintendent and one heck of a golfer. Thank you for your very distinguished service to all of us in the profession.

JOEL JACKSON, CGCS

GCSAA CONFERENCE & SHOW

Dallas No Hit But Conference a Big Winner for All

As a GCSAA conference and show site, Dallas was not a big hit. The cold, wet weather and conference center construction did not help matters, nor did the spread-out nature of the hotels and strange street grid system help in getting around. Some people reported different taxi fares to and from the same locations depending on the time of day.

But we did not come for the tourist attractions and sightseeing, we came to participate in our industry's biggest event of the year, and by all accounts that part of the trip was successful for everyone. This 72nd

GCSAA Distinguished Service Award Winners

"With this award you have put a turtle on a fence post. A turtle can't get up there by himself." - Dr. Euel Coates, Mississippi State University.

"I believe the GCSAA has helped to provide the training and leadership for us to provide the best playing conditions ever in golf." - L. W. Sonny Dubose, CGCS.

"A round of golf is like music that can refresh your soul." - Arthur P. Weber

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Keynote speaker Retired U. S. Army General H. Norman Schwarzkopf, Jr.

On golf: "When I lived on the right side of the Cheval

golf course in Tampa I collected 1900 golf balls in my yard. When I lived on the lived on the left side of the course at Saddlebrook I collected 600 golf balls. I concluded that 2/3 of the golfers in the world must slice."

Stormin' Norman's Keys to Leadership

"The circumstances of your birth have nothing at all with a person's ability to lead; it is what you perceive about yourself that is important to leadership."

The single most important ingredient of leadership is character."

"You don't have to be loved to be a leader, you must be respected."

"The challenge of leadership is to get people to willingly do what they ordinarily would not do on their own."

"Delegate authority not responsibility."

"Goals are only meaningful if everyone understands the objective and the role they must play in obtaining it."

"Failure is contagious. Success is infectious."

"Give yourself and others the latitude to learn (make mistakes)."

"You can forget all these principles if you only remember these two rules. Here are the two secrets to 21st century leadership. Rule 13: When placed in command, take charge. Rule 14: Do what's right."

Retired U. S. Army General Norman Schwarzkopf, Jr. was the keynote speaker at the GCSAA Conference's Opening Session on Wednesday night. Photo by Joel Jackson.

International Conference and Show also kicked off a year-long celebration of the 75th anniversary of the GCSAA. An extra effort was made to have a multitude of historic displays set up in various areas of the Dallas Convention Center to give everyone a nostalgic look at the history of the profession and the association. I give the GCSAA staff an A for effort.

The first thing many people saw after getting off

UGLY UGLY UGLY



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Hendrix and Dail's new, patented product, TURFCURE 376, controls turf-damaging nematodes with minimal turf damage and little or no chance of run-off or exposure to humans or wildlife. Our patented machine injects TURFCURE 376 into the soil beneath the thatch layer with minimal surface disruption.

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A series of historic displays throughout the convention center showed the evolution of golf course equipment and affiliated chapter publications. The FGCSA had a prominent display of milestone issues of the Green Sheet and The Florida Green and it's parent publication the South Florida Green. Photo by Joel Jackson.

the shuttle buses was the walkway to the classrooms festooned with banners hanging over the aisle. Each banner bore the name of a GCSAA affiliated chapter and its founding date. I understand each chapter will be presented with its banner to mark the anni-



Mark Black, CGCS, Quail West G&CC (center) was the moderator for the Southern Grasses Forum at the GCSAA Conference in Dallas. Bob Randquist, CGCS of Boca Rio GC (left) and Matt Taylor, GCS, Royal Poinciana Club (right) presented their programs for TifEagle and Champion ultradwarfs at the forum. Photo by Joel Jackson.

versary. Beyond the legends and milestones depicted around the convention center there are a full slate of activities including a \$75 dues special that will run most of the year to attract new members.



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Perhaps more history was made at the annual meeting where the muchballyhooed PDI passed with a 75% approval vote. Some are calling it a mandate. We will now await the implementation and the changes it will bring.

While FGCSA members

were in classes, the staff was attending a day and a half of programs designed to inform and assist chapter managers and newsletter editors conduct the mundane mechanics of association business. From media awareness, tax issues and government relations we

The expert crowd counters from the Hyatt Hotel in Dallas told us we had around 450 guests at the FGCSA Reception on Thursday night. Photo by Joel Jackson.

got tips, ideas and contacts to help us help the associa-

After several long days of classes and meetings, nearly 500 Florida superintendents, suppliers and guests gathered at the Hyatt Hotel near the convention center on Thursday night for the traditional FGCSA Reception to touch base and catch up with friends from around the state. The food, drink and camaraderie were enjoyed by all.

CHAPTER ROUNDUP

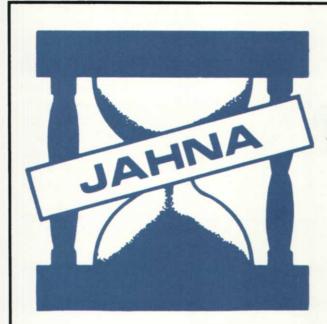
Lake City Alums Face Frost in Bonita

The 9th Annual Endow ment Golf Tournament held by the Lake City Community College Golf

and Landscape Operations alumni was another huge success. The event is annually averaging over \$10,000 in proceeds which is matched by state funds and goes for scholarships and program enhancements at Lake City.

This year's sell-out event at The Colony G&CC had to endure a rare frost delay in Bonita Springs on Jan. 6, which was part of the longlasting cold spell that gripped the state this winter.

But the ice and the players thawed out to have a great day for a good cause. John Piersol, chairman of the GLO program at Lake City was on hand to personally thank all the sponsors and participants in



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The LCCC Alumni Committee celebrated 9 years of successful fund raising for the Lake City Community College Golf Operations program. From the left: John Piersol, Lake City; Garry Higgins, Host superintendent; Glenn Zakany, Co-Chairman; Scott Hamm, Diamond Sponsors; David Fry, Co-Chairman; John Johnson, Gold Sponsors & Resort Packages; Mike Smith, Registration and Roy Bates, Raffle Prizes and Photo Gifts. Not pictured: Odell Spainhour and Dick Bessire, Raffle Prizes and Scoring. Photo by Joel Jackson.

this key fund raiser for the school.

Winners included: A Flight: 1st-Glenn Zakany & Jim Osburn; 2nd-John Lammrish & Glen Andrews; 3rd-Chip Powell & George Eisler; 4th-Dave Resch & Mike Dillinger. 5th-Scott VanDame & Jim Glass and 6th-Dick Bessire & Lou Conzelmann. B Flight: 1st-Dave Gibbons & Jim Phleps; 2nd-Ron Demis & Chuck Whitman; 3rd-Mike Outen & Kyle Tapp; 4th-Scott Lovecchio & Garry Callahan; 5th-Kyle Kenyan & Matt Taylor; and 6th-Rinn Neymeyed & Milo Seipi.

CENTRAL FLORIDA

Leventhal Honored for Event Support

At the 13th Annual FTGA Turf Research Tournament at the Interlachen C. C. in Winter Park., Central Florida GCSA President John Kopack presented host superintendent Stuart Leventhal of the Interlachen C. C. in Winter Park with a plaque of appreciation for hosting the event all these years. Interlachen donates the use of the golf course for the event and only charges the food at cost to help maximize the proceeds of the event. The generosity of Interlachen has helped the Central Florida chapter raise over \$50,000 in research funds over the past 12 years.

Dr. Terril Nell, chairman of the Ornamental Horticulture Dept. at the



Flight winners of the frost-delayed LCCC Alumni Endowment
Tournament at The Colony G&CC in January were, from left, B Flight
- David Gibbons and Jim Phelps. A Flight - Glenn Zakany and Jim
Osburn. Photo by Joel Jackson.

University of Florida was the guest speaker and gave the audience of superintendents and club officials a brief overview of current and proposed future research projects at the Gainesville, Milton, Belle Glade and Ft. Lauderdale research and education centers.

Winners: 1st Flight:
Low Gross-Chris Cartin &
Matt Janeczko; Low NetJim Wells & Stan Cooke.
2nd Flight: Low GrossTom Diggins & Doc Gray;
Low Net-Bob Uppenkamp
& Sean Stankos. 3rd Flight:
Low Gross-Chris Collins &
Brad Lattimer; Low NetCary Lewis & Russ Bond.

EVERGLADES

IFAS Seminar Draws 85

att Taylor, GCS of the Royal Poinciana Club was the organizer for the Everglades GCSAsponsored IFAS seminar held Ian. 29 at the Naples Beach Club. Taylor reported that 85 superintendents attended the program, which featured presentations by six UF faculty members: Dr. Phil Busey, weed management; Dr. Monica Elliot, disease management; Dr. John Cisar, research update of FTGA projects; Dr. Billy Crow, nematode management: Dr. Laurie Trenholm, paspalums; and Dr. Brian Scully, turfgrass breeding program.

Three days earlier at the FGCSA winter board meeting in Orlando, Everglades External Vice President Dale Walters, CGCS presented a check for \$4,000 for the FGCSA's turf research account. Education and research: it's what we're all about.



New UF/IFAS Nematologist Dr. Billy Crow discusses management practices for nematode control on Florida golf courses at the all-day January 29th IFAS seminar held at the Naples Beach Club and sponsored by the Everglades GCSA. Photo by Bob Toski.

2001 Florida GCSA

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The Winning Streak Continues!

he Southern Dunes Golf and Country Club is located on U.S. Highway 27 in the sleepy little town of Haines City in the sandy citrus ridge country of central Florida.

The owners and developers of the property gambled on building a challenging golf course and they hit the jackpot, and if you think using the words "winning streak," "gambled," and "jackpot" is coincidental then you'd miss out on some of the colorful history of Southern Dunes. You see, one of the owners is Dewey Tomko, a professional gambler and his partners are Roger and Terry Donley of Donley Citrus.

Tomko was the avid golfer in the group and he was convinced that building a championship golf course would pay off better than opting for a pitch and putt executive layout surrounded by mobile homes. Tomko even hosted three Professional Gamblers Invitational (PGI) golf tournaments inviting his peers and sports celebrities to help christen the new course. Pictures of notables like Ken Harrelson, Andy Bean, Tommy LaSorda and a host of PGA and LPGA pros deck the walls of the foyer



Bayne Caillavet

Originally from: Biloxi, Miss. Family: Wife, Esther (20 years); daughter Courtney (Winner of GCSAA Legacy Scholarship in 2000).

Education: 1983 Lake City Community College, A.S. in golf course operations Employment history: 1982 — O.J.T. at Annandale GC, Madison, Miss.; 1983 -O.J.T. at Hattiesburg CC, Hattiesburg, Miss.; 1984-877— director of

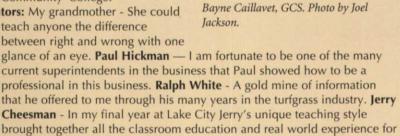
landscape & sports fields, Hattiesburg, Miss.; 1987-90 — self-employed

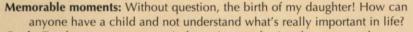
landscape construction and maintenance; 1990-93 - assistant superintendent Grenelefe Resort, Haines City; 1993 - present superintendent Southern Dunes G&CC, Haines City including construction and grow-in.

Professional affiliations and awards:

Member of Golf Course Superintendents Association of America; Florida Golf Course Superintendents Association - Ridge Chapter; Florida Turfgrass Association - board of directors since 1999. GCSAA Scholarship recipient in 1983 while at Lake City Community College.

Mentors: My grandmother - She could teach anyone the difference between right and wrong with one





Goals: To always represent our industry in a professional manner and to never lose the enthusiasm I have for this profession, and someday soon, walk among the giant redwood trees.

Advice: Work before play. Enjoy one of the best jobs in the world. Set your ego aside and fight only the battles worth fighting.

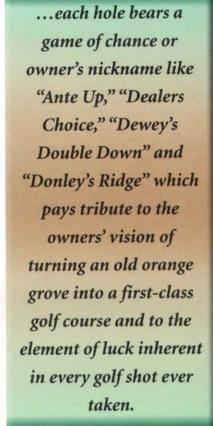
Work philosophy: Do every job so that you would be proud to sign your name to it. Never ever give up, and most importantly never let them see you

Hobbies and interests: Being a handyman. I enjoy being a do-it-yourselfer. I usually have so many projects going on at one time I can't get any of them finished. My wife isn't too happy about that. I'm also a self-confessed roller coaster junkie.

as the course became an instant hit with people who loved to play golf.

The PGI is no longer held each year, but each hole bears a game of chance or owner's nickname like "Ante Up," "Dealers Choice," "Dewey's Double Down" and "Donley's Ridge" which pays tribute to the owners' vision of turning an old orange grove into a first-class golf course and to the element of luck inherent in every golf shot ever taken.

Ever since it opened its doors, the course has been a winner each year



according to the world golfing media. Currently Southern Dunes is ranked #17 by Golf & Travel; #78 in Golfweek's Top 100 Modern Golf Courses in America; was in the Top 10 Golf Courses Built in America in the Last Ten Years by Links Magazine (1987-1997); and has received Golf Digest's Four Star rating from 1993 to 2000).

The Florida Golf Course Superintendents Association must concur with the golf media experts, because it has chosen to hold its first four FGCSA Golf Championships there not only for the challenge of the course, but also for the hospitality and service accorded by the staff.

The links-style course, which can stretch to 7,227 yards from the back tees, was the brainchild of golf course architect Steve Smyers of Lakeland. Smyers used the 100-foot elevation changes and the rolling topography of the former citrus grove to enhance his



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Southern Dunes Golf and Country Club

Location: Haines City

Ownership: Private - Dewey Tomko, Roger Donley and Terry Donley

Playing Policy: Daily Fee

Yardage: 7,227 yards. Par 72. Course Rating/Slope Rating from the Tees: Black: 74.7/135; Blue: 72.8/129; White: 70.2/123: Yellow: 72.4/126; Red: 68.8/118.

Designed by: Steve Smyers. Construction by: High Tech Golf. Opened in 1993.

Management Team: Director of Golf Shane Trice; Head Golf Professional Eddie Frye; Office Manager Debbie Campbell; Golf Course Superintendent Bayne Caillavet.

Average Rounds per year: 40,000

Total turf acreage under maintenance: 175 acres.

Greens: Average size: 7,500 Total 3 acres; turf - Tifdwarf; height of cut: .150" in summer - .130" in season. Overseed: Darkhorse Poa trivialis@ 15 lbs/M. Green Speed goal: 9.0 - 9.5.

Tees: 6.0 acres of Tifway 419; HOC = .5" summer - .4" season; Overseeded with Futura 3000 perennial ryegrass @12 lbs/M. **Fairways:** 55 acres of Tifway 419; HOC = .5" summer - .4" season. Overseeded with 50% Pickseed Cutter and 50% Transist perennial ryegrass @ 500 lbs/acre.

Roughs: 100 acres. Mixture of Tifway 419 and Argentine bahiagrass; HOC = 3 inches. Not overseeded.

Bunkers: 187 bunkers with native sandy soil. Mechanically rake all bunkers with Smithco Super Rake 3WD with standard tines & flaps.

Waterways/Ponds: Two lakes covering 3 acres.

Irrigation: Water source - Two wells @ 1,500 gpm capacity and reclaimed water from the City of Haines City. Equipment: PSI pump station @2,000 gpm; Controls: Toro Network LTC; 735 - Toro 650 and 670 heads.

Staff: Total staff including Supt. = 17 fulltime & 3 parttime budgeted. 13 fulltime currently on staff. Average weekly budget: Straight time 600 hrs. Overtime 75 hrs.

Key Personnel: Assistant Supt./Shop Manager Terry Davis; Mechanic Jason Deese; Pest Control Technicians Jeff Eisenheimer and Allen Hubbard; Irrigation duties handled by superintendent and assistant supt. I want to recognize the entire crew: Art, Dean, Bill, Bernard, Lorenzo, Debbie, Joe, Isaias and Ken. They make my job a lot easier and more enjoyable.

Major Renovations/ Ongoing Projects: Bunker Drainage and erosion control. Course landscaping with ornamental grasses. Special circumstances: The elevation changes in the course design can produce some bunker erosion control problems during heavy rains. We are in the ongoing process of modifying problem areas to protect the integrity of the bunkers and capture the runoff.

Communications: Daily pre-shift and post-shift meetings with crew; Daily schedule board is our communication center with completed jobs and new assignments being posted throughout the day. Everyone knows to check the board when they come back to the shop and to leave notes about jobs and observations. I have lunch meetings every two weeks with the director of golf and head pro to discuss course conditions and upcoming events.

Cultural/Fertility/IPM Programs: We use slow-release fertilizers exclusively. We do selective postemergent weed control. We make one application of pre-emergent herbicide in the fall around our overseeded turf areas. The entire crew is asked to act as scouts and report unusual conditions and problems.

Equipment Inventory: Mowers - Greens and Tees: Toro Greensmaster 3100s; Fairways: Toro Reelmaster E200D and 6500D. Roughs: Toro Groundsmaster 325D.

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Since the course was carved out of a natural sandy ridge with excellent drainage characteristics, the native soil was left as sand for the 187 bunkers... (architect Steve) Smyers specified that the roughs be planted in bahiagrass to provide a more roughhewn textural contrast to

design philosophy of requiring golfers to think their way around the course. Shot placement and taking advantage of the contours are key to having a successful round at Southern Dunes.

the manicured

bermudagrass fairways.

One might guess that with a word like "dunes" in the name, bunkers would be a major feature of the golf course and so they are. There are 187 to be exact and many of those are huge flowing sandy "waste" areas in addition to an array of traditional bunkers guarding fairway turns and protecting greens. Since the course was carved out of a natural sandy ridge with excellent drainage characteristics, the native soil was left as the bunker sand.

In keeping with the links concept, Smyers specified that the roughs be planted in bahiagrass to provide a more rough-hewn textural contrast to the manicured bermudagrass fairways. Smyers also advocated the judicious use of native grasses to provide that heather-and-gorse effect of the typical links layout. The result is a golf course of raw beauty and interesting shotmaking challenges for

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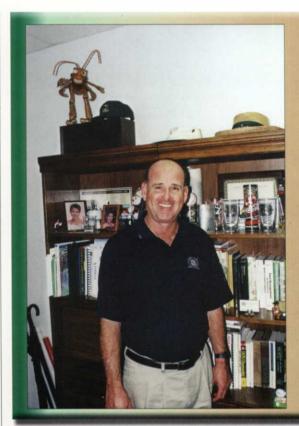
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Fun Facts

Here are some things you might not know about our cover story superintendent.

- 1. Car: 1994 Chevy Corsica
- 2. Last good movie I saw: Finding Forrester
- 3. I stay home to watch: Reruns of Seinfeld and Mash
- 4. Book I've been reading: Tuesdays With Morrie
- 5. Favorite meal: Shrimp Creole
- 6. Favorite performers: B. B. King and Ray Charles
- 7. Prized possession: My house.
- 8. Personal heroes: Robert T. Jones, Jr.
- 9. Nobody knows that I: Love thrill rides
- 10. I'm better than anyone else when it comes to: Being diplomatic
- 11. If I could do it over: I'm still a work in progress with no regrets
- 12. My fantasy is: Lift off in the space shuttle
- 13. The one thing I can't stand: Cell phones! A book on cell phone etiquette should be mandatory reading with every purchase.
- 14. If I could change one thing about myself: I'd have more patience
- 15. The words that best describe me: Easy going

Don't ask Bayne Caillavet about the best bass fishing lakes. Ask him where you can find the Cumba, Kracken and Mantou roller coasters.





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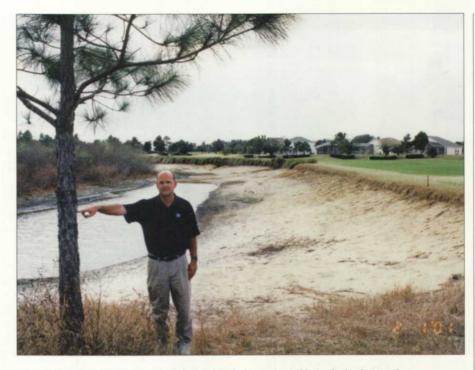
^{*} Dursban is a registered trademark of Dow AgroSciences

golfers of varying abilities.

Unique designs and concepts offer unique challenges to the superintendent, who must serve his ownership and golf members and still try to be faithful to the architect's vision of the golf course. It can be a tough balancing act sometimes, and the man who has been on the tightrope is Bayne Caillavet the only superintendent Southern Dunes has ever had.

Caillavet was working just down the road at the Grenelefe Resort when he applied for the superintendent's position at Southern Dunes. Project Manager Ralph Forrest hired him to work with the irrigation contractor when only six holes had been roughed in.

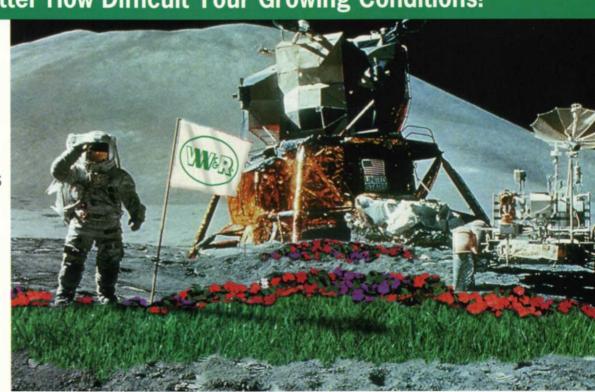
Caillavet calls the timing a godsend. "I walked every ditch. Saw every stick of pipe go in the ground. Logged all the hydraulic tubing lines and connections. It has certainly paid dividends when inevitable problems crop up over time. Not every superintendent gets that kind



The current drought effect on the lake level on hole #12 is visible in the background as superintendent Bayne Caillavet indicates the contrasting high water mark during 1997's El Nino rains which flooded most of the fairway. Photo by Joel Jackson.

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Number 9 "Press Em Up." The key to success on this 542-yard hole is to stay out of the Texas sage, the cordgrass and the dunes. so you can putt the two-tiered green in regulation. Photo by Daniel Zelazek.

of opportunity and many never inherit an as-built blueprint either."

Another thing Caillavet did — and continues to do — is to write everything down in a permanent journal or

notebook when he rides the golf course. He says, "Paperwork is the worst part of my job. I like to be out on the golf course. It's an important part of my personal job satisfaction, but it is also

important to document what I see not only to evaluate current conditions but to make lists of things that need to be done. If you try to make a mental note, an hour later you are distracted by an

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Number 2 "Texas Dolly." She may not be long at 374 yards, but she's no lady if you try to let the "big dawg eat" off the tee. Photo by Daniel Zelazek.

emergency and you forget half of the things you've seen. I have found it quite

enjoyable to go back and reread some of those notes to see how things have

changed and how much we have accomplished. It's a great historical

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golf course, but when we
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there are a few places
the water races downhill
and breaches the bunker
edges and washes out
the bunkers. We are
adding some subtle
fairway contours and
pocket drains to divert
or capture the water.

archive and a good management tool."

Caillavet likes the Scottish look of the golf course and tries to work with the architect as much as possible to preserve the original design. Smyers likes to stay involved in all his projects as much to preserve his original visions and to see how they mature over time. Caillavet says, "The native soil in the bunkers and the bahiagrass around them are our biggest concerns. If we don't cultivate the bunker faces they can crust over and algae will form and weeds invade. The down side is that by cultivating the native soil it softens up and can create embedded lies from linedrive shots."

There are some modifications Caillavet is working on as the course evolves. He said, "The rolling terrain makes for an interesting golf course, but when we get heavy downpours there are a few places the water races downhill and breaches the bunker edges and washes out the bunkers. We are adding some subtle fairway contours and pocket drains to divert or capture the water before it can cause erosion."

"We are also expanding some of our native cordgrass and gulf muhly plantings to dress up the sandy waste bunkers around the tee complexes. These areas are designed to act as retention areas for the runoff from the development and we want to improve the aesthetics a little more."

The growth of the development around the course has also had an impact on the original layout as more trees have been planted to create a more neighborhood look. Caillavet agrees that care must be taken in placement so that as the trees mature they won't intrude on the original links design.

Caillavet makes no bones about the fact that keeping Southern Dunes in award-winning condition is a team effort and he gives his staff a lion's share of the credit. With only 13 staff mem-

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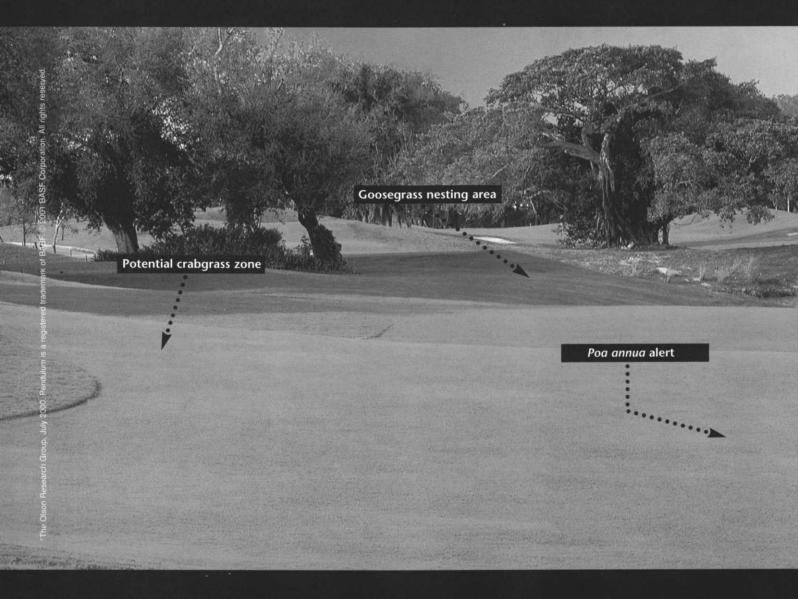
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bers to help run the operation and groom the 175 acres, Caillavet depends on communication and teamwork to stay on top of the program.

"Our daily schedule board is our communication center," he says. "We have a pre-shift meeting at the board for daily assignments and we meet there again at the end of the day to document what got done and what needs to be finished up. During the day it is understood that everyone will check the board when they come back to the shop to see if there are any new messages changing the job assignments."

"The crew members are encouraged to add their own messages, noting completion of jobs and alerting me to any problems they have seen during their rounds on the course. We all get busy and I may be spraying or fertilizing or in a meeting, so I depend on their input as well as my own observations to help run the course efficiently."

Caillavet calls himself a hopeless romantic when it comes to superintending. In fact he prefers the title "head greenskeeper." He feels that it captures the real spirit and meaning of the position. He says, "I think sometimes we get too caught up in titles. Maybe it's an ego thing.

"It is up to each individual to earn the respect of the people he works for and works with. If you conduct yourself professionally in all aspects of your work and personal life, your job title is of little consequence. When I hear the word "superintendent." I visualize someone with a tool belt in an apartment building. It's tough to find one label that adequately describes the wide variety of job responsibilities that we have."

"Sometimes they call me the chameleon around here because I might change clothes during the day. But if I have to do some dirty work on the course, I make sure I can change if I have to go to the clubhouse for a meeting."

Given his preference for the title

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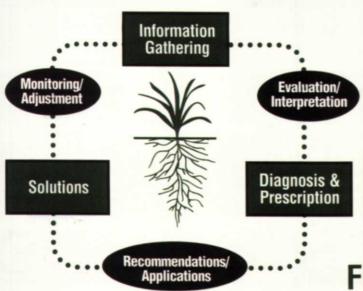
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Number 14 "Bunkers by the Dozen." It's only 167 yards from the back tee, so all the sand should just be a mirage. Photo by Daniel Zelazek.

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"Heaven's Gate" is 413 yards uphill. The bunker in the foreground is near the tee complex and serves as one of the runoff retention areas for the development. Photo by Daniel Zelazek.

"Maybe PDI will
provide the tools to
communicate (our)
value, but it still boils
down to the individual
person growing good,
healthy turf and
earning respect for who
he is and what he does
at his own club."

greenskeeper, I asked Caillavet what he thought about GCSAA's Professional Development Initiative and what it would mean for the profession. He responded, "I don't know if PDI can change the public's or even the golf world's perception of what a superintendent is or does. We definitely still have a long way to go and I don't mean to sound pessimistic.

"During the PGA Merchandise Show I attended a big promotional event one evening and as the video played on the big screen the dialogue written to golf pros went something like this... "What makes you get up in the morning? What is it about teeing up that first ball in the morning on that course that you made

green?" Here is a major golf equipment manufacturer implying the golf pro made the golf course green. That's why I say we still have a lot of old-time thinking to overcome."

"Maybe PDI will provide members with the opportunities and tools to learn how to better communicate their value and contribution to the game, but it still boils down to the individual person growing good, healthy turf and earning respect for who he is and what he does at his own club."

With a wall full of top golf course awards in the clubhouse I'd say that Southern Dunes and Bayne Caillavet are both getting a full measure of respect for those very same reasons.



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Keep Out of Reach of Children
DANGER-PELIGRO







Martin Downs Superintendent John Cunningham (standing on chair) welcomes more than 150 club members to the 2nd Annual Turf Maintenance Field Day. Photo by Joel Jackson.

Of course nothing of value is ever achieved without hard work and preparation, and for three weeks prior to the field day there's a lot of nervous anticipation by the staff that is not accustomed to being in the spotlight. But once the curtain goes up, all settle down to talk about their jobs to an audience of interested listeners and the experience becomes a positive reinforcer for

staff and members.

Cunningham is passionate about communicating with his members and instilling pride in his staff. He approached his board of directors last year about holding a field day and they approved. He hasn't looked back since, and the field day has taken on the importance of a major golf event at the club.

When Cunningham took over six years ago, he began a program of improvements to make the maintenance facility a less drab and cluttered environment to work in. Once that was accomplished he thought, "We complain that golfers don't know who we are or what we do, why not bring them down to maintenance and show them?

He got the idea for the field day approach from attending the South Florida Turf Expo in Ft. Lauderdale. He said, "What if we set up six or seven stations. Broke the members up into small groups and had them move from station to station on a timed schedule. We could have tables set up in the building and serve lunch when we are done."

And so the Martin Down Turf Main-

The members make a connection to the staff. They are no longer just faces passing by on the golf course.

They understand these people are trained professionals and have pride in what they do... Once they learn about what really goes on behind the scenes, they are a lot more positive about the club in general and complaints go way down



Of Greens Maintenance



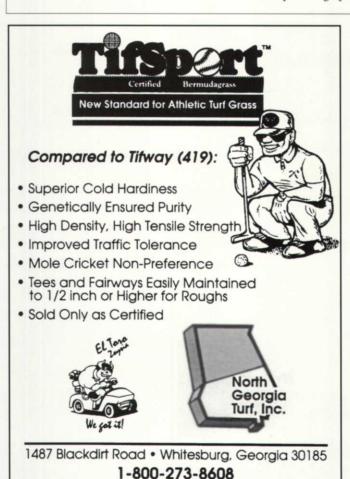
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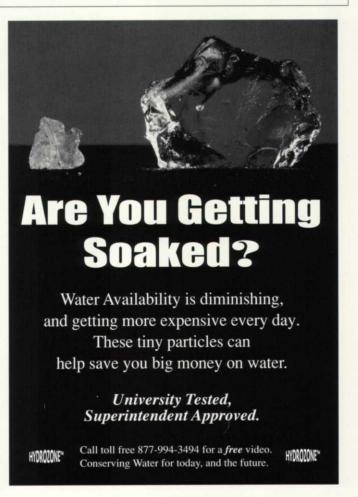
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Assistant Superintendent Eric Kunkel (far right) explains to members how and why aerification and top dressing equipment is used on the course. Photo by Joel Jackson.





Demonstration Stations

- · Crew Operations Room
- Superintendents Office
- Aerifying and Topdressing equipment;
- Chemical Room
- Fuel Island, Storage bins and Wash Down Rack
- Reel & Bedknife Grinding Demo
- Mower Height Adjustment Demo

tenance Field Day was born.

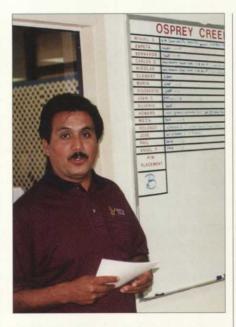
The day of the event the members play in a morning shotgun tournament and then drive down to the maintenance facility where the tournament results will be scored. They participate in the program that lasts less than an hour and then sit down to lunch in the maintenance building.

Cunningham explained, "We have

seven stations this year. Each presentation will last approximately seven minutes including questions and answers which is where we can really display our expertise. Each presenter writes his own spiel and we rehearse the whole program three times and have a dress rehearsal the morning of the field day. We critique the content and time the presentations to make sure they fit the schedule.

"You know a mechanic's strong suit isn't usually public speaking, but once he gets started explaining the precision of what he does and answers a few questions like, 'How many reels do you grind on just this one machine?' And he says, '150.' The members begin to realize there's more to maintenance than meets the eye and his pride builds.

"The whole crew is involved. There will be seven tour guides — one to take each group around to each station when time is called. We have a table crew to set up for lunch and we have six or



In the operations room Assistant Superintendent Jesus Romero described how the daily work is assigned in morning staff meetings to organize men and equipment for efficient course preparation. Photo by Joel Jackson.

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seven members of the staff preparing lunch. Last year we had a barbecue this year we are having a Mexican fiesta theme.

"We did go to the expense of renting banquet tables at a cost of \$350, with board approval, to improve over last years presentation. We also have hired entertainment this year from a local club to add to the fiesta ambience."

Cunningham says the paybacks and benefits of such an undertaking are worth the effort, "The members make a connection to the staff. They are no longer just faces passing by on the golf course. They understand these people are trained professionals and have pride in what they do. They also learn that maintenance is a lot more complex than they realized and that it is a team effort. Once they learn about what really goes on behind the scenes, they are a lot more positive about the club in general and complaints go way down.

"Just as important is what the staff gains from the experience. We push them out of their comfort zone a little bit. They are nervous. Most don't sleep the night before. Every wife has heard the presentation umpteen times, but they do just fine. The pride and improved morale from pulling it off creates such a positive working atmosphere that it is a win-win success for all concerned."

Cunningham is already planning the topics for next year's field day and the members are showing off their newly acquired insider knowledge about golf course maintenance facts. GCSAA's Kelly Loganbill came down from Lawrence, Kan. to see what Cunningham was doing since he had ordered 500 of those golf maintenance inserts that have appeared in golf magazines. The association will be looking at how to present his field day formula as a tool for everyone to use.

The local paper also had a reporter present and there was a great positive half-page article in the Stuart *News* about the event. So, there is a way to tell your story and no reason for your members to not know about what you do. It's up to you. Go for it. It works.



The superintendent's office was one of seven stations visited by the members. Here John Cunnigham (center) describes his various roles and responsibilities as the Martin Downs C.C. golf course superintendent. Photo by Joel Jackson

Positive Feedback

Editor's Note: Martin Downs Superintendent John Cunningham sent the following letters he received from some of his members after the Feb. 7 Field Day. Do you think these people will be advocates for the golf course maintenance department when issues arise?

Dear John,

You and your staff are to be commended for the truly exceptional Turf Field Day exhibition.

This is something every golfer and club member should attend. It certainly demonstrated why golf course maintenance requires money, equipment and dedicated employees.

We never get to see what goes on behind the scene by such capable people, and also we never get to know these same people as we pass them on the golf course.

The various stages of the demonstration were quite unique and the presentations really informative. The guys did a super job.

Needless to say, the food and entertainment were a nice touch and greatly appreciated by the membership.

We are all looking forward to the next one."

Eleanor and Dick Santee

Dear John,

I just want to thank you for a very interesting and informative afternoon at the Turf Field Day. All the gentlemen did an excellent job in their presentations. Thank you for making this huge effort in educating the membership. You and your staff do an excellent job.

Kathy de Wendt

What a special treat your field day was. It gave me a new respect for all you and your staff do. The presentations were so professional. I'm glad to be a part of the Martin Downs Country Club family.

Gayle Bue

Be a Curve Ball Hitter

The key to surviving an economic slowdown will be the extent to which you emphasize playability in your management program ... and educate your golfers on its importance.

BY CHRIS HARTWIGER USGA Agronomist Southeast Region

he 1990s were a decade of tre mendous prosperity for golf and the economy in general. Thousands of new courses were built and the rate of growth in maintenance budgets far outpaced the rate of inflation.

Unfortunately, signs are pointing to a serious economic slowdown and perhaps even a recession. Some superintendents are going to have fewer budget dollars with no change in expectations for the golf course. This article will offer a strategy for dealing with an economic downturn that will enhance a superintendent's value to their course.

As USGA agronomists during the golf boom of the 1990's period, we learned a few lessons that will prove to be invaluable in dealing with an economic slowdown.

1) No matter how large your maintenance budget is, the condition of the course is never going to be good enough for everyone.

2) Job security is not correlated with the size of the budget. An unlimited budget does not guarantee job security.

Superintendents who subscribe to the school of thought that all will be right with the world if the maintenance budget is 10 or 20 percent higher are due for a reality check. This theory does not work. Just ask the superintendents at the top of the ladder. Instead, now is the time to break out of the cycle of chasing expectations and shift the emphasis on playability.

Why Playability

Much of the extra money that has flowed into course maintenance budgets over the last decade has been allocated to improving the *presentation* of the golf course and not the *playability* of the course.

Roughs are not rough any more. Maintenance has spread from fence line to fence line and brushing off the cart paths every day is more important than brushing the greens. Immaculate presentation and excellent playability can be accomplished by the courses with the biggest budgets.

When mid- to low-budget clubs try to compete with this mentality, they promote mediocrity in many categories at the expense of excellence in a few. The game of golf is designed to be played up the middle of the course, yet we see clubs failing to commit the resources necessary to have excellent green, tees, and fairways.

Shifting the focus on the playability of the course takes attention away from the labor-intensive, expensive pursuit of things such as the search for the perfect bunker sand, overseeding, course land-scaping, string trimming creek banks, and on and on. Focus is shifted onto the primary playing surfaces: greens, tees, and fairways.

There is no reason why even a lowbudget club cannot commit the resources necessary to have excellent putting greens. After all, with more than 60% of all shots during a round involving the putting greens, doesn't it make sense to make the putting greens the highest priority on the course?

You would think so, but in our travels it is shocking how many courses do not have the equipment package and maintenance program in place to maximize the performance of the putting greens.

Playability Education

It is easy to spot the flowering dogwoods on the 12th hole or the shaved pond banks along the 7th fairway. However, it takes an effort to communicate the importance of regular putting green topdressing or the need to have extra help maintaining the mowing reels.

Start a playability education program and assume course officials know nothing about what it takes to provide excellent playing conditions. Teach them what it takes to create excellence on the tees, fairways, and greens.

The USGA Green Section Turfgrass Advisory Service is an excellent tool to assist in playability education. The Southeast Region Green Section staff has developed a three-hour seminar on improving playability as well as a fun report card designed to illustrate ways to improve playability.

Ten clubs have already requested visits with playability being the main topic on the agenda. We plan to study playability issues at these courses and conduct evening presentations with course officials specifically tailored to the course we are visiting. Call us now (800-296-9398) to schedule a visit.

Be Proactive, Not Reactive

No one knows more than the superintendent about the costs associated with the management and preparation of the golf course. Most golfers and course officials have no knowledge about maintenance.

Create manhour and cost studies that you can use to educate course officials. If faced with a budget reduction, these studies are an invaluable tool to show where expenses can be trimmed without seriously impacting playability.

Remember that even though budgets



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can be decreased with the stroke of the pen, it takes work to alter golfer expectations. With a manhour study, course officials can be the ones to advise which tasks should be reduced or eliminated to meet the new budget. Show them how playability of tees, greens, and fairways can be maintained or improved at a reduced budget level.

Have a Plan in Place

If you owned the golf course and had to reduce the budget by 10 - 20 percent, where would you cut costs? Develop this plan now and have it ready in case the budget is cut.

At many private clubs, course officials are volunteers and they derive a sense of satisfaction from representing their club. Imagine how valuable you will be if you implement a program on a reduced budget that actually improves the quality of the tees, fairways, and greens.

It can be done, but you must teach them to focus on playability issues and encourage them to decrease expenses in areas that have little or nothing to do with the playability of the course. You can make these course officials look like heroes during tough times and this will only benefit you in the long run.

Results

The playability of the golf course is a mindset for golfers just like the presentation of the course is a mindset. Maybe it is time to stop the endless pursuit of perfection and focus on how the course plays instead of how it looks. We have seen too many cases of million-dollar budgets with members grumbling in the 19th hole that "it still isn't good enough." Stop playing a game you cannot win and start changing the expectations of the players. It can be done. We have seen it done and we can teach you how to do it.

Life throws everybody a curveball from time to time, but isn't it easier to hit that curveball out of the park if you know it is coming? Developing a plan that maximizes the playability of the course while cutting costs will increase your worth to the club dramatically. Great curve ball hitters are hard to find. Go ahead and get to work.

Credit: USGA Links On Line

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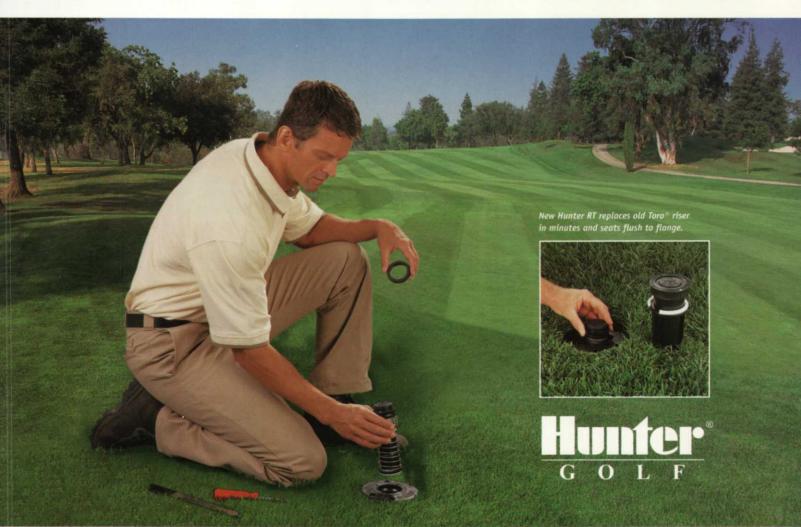
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Fertilizing the 'Green' Way

BY JOEL JACKSON, CGCS

hemicals today. Fertilizers tomorrow. There are groups taking dead aim on the use of fertilizers in today's environmentally sensitive climate. Nitrate and phosphorus pollution are the focus of some of these initiatives. With TMDLs and nonpoint-source pollution standards being drafted as we speak, people who use fertilizers are going to have to make sure they are not part of the problem.

Enough research has been done to show that golf courses can use products and practices that will not create excessive nutrient leaching or runoff. In this issue, learn how nutrients are managed on a variety of courses from a high-volume public course to a multi-course resort complex. Florida's newest USGA Agronomist Todd Lowe also pitches in with some facts to help you spread the truth about turf fertilizers.

Winter Pines GC Fertility Program

Granular & Liquid Program for Greens

Our granular fertilization program on greens maintains a 1-0-1 or 1-0-2 ratio of N-P-K depending on the greens and their grass variety. We have some different strains of Tifdwarf on some greens as we rebuild them a few each year. All granular applications are made with a Scott's R8A walking spreader.

Some of the analyses we use are 19-0-16 with IBDU and sulfate of potash (SOP) in the winter for a slow feed at .5 lbs of N/1000 sq. ft. applied biweekly. We also use Lesco Novex 18-2-16 at the same rate. Milorganite is used at overseeding time and when cold nights are expected also at .5 lbs N/1000 sq. ft. Certain greens are supplemented monthly with Sul-Po-Mag at 5.0 lbs/1000 sq. ft. monthly and 0-0-50 at 2.0 lbs. K/1000 sq. ft. based on soil test results.

During transition we use "hotter" mixes at .5 lbs N/1000 sq. ft. weekly like Harrell's 12-4-12 or 14-2-14 and some ammonium sulfate (21-0-0) also at the .5 lb rate per 1,000 sq. ft.

We use a weekly liquid program during the winter months to supplement the dry fertilizer. All applications are made with a Smithco Spray Star 1600 with 8008 TeeJet nozzles. Our two basic programs: 1) 2.5 gal. Our two basic programs: 1) 2.5 gal. of 12-0-12 plus 1.25 gal. 2-0-25 plus 1.25 gal. 7-0-0 plus 2 qts. 6-20-5 per acre per week and 2) 2 gal of 28-0-0 plus 10 lbs. 13-0-44 plus 10 lbs. 0-52-34 plus .5 lbs. Microplex per acre.

During transition or on weak greens we will help extend a granular application by applying 1.25 gal. of Lesco 12-0-0 + Iron or 1.5 gal. 18-3-6 from Growth Products as needed.

Program for Tees

Our granular program for tees consists of monthly applications of 9-2-9, 15-0-15, and 6-2-0 at 1.0 lbs. of N/1000 sq. ft. High traffic areas

are done at the same time to minimize wear damage to the turf. Since our tees only average 1,500 sq. ft. keeping the nutrition levels high is necessary to help them recover more quickly.

Most of the granular applications are made with the Scott's rotary spreader, but occasionally we will use our Massey Ferguson 230 tractor with a 600 lb. capacity hopper to cover tee tops, tee slopes and wear areas in one pass.

We use liquid applications of 1.25 gal. of 12-0-0 + Iron or 2 gal. 16-4-8 at 2.0 lbs./acre to supplement the granular applications or for better color on problem tees.

Program for Fairways

All fairway applications are made with our tractor and 600 lb. spreader. For a good spread pattern and coverage applications are made at 250-330 lbs of product per acre. We use a 9-2-9 fairway blend with Milorganite and Sulfur Coated Urea (SCU) in the winter to help green up the turf since we don't overseed our fairways and we don't have wall to wall cart paths.

In the spring we use Scott's 32-3-10 to get our fairway turf going before we renovate. Some years we will apply a 15-0-15 blend with Ronstar on the fairways if we have been having a weed problem. But spot treating with today's herbicides has made post emergent control a lot easier. A 4-2-23 fairway blend is used in the summer to start preparing the turf for cool weather in the fall, then when fall is here we usually apply 15-0-15 with Barricade to control Poa annua and "walked off" ryegrass from our overseeded areas.

The only liquid nutrient used on the fairways is the addition of iron to our Primo growth regulator applications to avoid any yellowing or bronzing of the turf.

Natural and Bio Products

We have tried some of the natural products on our new greens and problem areas on the older greens but there was nothing I saw that made me say, "This stuff really works!" Most of the time we quit using it after 3-4 applica-

tions if we didn't see any significant results. I'm willing to try something new if its not too expensive, hoping to see some benefit, but after reading Dr. Elliot's report on testing being done on biologicals, I go back to the basics and with a little help from Mother Nature everything comes back.

IPM Considerations

IPM is always taken into consideration no matter what we are applying. All big tractor applications of fertilizer maintain a setback or buffer zone along the water hazards. We fill in with walking spreaders or sprayer for better control. Additionally we apply Primo and iron along the lakes and canals to keep flymow work to a minimum so less fertilizer is needed.

We select our fertilizer blends to keep the amount of quick-release nutrients to a minimum to avoid any runoff problems from an unexpected downpour. We allow our last fertilizer application on our tees and greens to run out and we make a "spoon feeding" liquid application to hold color until the next granular application kicks in.

Soil tests are done once a year on six greens, tees and fairways and on any problem areas. Tissue testing is done periodically on any greens where the products do not appear to be working and the turf remains weak.

Summary

Winter Pines is a public golf course which is open 365 days a year from sunup to sundown. We try to work around our players as much as possible. Most of our morning players are regulars so they understand what we are doing when we might have to hold them up to water something in.

Every year we evaluate all the fertilizer products we use and we stick with what has given us the biggest bang for our bucks. New products come out every year and we will try some to see how they perform for us. All in all, how our turf looks and responds to what we do is the bottom line.

BY JOE ONDO, CGCS

The Nitrate Truth Shall Set You Free

am preaching to the choir when I say that golf courses are good for the environment. We have known for years that turf is a filter for pollutants and loose sediments (dust) even though in some instances chemicals must be applied to support its growth. If it were not for turf, many of our waterways would be environmental hazards.

The USGA remains the largest supporter of turfgrass research. To date, we have funded over \$20 million in research and will continue to provide this support into the next millennium. Protecting the environment is the major goal of our funding by producing improved turfgrass

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varieties, supporting the Audubon Cooperative Sanctuary Program and creating the Wildlife Links Program (visit www.usga.org/green/turfgrass/ to learn more about each of these).

Fertilization is a key factor to producing quality turfgrass. Turfgrass requires nitrate for growth; however, excessive nitrate in the environment is harmful. Nitrates pollute water sources and are a potential human health threat causing the condition known as "blue baby syndrome" in infants.

Through the years, research has shown that much of the nitrate is a byproduct of other industries like agriculture. Even so, golf courses are still popular targets of attack from environmental advocates.

Ignorance is bliss for some individuals but the USGA feels that it is best to learn as much as possible about the fate of chemicals applied to golf courses. A series of studies funded by the USGA was conducted throughout the previous decade in order to determine the environmental fate of fertilizers and pesticides.

These studies are too numerous to list but some of the findings from these studies include:

- Nitrate leaching was negligible (<0.2%) in a bluegrass rough at a depth of 4 feet and the concentration was at least 10 times below EPA standards for drinking water (Michigan State University).
- When turf was maintained under a high level of management, nitrate leaching from a tall fescue rough and bermudagrass fairway was very low. A total of 1% or less of the applied nitrogen

There is freedom in knowing the truth, and the USGA will continue to fund necessary research for providing the best playing conditions while also protecting the environment.

was lost in leachate (University of Nevada).

- A bermudagrass fairway and a bentgrass putting green utilized most of the nitrogen applied even with over irrigation. Under the conditions of the study (biweekly applications of urea and sulfur-coated urea), little nitrate leaching (1%) was recorded (University of California).
- More leaching occurred in a newly planted bentgrass fairway than in a mature established turf but did not exceed EPA drinking water standards (Cornell University).
- Irrigation had to be doubled (6-inches/hr.) in ryegrass and bentgrass fairways in order to produce any runoff. All nitrogen and phosphorous concentrations in the runoff were less than EPA drinking standards (Penn State University).
 - · Addition of organic matter to a sand

rootzone mix proved to be the most important factor for reducing nitrogen leaching. Spoon feeding every 14 days significantly reduced nitrogen leaching from young greens compared to 28 days.

As putting greens matured, nitrogen fertilization rate was the most important factor affecting leaching. Light applications of slow-release sources on a frequent interval provided excellent protection from nitrate leaching (Washington State University).

- Bermudagrass buffer strips are an effective means for decreasing the amount of nutrient and pesticide runoff that reach bodies of water. Longer strips (8 to 16 feet) and increased mowing heights (3-inches) are more effective than shorter strips (4 feet) and mowing heights (0.5 to 1.5-inches) (Oklahoma State University).
- At downstream sites of golf courses, nitrate concentrations were lower than upstream sites. Also, an overall increase in the number of invertebrates occurred downstream of two golf courses (University of Maryland).

In addition to the benefits of turfgrass, some of the information also pointed out the negative effects of poor management.

Applying more soluble nitrogen (>0.5 N per 1000 sq. ft.) than the turf can utilize at any one time leads to nitrogen loss. Also, applying fertilizer just prior to a major rainfall or irrigation cycle (7-inches/hour) may lead to runoff.

Immature root systems are also much more inefficient at utilizing nitrogen as compared to mature, dense roots, and



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great care should be given to not applying too much fertility to newly establishing turf sites.

Once the facts are known, informed decisions about fertilization can be made. There is freedom in knowing the truth, and the USGA will continue to fund necessary research for providing the best playing conditions while also protecting the environment.

BY TODD LOWE USGA Agronomist

The Legacy Club's Fertility Program

John Kopack, superintendent of The Legacy Club at Alaqua Lakes shares his fertility program with *The Florida Green*. The Legacy Club was only the third public course to be built as an Audubon Sanctuary Signature Course.

Kopack says, "We maintain 30-foot unfertilized bahiagrass and cordgrass

buffers around the lakes to ensure there is no runoff into the water bodies. Additionally, our irrigation system is designed so that no sprinklers throw water into lakes, wetlands or other natural areas. We also store all the storm water runoff from the development: it moves through staging ponds to the irrigation lake and is then recycled onto the course."

"We do soil testing three times a year. I check four greens, tees and fairways each time and I keep three greens as permanent control sites and vary the other three choices for each test. I personally do the tee and fairway granular fertilizer applications with a two-ton capacity Lely spreader pulled by a tractor. On our greens we cut the rate in half and go two directions with Lesco rotary spreaders."

Greens Program

Granular — six applications a year of 12-2-12 with 50% sulfur coated urea.

Liquid—Spray boom applied 2 times

a month in the cool season with Peters 20-20-20 at 1/4 lb. of nitrogen per 1,000 sq. ft. We also include soluble iron in with our fungicide applications in the winter time. Coronas 12-0-0 or 15-0-0.

Tees and Fairways Program

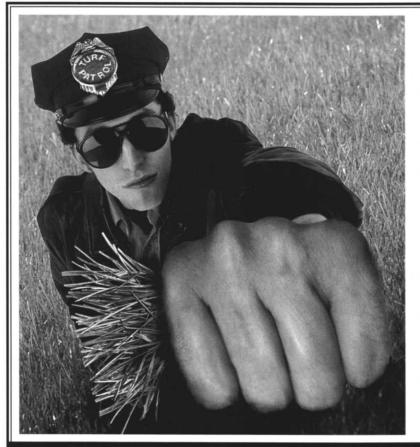
Granular — two applications a year spring and fall. Usually a 15-5-15 blend with 70% slow release nitrogen.

Fertigation Program

Warm season — 2-3 applications of 11-0-8 with 50% slow release N. Each application takes 5-7 days with meter set at 30%.

Cool season — 2 applications of 20-0-0 with a unit of iron. These are usually made prior to our member-guest and invitational tournaments for special event green up.

Special — We apply a 0-34-0 that comes in a mini bulk container during our overseeding process to help the new seedlings get rooted.



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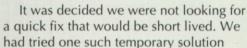
Growing Solutions in Turf

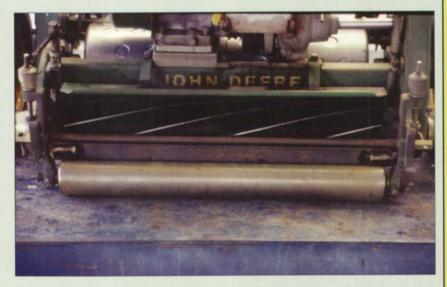
Easy Scraper for Clean Rollers

Solid rollers on walking mowers can be a saving grace for turfgrass managers during periods of the year when your turf is under stress. However, the build up of wet clippings, fertilizer and sand on the solid roller can drastically affect the height and smoothness of cut as well as becoming a nuisance for the operator who must

often stop mowing and clean the debris stuck on the front roller.

This problem can occur at various times throughout the year especially during cold winters when heavy rates of Milorganite were applied to help draw in heat. The Milorganite can become caked on the front roller for several days after the application is made. I have also seen the problem during grow-ins and after seasonal renovations when there are a lot of clippings, fertilizer and sand present on the surface. This past summer when the problem arose again during the grow-in of our newly renovated greens I asked my equipment and facilities manager, Joe Stefanick, to help me solve this problem once and for all.

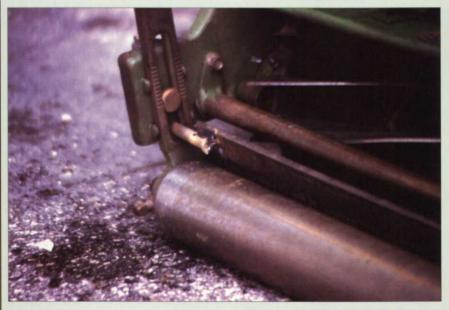




Front view of roller scraper mounted on walking greens mower. Photo by Darren Davis.

which failed, using fishing line tied to the roller brackets and stretched tight against the roller. While it was effective in the short term, it became a nightmare to keep them installed for any length of time. Therefore, I set Joe free to use his creativity with the charge of, "Do it cheap but make it effective and durable." I don't ask for much do I? What he created was very successful and durable.

The roller scrapers that Joe constructed are attached to our 1993 John Deere 22-inch walking greens mowers. The scraper itself is a 1-1/4-inch wide by 3/16-inch thick piece of flat stock cut to a length of 22-1/2 inches that rests (floats) on top of the solid front roller. This provides a 1/4-inch overhang on each side of the 22-inch-wide roller. A 3/



Close up view showing scraper orientation to the roller and mounting pin resting in height of cut bracket. Photo by Darren Davis.

8-inch by 2-inch metal pin was then welded on the upper third of the flat stock on both ends. This pin rests freely in the height-of cut-brackets above the roller. By welding the pin to the top third and in the front of the flat stock scraper, the scraper rests at an angle on the top of the roller. The weight of the flat stock holds it against the roller and keeps any material cleaned off so it can't accumulate and become and nuisance.

The roller scraper that Joe designed and constructed for us took less than 10 minutes to install and cost around \$5 to build. The total weight is just 1.6 pounds. We would expect this timesaving device to easily last the life of the equipment that it is mounted on.

DARREN J. DAVIS Olde Florida Golf Club



INDUSTRY NEWS

hope this is the first of many columns that I will be writing to keep you informed of the latest happenings and viewpoints from the Florida Turfgrass Association.

Like many of you I have just returned to sunny Florida from the rain and cold weather in Dallas. I think the weather gods wanted to show us what rain looked like. They overdid it though as some areas around Dallas had flash floods and went under water. Seeing cars stalled with water up over the roofs is a sight we seldom get to see.

While in Dallas, Paul Crawford, superintendent of the

Together, We Are Making a Difference Palm Beach Country Club and myself were joined by Marie Roberts and Joel Jackson in a meeting with Hannes Combest, GCSAA director of education and Sherri Kohler, senior manager of chapter seminars.

We were meeting to see how the GCSAA could help improve the annual FTGA Conference and Show at Gainesville this coming August.

There have been informal discussions in the past with GCSAA about the impact on the FTGA Conference by having the national conference in Orlando every two or three years, and GCSAA has been receptive to discussing how they might assist overcoming that impact. This year we started talking turkey and we are going to work together to see what we can do this year to start making some improvements. GCSAA has a lot of conference and show expertise and we are trying to tap into that with their cooperation to help attendance at our own annual conference and show.

The meeting in Dallas is just another example of the FGCSA and the FTGA working together and getting on the same page with the University of Florida. The University is committed to conducting pertinent, up-to-date research that you as superintendents can use. Water and environmental pressures have put us all together in the same boat. We need research on how much water is filtered and returned to the water supply by golf courses.

We need that research done here in Florida with our soil

Benham's Beat Don Benham FTGA Director

of Public Affairs



conditions to prove to others what we already know: golf is good for the environment and superintendents are among the best and most informed environmental groups in the state of Florida.

The Regulators Are Listening; Are You Speaking Up?

The time is ripe for industry to take its case to the state and federal regulators. I have witnessed three meetings where regulators are listening to industry's concerns on environmental issues and the regulators are offering advice and guidance on how to find solutions that will satisfy everyone as much as possible.

I sat in on a meeting in Tallahassee in early January with Gregg Storey and Pete Coody of the Bayer Corporation as they discussed a proposed ground water study that would monitor the use of Nemacur on Florida's sandy soil profile.

Members from the Florida departments of Agriculture and Consumer Services and Environmental Protection, working with the Bayer representatives, hammered out a draft that was agreeable to both parties and could be submitted to the U.S. Environmental Protection Agency for the reassessment of Nemacur. The object was to find a method to determine if Nemacur truly posed a threat of ground water contamination.

It was a great example of give and take and compromise that addressed the need to protect the environment and to scientifically and realistically assess the true effects of a properly applied product that is the only effective weapon we have against high nematode populations.

Later in January, at the request of Mike McDavit of the US EPA, I was able to organize an informal faceto-face meeting of Florida superintendents and McDavit who is in charge of the Nemacur reassessment team in Washington. Dennis Howard of Florida DACS was also present along with a representative from EPA's Region Four office in Atlanta.

What ensued was an honest and open discussion of real-world uses and concerns about Nemacur use, application methods, worker exposure risks, golfer exposure risks and environmental impacts. McDavit openly admitted that it was essential for EPA representatives to get this kind of information to modify and/or validate the assumptions they are using to determine risk.

How effective and valuable are these kinds of stakeholder meetings? I can only tell you that in a follow-up call from Pete Coody a few weeks later, he indicated that EPA's tone and level of cooperation was 180 degrees different. They approved the draft of the Nemacur ground water study with some acceptable modifications and Coody was pleasantly surprised by the level of support and encouragement from EPA.

Meanwhile on another front, we are dealing with growing water restrictions as drought conditions hang on. The FGCSA is working with the Southwest Florida Water Management District with the help of Stuart Bozeman of the Seven Rivers GCSA. Bozeman has vol-

unteered to sit on the SWFWMD's Green Industry Advisory Committee and the Water Conservation Task Force.

The FGCSA is supporting Bozeman's initiative to get SWFWMD to change the language of its water restrictions to abandon the old arbitrary day-of-the-week method of regulating water use. We are advocating a percentage reduction of the consumptive-use permits which will guarantee water conservation, but will allow superintendents the flexibility to water when and where its needed.

We still have some work to do, but the take-home message is that once again the regulators are listening. We are proposing common-sense solutions which are fair, meet the district's need to conserve water and allow golf courses to conduct business for everyone's benefit. The regulators are listening. Are you speaking up. Now is the time to be heard.

JOEL D. JACKSON, CGCS

IFAS UPDATE

Concept Plan Released for UF's New Turf Research Plots

The consolidation of UF/IFAS plant science research in the Gainesville area to the Pine Acres Plant Science Research and Education Unit south of Gainesville provides our turfgrass program with the opportunity to develop state-of-the-art-and-science turfgrass plots.

The new turfgrass plots, when combined with the Turfgrass Envirotron, will give the University of Florida in Gainesville outstanding facilities for research dealing with all aspects of turfgrass (sod producers, golf course superintendents, athletic field managers, pest control operators, landscape managers, homeowners and governmental regulatory agencies) and will expand the potential cooperative programs with faculty in Ft. Lauderdale, Belle Glade, and Milton.

Further, addition of ornamental

2001 Florida Plants of the Year - Part 2

Editors Note: The Florida Plants of the Year program was launched in 1998 and has been beneficial to both consumers and growers. Purchasers are introduced to under-utilized but proven Florida plant material. This program is sponsored by the Woody Division of the Florida Nurserymen and Growers Association (FNGA). This group of plants deserves consideration for their drought and stress tolerances and wildlife attraction.

COMMON NAME: Mexican Sage

BOTANICAL NAME: Salvia leucantha

HARDINESS: Zones 7-10

MATURE HEIGHT AND SPREAD: 5' x 4'

CLASSIFICATION: Perennial

LANDSCAPE USE: Long lasting color in perennial border or

accent plant

CHARACTERISTICS: A drought tolerant perennial with gray foliage. Does best in sun or light shade, has some salt tolerance and is a butterfly and hummingbird attractor.

Blooming for a long time with fuzzy purple/white infloresence, the velvety leaves are fragrant and unappetizing to insects and disease.

COMMON NAME: Fringe Tree

BOTANICAL NAME: Chionanthus virginicus

HARDINESS: Zones 4-9

MATURE HEIGHT X SPREAD: 25' x 15'

CLASSIFICATION: Large shrub or small flowering tree
LANDSCAPE USE: Small specimen tree, good as and understory

CHARACTERISTICS: Showy white flowers appear on this Florida native plant before the narrow dark leaves in the spring, spreading a sweet fragrance. The black fleshy drupes (fruit) are wildlife attractors. Half or full sun gives the best growth of this drought tolerant and cold hardy tree.

COMMON NAME: Tropical Wisteria

BOTANICAL NAME: Millettia reticulata

HARDINESS: Zones 7-10

MATURE HEIGHT X SPREAD: vine 20' x 30'

CLASSIFICATION: Vine

LANDSCAPE USE: Best use on a trellis, fence or gazebo

CHARACTERISTICS: Fast growing and deciduous woody vine is a late spring/early summer bloomer that does well in full sun of light shade. The compound leaves are cupped and leathery. Pendulous clusters of dark purple flowers resemble wisteria blooms and rebloom often if deadheaded.

COMMON NAME: Emerald Gem

BOTANICAL NAME: Homalomena 'Emerald Gem'

HARDINESS: Zones 9-11

MATURE HEIGHT X SPREAD: 8" x 24" CLASSIFICATION: Aroid foliage plant

LANDSCAPE USE: Can be used in warmer climates in areas with medium shade

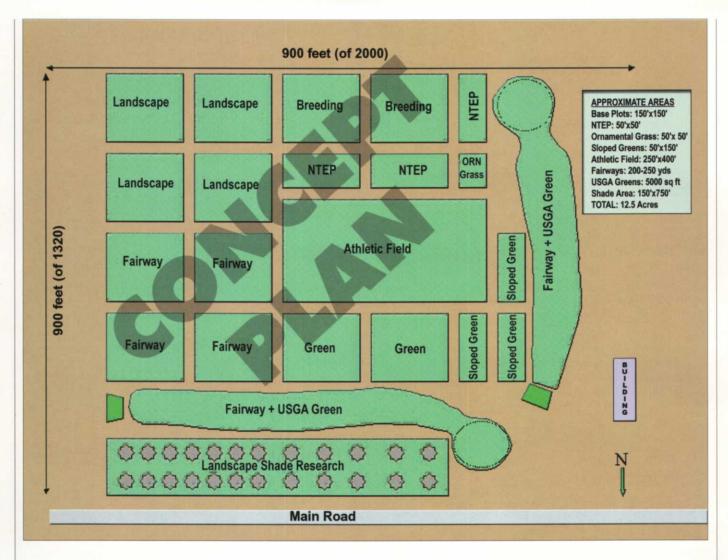
INTERIORSCAPE USE: Excellent for interior applications due to its compact shape and durable foliage - also tolerates low light conditions

CHARACTERISTICS: Compact, symmetrical growth habit. Nonvining, self-healing. Foliage is dark green and has a waxed appearance. Heart shaped leaves are 4 inches in diameter. can be grown in 6 through 10 inch containers. Emerald Gem has proven to be disease resistant and tolerant of stress conditions









landscape and urban tree research and extension programs to this site will allow us to bring new landscape management strategies to turfgrass professionals.

Keeping in mind that the following diagram is only a draft proposal, the potential for the Pine Acres Plant Science is boundless.

With ample space to include golf holes and sloped turf areas to scientifically study runoff, real practical, handson research can be accomplished on a large scale.

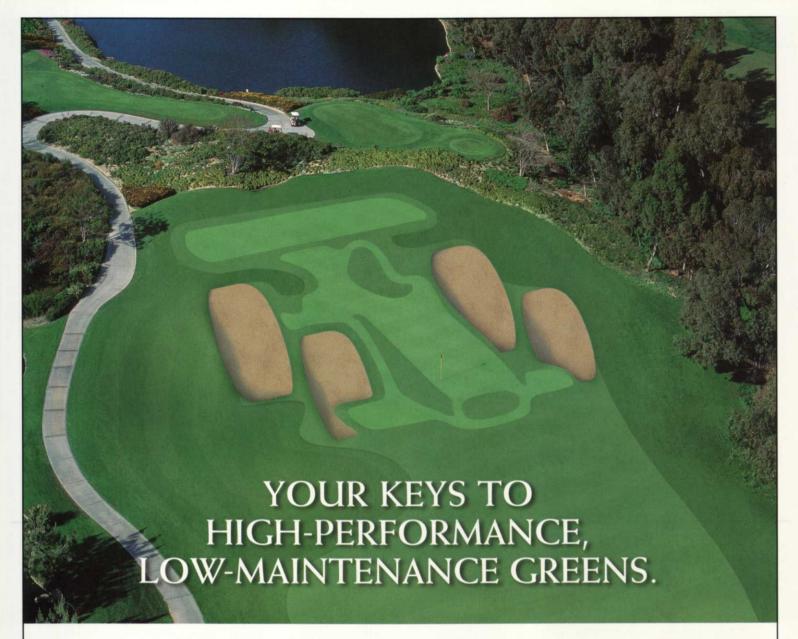
Especially intriguing is the concept of having governmental regulatory agencies getting involved in turf research. What a fantastic opportunity to bring real-world science and fact into the equation when making decisions about the environment.

This initial phase is only about 12.5 acres of a potential 120 acres being considered to be dedicated to turf and ornamental research.

An adjacent 40-acre headquarters and conference facility site is also being proposed to make education and research a one-stop visit for meetings, seminars and hands-on observations. Stay tuned for more news to come out of Gainesville on the Pine Acres Plant Science and Education Unit and how we can all be a part of this great endeavor for the turfgrass industry in Florida.

This executive summary written by Drs. L. E. Trenholm, G. L. Miller and T. A. Nell.

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STEWARDSHIP NOTES BY SHELLY FOY

What is Stewardship?

Shave been fortunate enough to see quite a bit of stewardship from golf course superintendents over the years. Knowing what you do in your everyday job is amazing enough, let alone all the "extras" that you get involved in from day to day.



One such stewardship effort is under way at South Fork High School in Stuart. South Fork is the only high school in the country that we know has a golf course on property fully maintained by students. The Bull Dog Horticulture and Sports Turf Complex is a 25-acre facility that includes a three-hole, par-three golf course with 11 tees ranging from 100 to 215 yards, a practice range, practice green, plant nursery, equipment compound, computer lab, classrooms, shade house and propagation house.

The nearly 100 students enrolled in the program are offered a three-year, six-course program on golf course operations, or landscape operations. They meet five days a week for 100 minutes a day to gain hands-on skills vital to the above three areas. They learn plant identification, propagation, plant care, soil science, landscape design and installation, the agronomics of growing turfgrass, and cultural practices including mowing, irrigation, fertilization, cultivation and IPM.

The project was started in 1989 with architect Charles Ankrom donating his time to design the course. Many local golf courses and members of the turf industry offered resources to complete the project and keep it functioning. The PGA of America has officially sanctioned the complex as a teaching facility and has recorded a video there. *Golf Digest* presented the facility with its prestigious 1997 Junior Development Award.

Instructor Keith Krueger teaches not only the turf program, but all the horticulture programs as well. Keith is a classroom teacher with over 22 years of experience, and he does this with practically no budget.

Rob Kloska, superintendent at the Jupiter Island Club, has formed a business advisory group to help Keith and his turf program. Members of this advisory group are Roy McDonald, superintendent, Hobe Sound Golf Club; Craig Weyandt, superintendent, Yacht & Country Club of Stuart; Kevin Downing, superintendent, Willoughby Golf Club; Bill Lanthier, Golf Ventures; David Oliver, Boynton Pump and Irrigation, Inc.; John Foy, director, USGA Green Section, Florida Region; and Shelly Foy, office coordinator, USGA Green Section

In November, SFHS applied for a grant from the USGA Foundation for equipment, consumables, summer interns and uniforms for their turf program. They were awarded a \$5,772 outright grant for interns, and a \$45,000 challenge grant. This is the second year that the USGA Foundation has made a challenge grant to the SFHS Turf Program. Under the terms of this grant, the USGA will match funds raised by SFHS, \$2 for every \$1 raised up to \$45,000.

Last year SFHS received \$41,860 from the USGA.

The following is a list of items needed for the SFHS Turf Program: trim mower; greens aerifier; multi-cutter power head; multi-cutter edger; multi-cutter string trimmer; rebuilt sand pro; rebuilt fairway verticutter; money for parts/repairs and maintenance of equipment; sludge; 10-20-30 fertilizer; 15-5-15 fertilizer; 21-0-0 fertilizer; 11-3-22 greens mix fertilizer; Chipco Choice; Dursban; Round Up; MSMA; Spreader Sticker; Barricade; Momentum (240); Kerb; Drive; sand; overseeding; and uniforms.

The business advisory group is seeking donations for items on this list. The USGA has generously agreed to match donations received for this list, again at \$2 for every \$1. Please look over the list and consider making a donation to this program.

Benefits are already being realized to the turf industry, as several students are interning on local golf courses during the summer and some of them are already working full time on local golf courses after graduating from the program.

You can make a donation to the SFHS Turf Program by contacting any of the business advisory committee members.

Again, stewardship comes in many forms. We applaud the USGA for recognizing the value of this program, the business advisory group for getting involved, and all of you who will choose to help us reach our goal of fulfilling the USGA Challenge Grant.

Note: The USGA's 2000 Turfgrass and Environmental Research Summary

Audubon Additions

Florida's Newest Audubon Cooperative Sanctuary Golf Courses as of 11/17/00:

Carefree Country Club, Winter Haven

Pablo Creek Club, Jacksonville Weston Hills Country Club, Weston

St. Andrews Country Club, Boca Raton

New Fully Certified Audubon Cooperative Sanctuaries since 11/ 17/00:

Wildcat Run Golf & Country Club, Estero

Polo Park East, Davenport

is now available. If you are interested in receiving a copy, please call my office at 561-546-2620, or send me an email at sfoy@usga.org. The USGA also has an updated version of the pamphlet, "Golf Courses Benefit People and Wildlife", which I would also be happy to send you.

BMPs vs ACSP: Different Aims and Both are Worthwhile

BY GRADY L. MILLER, PH.D.

was recently asked to explain how the University of Florida Institute of Food and Agricultural Sciences (UF-IFAS) publication Best Management Practices of Florida Golf Courses (2nd edition, 1999) compares to the Audubon Cooperative Sanctuary Program.

As a preface to an explanation let me first state that as a Land Grant University, the University is federally mandated to serve the citizens of this state. The Cooperative Extension Service is a partnership of county, state, and federal government that serves the citizens of Florida by providing information and training on a wide variety of subjects. Turfgrass science is one area of specialization where UF-IFAS has specialists that serve golf courses and other turfgrass production and maintenance industries.

The Best Management Practices of Florida Golf Courses book is intended as a reference guide for Florida golf course superintendents and regulatory agencies in their efforts to grow and maintain some of the most prestigious golf courses in the world.

The information contained in the book was compiled and written by more than 11 researchers, teachers and/ or extension specialists. The recommendations in the book are as up-to-date as possible, and in most cases, are based on many years of research.

Much of the research that was used to generate this data was paid for by agencies such as the United States Golf Association, US EPA, Golf Course Superintendents Association of America, Florida Department of Agriculture and Consumer Services, various Florida water management districts, Florida Turfgrass Association, and the Florida Golf Course Superintendents Association. Many other groups and individuals have likewise contributed toward research necessary for completing the publication.

The Best Management Practices of Florida Golf Courses was produced so as to provide a template and explanation of good turf management principles and also to provide information for green construction and reference values for irrigation water quality. The term "Best Management Practices" or BMPs has meaning on a number of different levels.

This IFAS publication suggests BMPs for golf course management, but they are not in the form of rule, law, or ordinance. The university is not a regulatory agency. In reality, many of the state's regulatory agencies defer to UF-IFAS in matters related to standards, due to our years of research experience on specific matters (e.g. nitrate leaching, water use, pesticide need, etc). We would like to think that policy decisions are substantiated with science, although we know that decisions are sometimes made based on political reasons.

In contrast to the IFAS publication related to turfgrass management, the Audubon Cooperative Sanctuary Program presented by Audubon International (1991 inception) is a voluntary program designed to provide conservation management strategies for a golf course.

The primary goal of the program is to enhance wildlife habitat and protect natural resources. It is based around monitoring programs and implementing various stewardship projects. The primary financial supporters of this program are the USGA and the individual golf course members.

The Audubon Cooperative Sanctuary Program recognizes six categories:

1. Environmental Planning – each club generates a written plan out-

- lining their goals and proposed projects.
- Wildlife & Habitat Management emphasizes the management of non-play areas to provide habitat for wildlife.
- Integrated Pest Management developing a responsible program for controlling pests, ensuring a healthy environment for both people and wildlife.
- Water Conservation attention is directed toward irrigation systems, recapturing and reuse of water resources, maintenance practices, and turfgrass selection.
- Water Quality Management directs emphasis on impact of golf course chemical use on quality of lakes, streams, and groundwater sources.
- 6. Outreach & Education focus is placed upon generating public awareness through education.

These six areas require extensive documentation and in many cases, implementation of projects to support or strengthen the golf course's efforts in environmental awareness and/or protection. As you can probably gather from this list, the Audubon program is taking a more holistic approach to evaluating the golf course environment, addressing the turf, water issues, wildlife, pest control, and community education.

The university's goal with developing BMPs for golf courses is primarily focused on growing quality turf in the most ecologically friendly way, but we do not specifically address the extensive monitoring or the community outreach and education components as outlined in the Audubon program.

It is my experience that most of the university-directed golf course turf programs are geared toward the people who manage the turf rather than the end user (e.g. the golfer). The Audubon outreach and education programs are designed primarily for the golfers and potential future golfers.

Which program is the best? They both serve an important function for the sustainable future of this industry.



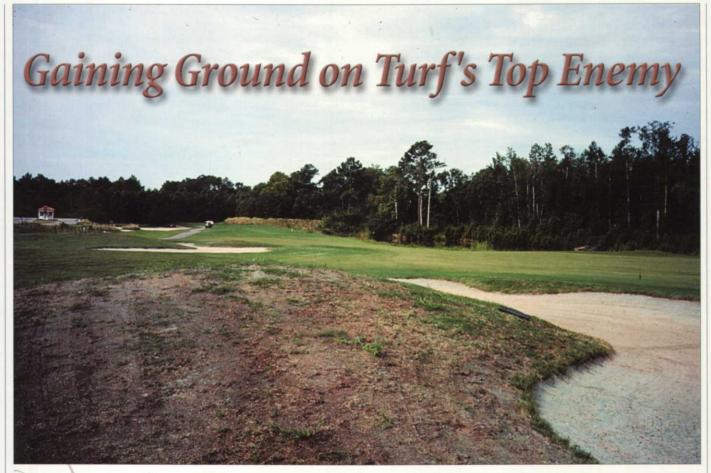


Figure 1. Mole cricket damage is often quite severe and effective control can often times be a frustrating and expensive endeavor.

Practical Use of New Research for Effective Mole Cricket Control

BY RICK L. BRANDENBURG, PH.D. North Carolina State University

The southeastern United States, and Florida in particular, seem to be blessed (or cursed) with an abundance of turfgrass insect pests. The list ranges from cutworms to mole crickets, fire ants to sod webworms, chinch bugs to white grubs. Many of these pests are troublesome every year and often persist for long periods of time during the warmer months. In addition, several of the pests such as fire ants and mole crickets offer special challenges as we attempt to control them in an environmentally and economically sound manner.

While fire ants present their own special challenges, just not in terms of effective control, but also from the health risk they produce, in this article we will restrict our comments to mole crickets. The underground nature of this insect, its presence near water, and several behavioral characteristics of this pest make it a particular challenge (Fig. 1).

The majority of this article will focus on recent research that helps us better understand what the mole cricket does under the soil and how this information ma be useful in helping us manage this

The first advantage that mole crickets have working in their favor is the very fact that they are a soil insect. This works to their advantage in two ways.

First, we can't see what the insect is doing when its below the soil surface. This obviously works to the insect's advantage. We don't know where the pest is concentrated, its developmental stage, or even its general abundance prior to serious damage to the turfgrass.

Secondly, the soil and associated organic matter (such as thatch) work against our efforts to deliver the insecticide or other control agent directly to the insect pest. Many insecticides are bound tightly to organic matter in the soil and this results in less availability of the product to the insect. The soil itself somewhat buffers the insects from any application of an insecticide. As a result, control of soil insects such as mole crickets is a great challenge that often requires a significant investment in time and money.

These challenges in mole cricket management have resulted in a number of research projects through the years to help us better understand the biology



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Figure 2. The southern (left) and tawny mole crickets are similar in appearance, but differ in their biology and ecology.

and ecology of this pest. Our program at North Carolina State University has been studying this pest for about 15 years and a very significant effort has been under way for the past 10 years. A portion of this work in collaboration with Dr. Mike Villani at Cornell University has been funded for seven years by the United States Golf Association.

The major focus of our research has been studying the biology and behavior of mole crickets and how this affects our efforts to manage this pest. We have studied both the southern and tawny mole crickets (*Fig. 2*). While there are many similarities between the two species, there are also some distinct differences.

The southern mole cricket is more of a predator feeding on soil organisms and the tawny mole cricket feeds more on the root systems of the turf. Each will modify its feeding behavior somewhat under unusual or less than optimal conditions. However, the very predatory nature of the southern mole crickets actually allows them to attack and feed upon tawny mole crickets that are the same size or smaller.

Fortunately for the tawny mole crick-

ets, their biology gives them a leg up on the southern mole cricket. Tawny mole cricket adults typically lay eggs earlier than the southern mole cricket and as a result the tawny mole crickets are often a little larger, offering them a level of protection from the southern mole crickets. It is quite possible that some of the earliest hatching southern mole crickets do consume a few of the later hatching tawny mole cricket.

When we consider the management implications of this difference, the length of egg hatch is going to be considerably longer in areas where the two species coexist. This makes good control more difficult since the timing and residual activity of the insecticide must cover a longer period of time than the situation where only one species is present. The combination of the two species in one location usually gives us a bit more of a problem in our efforts to obtain maximum control.

In addition to the fact that we can have two different species present in one location, we are finding that there are some rather significant regional differences in mole crickets.

For example, in a particular year, a mole cricket population in north Florida may enter into the winter months with about 80% of the nymphs having completed their development to the adult stage. In North Carolina we may see as high as 90% of the population overwinter as adults.

We don't know why we see advanced development in an area with cooler spring and fall temperatures and where the eggs may hatch a month later. There also

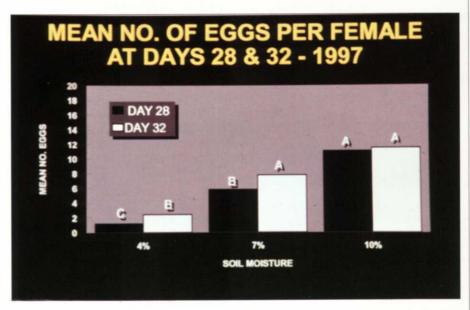


Figure 3. Effect of soil moisture on the egg laying of mole crickets in a greenhouse study (North Carolina).

appear to be some differences in the susceptibility of mole crickets to particular insecticides from various parts of the Southeast.

Are all of these differences a reflection of different environments (i.e. soil types, rainfall, temperature), the result of years of exposure to different insecticides, or is it that the various populations of mole crickets that found their way to the U. S. came from different points of origin in South America?

I don't think we have a clear answer for this yet, but it does caution us in accepting data from far removed locations as the gospel. The way a product stacks up in North or South Carolina may or may not be the same as it performs in south Florida. Local testing and on-site trials are critical with this pest.

One aspect of mole cricket ecology that does appear to be consistent across its range is that it is a creature of habit. By this, I mean that the mole cricket population generally finds an area that it is suitable and populations tend to occur there year after year.

Much of this is the result of the fact that the adult male mole cricket seeks sites that are suitable for making attractive calling chambers to attract the females for mating in the spring. These same sites are often good for egg laying, which the females frequently utilize soon after mating. In effect, the signs of adult activity in the spring are actually a very good indicator of where significant egg laying will occur and represents a site where monitoring of egg hatch should be focused.

This is not to say mole crickets don't spread to new areas because they certainly can and do. By mapping and monitoring these sites of springtime adult activity, superintendents can use their time most effectively and feel confident that they can accurately monitor egg hatch. Defining those areas and closely observing egg hatch is the first step to an effective control program.

Soil moisture greatly affects mole cricket behavior. Female mole crickets like good soil moisture in which to deposit their eggs (Fig. 3). Our research has shown that females may lay their

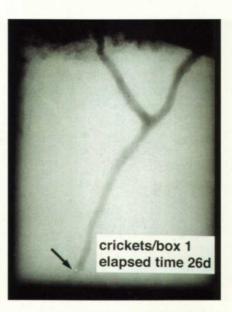


Figure 4. Typical "Y" shaped tunnel of a tawny mole cricket in the soil as observed through an X-ray image.

eggs a little bit earlier if a good rainfall occurs and a little bit later if the soil is dry.

I believe the effect of soil moisture is one reason why we have not been able to accurately predict egg hatch based upon soil degree days. This desire for higher moisture area to initially deposit the eggs may well explain the reason for the consistency in the sites in which they show up each year. Once hatched, the nymphs may migrate to drier areas as we often see them around bunkers and on mounds.

Under drier soil conditions, the mole crickets also have a tendency to be a little deeper in the soil. This is why it is more difficult to use the soap flush to get them to the surface when it is dry.

Dry conditions also make it more difficult to control mole crickets. The dry soil and organic matter make it more likely that much of the pesticide will be bound to it rather than moving to the target site. In addition, the cricket is simply residing down deeper in the soil and is less likely to contact the insecticide.

I have observed on several occasions a situation where superintendents are ready to throw in the towel on a particular treatment. A treatment is



Figure 5. Indications of avoid behavior by tawny mole crickets to the presence of an insecticide in the soil as observed through an X-ray image.

applied in a timely manner, but under dry soil conditions. Time passes and it remains dry. During this dry period the mole crickets are still feeding and growing larger, but there is little evidence of surface damage.

Then we enter a period where we receive some good soaking rains and suddenly mole cricket damage appears everywhere, including the treat areas (regardless of the insecticide used). Immediately we feel that the treatment has failed.

What has most likely happened is that with the rains, the crickets moved to the surface and it's the first time the crickets have actually been exposed to the insecticide. If the insecticide has sufficient residual activity it will then begin to control the crickets. One must remember, however, that the crickets are larger and it may take up to several weeks before the damage begins to subside and the mole crickets die.

Mole crickets have two other unique behavioral characteristics that affect our ability to control them in an effective manner. Studies conducted in collaboration with Dr. Mike Villani at Cornell University has helped us to better understand behavior in the soil.

The tawny mole cricket typically makes a "Y" shaped tunnel in the soil



that may go as deep a 3 or 4 feet in the soil during cold weather (Fig. 4). This "Y" shaped tunnel structure is found in some other soil insects and is consistent with other species of mole crickets such as the African mole cricket which is found in heavy clay soils in South Africa.

It is obvious this "Y" shaped structure plays an important role in mole cricket biology. It appears the tawny mole crickets feeds extensively on the turfgrass root system between and near the branches of the "Y". The southern mole cricket tunnel structure has the appearance of more random movements, such as might be expected from an insect that is seeking prey. This different tunnel structure most likely affects the effectiveness of certain treatments against each species.

The other behavioral response of the mole crickets is that they appear to be able to detect and avoid conditions that are detrimental to the cricket. Our research indicates that mole crickets are able to detect and even avoid insecticides applied to soil (*Fig. 5*).

The mole cricket may go deeper in the soil and stay away from the treated area for a considerable time. The larger the mole cricket, the longer it can stay deeper in the soil and thus avoid contact with the insecticide. This is one more reason why treatments directed against smaller crickets are usually more effective.

In many cases our initial observations of mole cricket control may be simply a reflection of repellence, rather than actual control. We have even observed a similar avoidance response with biological control agents. Unfortunately our understanding of this behavior is still too limited to develop means to overcome it. However, we do know that the rate of application, as well, as environmental conditions can influence this avoidance behavior.

Hopefully this information will

prove useful in your understanding of mole crickets and how to most effectively manage them. There is a lot we know about this pest that space doesn't permit us to discuss in this article, but the points highlighted here are of great importance.

At the same time there is still a lot of room to improve our knowledge of this pest and our program will continue to seek additional answers. I will keep you posted of new information as it is developed.

Should you have questions or feel I can be of assistance, please feel free to contact me. I also hope that in the future we'll have an opportunity to address some of these issues face to face in workshops or seminars.

Rick L. Brandenburg, Ph.D., is professor and extension entomologist at NCSU in Raleigh. He may be reached at 919-515-8876, fax 919-515-7746; email rick brandenburg@ncsu.edu.

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What are we really? With all the things that we get involved in by choice or by just trying to stay one step ahead, sometimes I think we forget our focus.



Image-building, job titles, marketing strategies and public perception may be the modern consequences of golf's popularity to our profession, but the bottom line is we are first and foremost, keepers of the green.

Regardless of the outcome of GCSAA's Professional Development Initiative, maintaining good golf course conditions is what it is all about.

Compared to the golf professional, our jobs have drastically changed with all the things we need to keep up with: FQPA; PDI, Sara Title III; OSHA; county, state and national laws just to mention a few.

Then there are the groups we join to keep up our education on turf management and regulations. GCSAA, USGA, FSGA, TCGCSA, FGCSA and FTGA. Don't get me wrong: these are all great organizations and I am a member of all of them, but regardless of all the administration and regulation, our real job boils down to golf course conditions.

My family came to this country from England in the 1940s, and has been in the golf business for many years. My grandfather and his brothers were golf professionals in England. Their father and uncles were also in the golf business.

The MacDonalds have been playing this great game for over 200 years in this country, England and Scotland. The love for playing the game of golf came from my father, brother and my great uncle who all taught me the great game of golf. Over there, superintendents are still called greenskeepers and their professional association is called the British and International Greenskeepers Association.

No matter what you call us or how our job descriptions have changed, we are about the game of golf just like Jack, Arnold, Sam, Ben and the rest of the great golfers over the past 200 years. So how do I keep my focus and carry out my primary responsibility of maintaining good playing conditions? I play golf!

The last greenskeeper I worked for taught me many things, but the one thing that sticks out is he always found time to go out and play a few holes. Most of the time it was long after the crew had gone home or early on a weekend morning. We were both very lucky in that way, we both really love to play the game.

If I don't play my golf course at least once a week, I feel as if I let my members down. Because to me that is one of the best ways a person can really evaluate his or her golf course's conditions. We also have a few Tour players who play out of my golf club. I take the time to talk to them and compare our course to the ones they play on the tours.

Playing other courses is also a great way of knowing what is going on. The next time you are in the clubhouse and one of your members says, "Joe's course is always in good shape. Why can't we be that good?" You will have an answer for him: budget, overseeding, new grass, new irrigation system, new greens, etc.

If you don't have time to play other courses, just go look at them. When was the last time you went and looked at three or four golf courses in one day? You can compare first hand what "Joe" is doing up the street just by going and looking at a few his greens and talking to him about his current programs.

Playing golf with my members is something else I try to do. This does not happen on a regular routine but I do try to do this six or seven times a year. This seems to work for me and might not be for everyone. But I really think that if you don't play a few times a month, you don't know your course as well as you think.

Image building, job titles, marketing strategies and public perception may be the modern consequences of golf's popularity to our profession, but the bottom line is we are first and foremost, keepers of the green.

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t the Florida Turfgrass Association's December committee day, a prominent sod producer suggested that the FTGA should be the organization to spearhead efforts to standardize the definition of a "bushel" of sprigs. Since we are trying to define and position the FTGA as the "umbrella" turf organization, it is fitting that FTGA tackle this problem. But superintendents, as the end users, and golf course designers, who typically write planting rates, need to be principals in the creation of these new specifications. Frank Hutchinson, president of the

Golf Course Builders Association of America, has already written on the subject, and the GCBAA should also participate in this process.

How do *you* define a bushel of sprigs? Do you just accept what the grassing company delivers and then take the heat if your grow-in took longer than a neighboring course planted at the same time? Do you relish the thought of a confrontation with the grassing contractor and the inevitable delays when the planting job is

lighter than you had anticipated? If you're faced with a deadline or approaching winter, do you just specify a heavier rate of sprigs and pay the contractor more money for what might have been the proper and normal rate in the first place? Shouldn't a bushel from company A be the same as a bushel from company B?

I first became aware of the problem about 12 years ago when I sent a man and a truck to pick up 150 bushels from a nearby grower for a green renovation and was blown away by the paltry pile of sprigs he returned with. I sent my assistant to Publix to get a bushel basket, and when we had finished filling, counting, and emptying (without compacting), we had a grand total of 16 bushels. The grower was not apologetic or receptive to my complaint, but begrudgingly allowed me to pick up additional sprigs.

A Georgia bushel is supposed to be 0.4 cubic feet. A Texas bushel may be anywhere from 0.4 to 1.23 cubic feet. An industry standard bushel is 0.4 cubic feet, and the U.S. standard bushel is 1.25 cubic feet. Dr. Al Dudeck from the University of Florida defines a bushel as the amount of sprigs harvested from 100 square feet, while others try to

define a bushel in terms of how many live plants per square foot have survived three to six weeks after planting. Volume seems to be the only practical means of measuring sprigs.

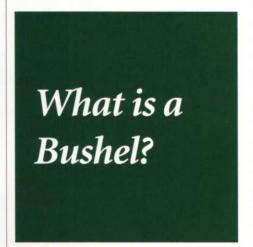
Other factors also influence the delivered volume. Sprigs are typically delivered in an open truck rather than stuffed into bags, bushel baskets, or other containers. Trucks used for delivery must be easily measured to determine their capacity in cubic feet. Truck capacity can be certified by the grower or measured by the buyer upon delivery. Settling, or "shrinkage", is inevitable even if the sprigs were compacted after loading.

Obviously, the standards must agree on whether the volume is figured before or after this settling occurs. Water loss occurs the longer the sprigs sit in the truck before planting. Sprigs grown on heavier soils, like Georgia clay, are usually washed under high volume to remove the soil. This process may also remove more of the unusable detritus like clippings and thatch, whereas sand-grown sprigs are typically not washed (and may allow for nematode contamination as some of the Georgia growers contend). GCBAA President Hutchinson's recommendation is to adopt the U.S. Standard bushel of 1.25 cubic feet and figure in no more than 20% shrinkage at delivery.

I won't go so far as to say that this is the grassing industry's "dirty little secret," but the facts that the sod producer who raised the issue wishes to remain anonymous, and that the industry has done nothing to police itself, suggests that a strong outside organization or coalition of organizations needs to step in. Having no standardized definition of a bushel of sprigs has allowed abuses by some grassing companies either at the bidding stage or the planting stage. The honest sod producers and grassing contractors will support this effort.

Architect Jan Beljan, who took part in December's discussion, has agreed to solicit the support of the American Society of Golf Course Architects and personally participate in the project. If we move forward with this, our thinking was to establish some plots at Ft. Lauderdale using different varieties and variable planting rates with photographs taken every step of the way, including the sprigs laid out on the ground before planting, to help in writing the standards and determining proper planting rates.

What do you think?



Mark My Words



Mark Jarrell, CGCS

2001 Florida Green Photo Contest

Category 1 - Wildlife on the Course: includes mammals, birds, reptiles, amphibians.

Category 2 - Course Landscape: Formal Plantings: includes annuals, shrubs, trees, entrance and tee signs.

Category 3 - Course Landscape: Native Plantings: includes aquatic vegetation, grasses, shrubs, trees and wildflowers.

Category 4 - Scenic Hole Layout Shots: includes sunrises, sunsets, frosts, storms and any other golf hole view.

Prizes

- 1 st Place (\$100) and 2 nd Place (\$50) in each category.
- Editor's Choice-Best Overall Photo - \$100.
- All winning entries published in the Fall 2001 issue.

Easy Rules

- Color prints or slides. Prefer prints.
 Only one entry per category.
- Photo must be taken on an FGCSA member's course. Photo must be taken by an FGCSA member or a member of his staff.
- 3. Attach a label to the back of the print or slide which identifies the category, course and photographer. DO NOT WRITE DIRECTLY ON THE BACK OF THE PRINT. Each photo shall be attached to an 8.5" x 11" sheet of paper. Attach the print to the paper using a loop of masking



Category 1: Wildlife on the Course, the largest mouse in Central Florida. Photo by Joel Jackson.

- tape on the back of the photo. Slides must be easily removable for viewing.
- 4. A caption identifying the category, course and photographer should be typed or printed on the sheet of paper below the print or slide.
- Judging will be done by a panel of FGCSA members not participating in the contest.
- Mail entries in a bend proof package to Joel D. Jackson, 6780 Tamarind Circle, Orlando 32819. No entries accepted postmarked after August 1, 2001.



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Jensen Beach, Florida 561-692-1221 cell: 561-485-3776 eing environmentally sensitive doesn't bother me at all. I have to drink water, eat food and breathe air just like everyone else. Being environmentally stupid is something else.

If recent edicts and proposals coming out of federal, state and local departments, legislatures and commissions are any indication of the mentality of people charged with representing and serving the people, then there seems to be a need for a massive recall of many elected officials and firing of their appointed staff members.

Before I generalize too much I must recognize the thoughtful, rational people in government who understand that, as employees of the public, they represent all stakeholders in a contentious issue. They are duty-bound to look at all the evidence and facts and do what's best for everyone. I commend the staff members in the Florida DOACS and DEP and the water management districts who are working with the

green and ag industries in Florida to find practical, responsible solutions.

What boggles my mind is the sheer arrogance and/or ignorance of some regulators who come up some real boneheaded decisions that miss real opportunities for improvements. For instance:

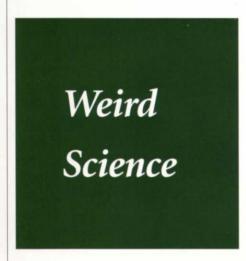
- In Houston, home of the petroleum refining industry, local officials are fighting air pollution by banning the use of leaf blowers and other small engine tools during the morning hours to prevent smog build up during the day. It makes it seem as though the officials are doing something, but it doesn't really address the major causes of air pollution in a large, bustling, industrial city.
- In Minnesota, there are folks concerned about phosphorus pollution of the lakes. The only phosphorus they are going after is that used on golf courses and home lawns. Those concerned choose to ignore agriculture, nursery production, industry, septic tanks, and natural decay of the annual leaf fall. The fact that surrounding states have found no direct link from lawn fertilizing to lake pollution doesn't not impress the officials. Minnesota hasn't

done such a study, so it doesn't count.

- In New Jersey, this year's drought brought swift targeting of golf courses as big water wasters. The fact that golf courses accounted for only .003% of the state's water consumption did not impress anyone. Once again fair and meaningful restrictions on all users were ignored in favor of hitting the easy target. Late breaking news indicates New Jersey is going to study the feasibility of using effluent water on golf courses. Maybe there's hope yet.
- In New York we won't mention the ban on spraying mosquitoes carrying the West Nile Virus, but rather talk about the proposed ban on using industrial-strength pesticides on public lands. When the staff of the sponsor of the bill was asked what constitutes an industrial-strength pesticide, they couldn't define it. However, they will be producing a brochure at taxpayers' expense to warn the public about the dangers of being exposed to an industrial-strength pesticide, whatever that is! Don't people already know that pesticides can be dangerous if not used properly?
- Here in Florida, water is doled out during drought conditions by designating days of the week to water. This might work under certain conditions, but consider this goofy scenario: In one city even the people who had effluent irrigation systems had to abide by the water ban. The result: unused effluent water is being dumped directly into a pristine river. Go figure. Maybe it was too hard for the water police to figure out who was on gray water and who was on potable. So the environment loses out in the long run.

Which brings to mind a recent conversation I had with a superintendent who got a call from an irate citizen who lives along his golf course. The person called condemning him for having a lush green golf course in the face of this horrible devastating drought. When the superintendent calmly explained that he was watering with 100% effluent water, the caller only replied, "Well, I don't care. You're not doing your part!"

All of these examples just go to prove that we have a lot of educating to do not only to the regulators and legislators but the general public as well. We can't let people in authority use weird science to make decisions that can affect our lives.



Green Side Up



Joel Jackson, CGCS Editor

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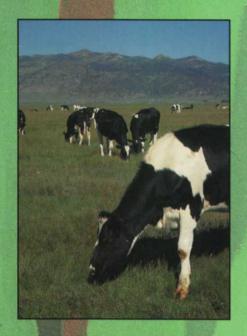
"Highest mean for turf color"

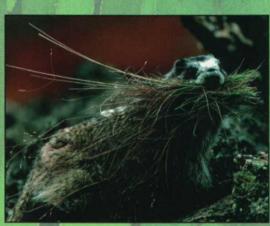
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