



# The Florida Green

Winter 1995



Saddlebrook Golf & Tennis Resort  
Wesley Chapel  
Number Three



## Officers

**President Scott Bell**  
Bent Pine GC  
6001 Clubhouse Drive  
Vero Beach, FL 32967  
(407) 567-9422

**Vice President Greg Plotner, CGCS**  
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Tampa, FL 33647  
(813) 972-3375

**Secretary/Treasurer Dale Kuehner, CGCS**  
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## Staff

**Association Manager Marie Roberts**  
1760 NW Pine Lake Dr  
Stuart, FL 34994  
Phone: Days (407) 692-9349  
(800) 732-6053 (Florida WATS)  
(407) 692-9654 (Fax)

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# The Florida Green

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**Editor Joel Jackson, CGCS**  
Disney's Magnolia G.C.  
Address Florida Green business to:  
6780 Tamarind Circle  
Orlando, FL 32819  
(407) 248-1971 Florida Green voice/fax  
(407) 824-6298 Work  
(407) 351-3729 Home

**Assistant Editor Mark Jarrell, CGCS**  
Palm Beach National G.C.  
7500 St. Andrews Rd  
Lake Worth, FL 33467  
(407) 965-0046

**Publications Chairman Greg Plomer, CGCS**  
Tampa Palms G&CC  
5811 Tampa Palms Blvd  
Tampa, FL 33647  
(813) 972-3375

**Business Manager Paul Crawford**  
Palm Beach Country Club  
P.O. Box 997  
Palm Beach, FL 33480  
(407) 845-2395

**Editor Emeritus Dan Jones, CGCS**  
Banyan GC  
West Palm Beach

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## Contributors to this issue

**Cover Photographer:** Dan Zelazek

**Cover Story Writer:** Joel Jackson, CGCS

**Hands On Package:** Joel Jackson, CGCS, coordinator;  
Janet Cushnaghan, photography

**Audubon Series:** Shelley Foy, coordinator;

**Environment:** C. Eloy Timmer

**Research Report:** Monica Elliott, PhD

**Spotlight:** Mark Jarrell, CGCS; Robert G. Klitz, CGCS;  
Joel Jackson, CGCS

**Afterwords:** Mark Jarrell, CGCS; Joel Jackson, CGCS

**Copy Editor:** Jennifer Jackson

## Production

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President ..... Larry Kieffer

Project Manager ..... Philip Pettus

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*Mother nature  
throws many  
curve balls*

As we start a new year and some of us look forward to going out to San Francisco for the GCSAA Conference and Show to attend classes and to see the trade show, I look back at 1994 and one word comes to mind: perseverance.

Statewide the rains fell all summer and fall. Some folks got more than their share and most of us had well above normal amounts. Of course the timing of Tropical Storm

Gordon was perfect, arriving right in time for the start of the Florida golf season. Many of us on the East Coast had rainfall amounts that exceeded one foot from the storm. The bad news is that my golf course had areas, that I had never seen hold water before, flood and then take days to drain or evaporate. Of course the turf in these areas thinned out and as Murphy's Law would have it, the winter growth slowdown was rapidly approaching. The good news is not real good but it is that we are all experiencing the same problems that have resulted from the rains.

The golf course superintendents that I know will PERSEVERE through these tough times and help out fellow superintendents who are also battling these problems. I think that we all need to reflect and remind ourselves of the great industry that we are all fortunate to be involved with. In spite

of the weather that makes all of our jobs interesting, managing such a large tract of land, to such a high degree that we do, is truly an awesome task and one that is very gratifying. Helping to improve wildlife habitat and doing an environmentally responsible job while offering great golf conditions is something that we should all be very proud of. Mother nature throws many curve balls during a year, from tropical storms and hurricanes to unusual cold to wind, lightning and heavy rain. After she is done, we clean up the mess and continue on.

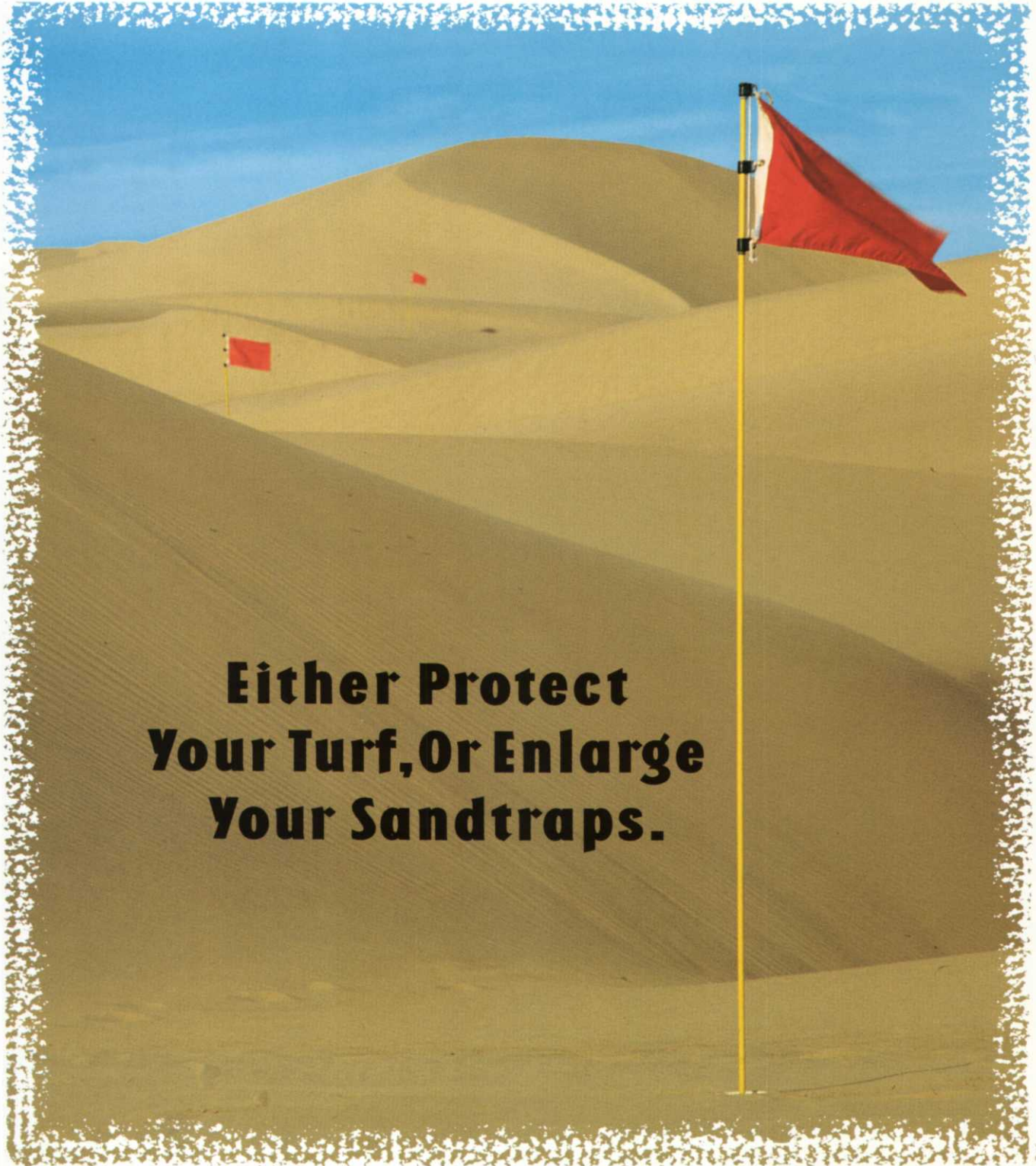
Everyone has their own reason or reasons for playing golf. As a matter of fact, I think that some people play golf, while others actually live golf. Some play golf solely for the competitive or athletic aspect. Others play as a form of relaxation and a way to commune with nature. Still others enjoy the social aspect of the game and their club. Those that I feel who live golf may actually live on a course, play many times per week and enjoy the social aspect of the game and their club. We are the main link who tie golf together. Without a properly managed golf course, the game and all the different facets of it would not be the same.

The next time that the weather treats you bad or when things are stressful and you are ready to give up, think of your job and the industry and your fellow golf course managers. Look at the big picture and appreciate your profession and all that it has given to you. 🏌️

**President's  
Message**



Scott Bell, CGCS  
President, FGCSA



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has seen them all.**



*The 18th Fairway at The Bay Hill Club; Arnold Palmer and Superintendent Dwight Kummer*

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I hope that all of you had a wonderful and safe holiday season. After living in Florida for the past eight years, I still find it somewhat strange to celebrate the holidays without cold weather and some snow, but somebody has to do it and it might as well be me.

This past year was a very positive one for the FGCSA. We have seen an increase in

our research dollars due to some hard-nosed fund raising efforts. This gives the FGCSA an opportunity to actively participate in and support programs and projects important to the well being of the game of golf. We have also seen a bringing together of Dr. Nell's talented staff at the University of Florida to help solve the turf identity problems that we are now facing. Finally, we have seen the release of the all-important turf survey by the

Florida Turfgrass Association that shows just how valuable our industry is to the economy of Florida. With 1994 behind us and its successes still in view, we must now move on and try to be even more constructive in 1995.


A large obstacle that continues to potentially threaten our well-manicured golf courses is a lack of water or the threats of a lack of water. Our industry is looked upon by many as a water-waster and this image must change. The FGCSA must stand united behind the benefits of turfgrasses and continue to demonstrate to those concerned that golf courses are NOT wasting this valuable resource.

I actively attend water conservation meetings in the Tampa area and am appalled at the misconceptions that other

segments of the green industry have about turfgrass. Their biggest complaints are that turfgrasses use tremendous amounts of water and that it costs "mucho dinero" to maintain it. How can it be?! I actually sat in on a meeting where several individuals wanted to establish within an ordinance a limit on the amount of turfgrass that can be used in a landscape setting. If it's not grass, what will it be — concrete?! One can only have so many trees and shrubs.

Many of you have heard me talk about this important issue before and I sure hope you are listening to me now. Other segments of the green industry have consistent representation at these meetings and are aligned on their needs when it comes to water use and have proposed their own methods of water conservation. The turfgrass industry must do the same and do it now. The issues of water use on turfgrasses must be attacked before new laws are mandated and we find ourselves wondering what happened.

For those of you who have water use permits, take the time to review the permit and if you foresee any problems with your existing permit, start working on them now, not when it comes time for renewal. Changes in the permitting process are occurring and for some of us it will not be for the better. For those of you who are on effluent systems, your wake-up call is coming sooner that you would like it to. Better take a look at your contract because a new source of revenue has been found and guess what... it's your effluent water!

Water use on golf courses is going to be a hot topic in 1995 and the FGCSA as an association should be ready to justify our needs as an industry and be able to educate those "decision-makers" about our needs when the time comes. A state-wide effort is needed — let's all work together! 

## Water use is the hot topic for 1995

### Plotner's Page



Greg Plotner, CGCS Publications Chairman

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## DISTINGUISHED SERVICE AWARD

# Ray Hansen rises to FGCSA pinnacle after only eight years in the state

BY MARK JARRELL, CGCS

It hardly seems possible that Ray Hansen has only been in Florida since 1986. In his eight short years in Florida, his accomplishments on behalf of the Florida GCSA were considered so significant that in 1994 his peers awarded him their highest honor — the Florida Golf Course Superintendents Association's "Distinguished Service Award."

Ray characteristically down plays his contributions with a shrug of the shoulders and a remark like, "When you see something that needs to be done, you do it!" Those of us who have had the pleasure of working with Ray on the FGCSA Board and various committees recognize and credit him for his leadership in seeing that projects are initiated and followed through to their conclusions. Leadership is a rare quality, and Ray Hansen has it in spades. When Ray assumed the presidency of the Florida GCSA in August, 1990, the Florida Green cover story about him was appropriately titled, "He Gets the Job Done," and all who know him agree with this assessment.

His proudest accomplishment is the Florida GCSA's USGA spec green at the University of Florida's IFAS research station in Fort Lauderdale. This green is the direct result of another of Ray's inventions — the South Florida Turf Expo. Without the money generated by this Field Day, it is questionable whether or not enough funds would have been available to build the green and sustain its maintenance.

Ray's other contributions to the Florida GCSA include serving as our Voting Delegate at the GCSAA Conference and Show for two years; six years as Chairman of the Fort Lauderdale IFAS Advisory Committee, and various other statewide committees.

For all he's given to us in Florida, it appears Ray's time here is limited. In November, he resigned his position as



*Ray Hansen (left) receives the 1994 FGCSA Distinguished Service Service Award from Paul Crawford at the Crowfoot Open banquet.*

Golf Course Manager at Delaire Country Club and is actively seeking a job in the "snowbelt" to allow him the freedom of four months off in the winter for travel.

Once Ray leaves the state, it's possible that we'll see him back in Florida often during those long winters. He recently sold his home in Key Largo to his son, Kurt, and although his boat is on the market, it permanently resides with Kurt in the Keys. Deep sea fishing is one of Ray's passions, though a recent six-week trip to the Rockies for flyfishing may indicate a shift in priorities for shallower pursuits.

Ray also enjoys snow skiing, but the subject that lights up his eyes is Penn

State football. Ray graduated from Joe Duich's Penn State turf program in 1960 and has owned season football tickets for 35 years. He had plans to go to the Rose Bowl, and I expect by the time you read this article, Joe Paterno's team will have wasted Oregon and laid a claim to at least a share of the national championship, if not the title outright.

Nothing could cap 1994 for Ray any better. When asked what winning the Florida GCSA Distinguished Service Award meant to him, he replied, "It's the most important award I've ever received, right up there with going to the Rose Bowl!" (There was a twinkle in his eye



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Cypress' prostrate growth habit is apparent in these P.V.P. trials. One picture is worth 1000 words.

TMI will be happy to send you copies of the complete trial data for any of the trials we have mentioned below.

University of Florida 1991-92 Overseeding Trials Gainesville, Fla.		
	Mean Quality	
	Scores	Color
Cypress	7.2	7.8
Sabre	7.2	5.4

University of Arizona 1992-93 Overseeding Trials		
	Mean Quality	
	Scores	Color
Cypress	5.4	5.3
Laser	5.0	5.0

USGA Stimpmeter tests at University of Arizona revealed a higher average ball speed of 92 inches for Cypress; better than for Laser.

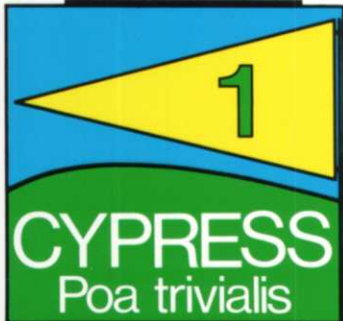
*"Although Cypress and Sabre Rough Bluegrass had equal seasonal Turf Quality Ratings of 7.2, the "Cypress" cultivar had better color and less dollarspot disease in May."*  
Univ. of Florida Gainesville 1991-1992 overseed Trial.

Monthly and seasonal mean values for turf quality on cool-season grasses overseeded on a 'Tifdwarf' bermudagrass putting green from Dec. 1993 to Mar. 1994 at Gainesville, Fl.					
Turfgrass	Dec.	Jan.	Quality		Mean
			Feb.	Mar.	
	Rating				
Cypress	6.8	8.2	8.0	6.8	7.25a
Colt	7.1	8.2	7.8	8.5	7.19a
PT-GH-92	6.3	7.8	8.0	7.1	7.19a
LPT-CT (Loft)	6.6	7.8	8.0	6.8	7.16a
PT-GH-89 C11 (Dark Horse)	8.1	7.3	7.8	7.0	6.97a
Danish Common	7.5	8.2	7.5	5.8	6.94a
LPT-HWY (Loft)	6.6	7.7	7.9	8.2	6.88a
Winterplay	6.6	7.5	7.8	6.3	6.88a

Quality mean based on eight visual ratings on a scale of 1-9 where 9 = best

Establishment rate of Poa trivialis varieties overseeded on dormant bermudagrass in Florida (data from Dr. A.E. Dudeck, Univ. of Florida)			
days:	7	14	21
	—% ground cover—		
<u>1991</u>			
Cypress	2	23	79
Sabre	2	17	70
<u>1992</u>			
Cypress	87	93	86
Laser	36	58	83

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## President's Award

# Bill McKee —

## *Pennsylvania's loss is Florida's gain*

BY ROBERT G. KLITZ, CGCS

In July 1994, the South Florida Golf Course Superintendents Association chose Bill McKee of the Oak Tree Country Club to be the recipient of the President's Award. Bill has been working in South Florida for over 20 years and also had about eight years of experience in Pennsylvania. The purpose of this article is to give the other members of the organization some insight into a key figure in the South Florida community of superintendents.

As incoming President of the SFGCSA, I was given the honor of presenting this

award to Bill at the Crowfoot Open in August. Prior to the formal presentation, it was my pleasure to inform Bill that he had been selected by his peers for this prestigious and highly coveted award. When I told him that he had been chosen unanimously by the SFGCSA board, his emotional reply was, "Is everyone else dead?" After that response, I realized that I was not only going to have some good material for the Crowfoot "roast" presentation, but I might even be able to use some of the more tasteful material in a Florida Green article.

The illustrious Bill McKee was born and raised in Butler, Pennsylvania. Bill

started working at the Butler Country Club when he was 15 during summers while attending high school in nearby Saxonburg. After graduating from high school, Bill continued to work at Butler C.C. during breaks from college. Bill received a four-year degree in Pre-Law History from Grove City College in western Pennsylvania. While working on the golf course during a break in his final year of school, Bill realized that playing golf is listed in a golf course superintendent's job description but not in a lawyer's job description. Now I know Bill didn't just fall off the turnip truck, but did it take

## *Ray Hansen honored by peers with DSA*

from previous page

when he said it!).

Ray's Penn State ties are very important to him, and he has given back to the college by serving as President of the Penn State Alumni Association for the past two years. He credits Joe Duich and his informal classes as having the most influence on his career.

Ray's nearly 40-year career in the golf business has been very diverse. He started as a caddie at Ridgewood Country Club during high school in Fairlawn, New Jersey, also spending summers maintaining a pitch-and-putt course. This sowed the seeds, but a two-year stint in the Army, followed by two years pursuing a physical education degree at Panzer College, preceded his formal turfgrass education at Penn State.

His first job out of college was selling golf course supplies for a company called Person's Mill. He then accepted the job as superintendent at Essex Country Club in West Orange, New Jersey, where he had spent his summer internship while attending Penn State. Here he had the

unique opportunity of managing 18 holes of public and 18 holes of private golf course, at the same 36-hole facility. Four years later he became the general manager, responsible for the entire project. Ray considers this his most satisfying position.

Still, four years later, another challenge presented itself, and Ray left to build and manage the two sister resort communities of Lake Naomi and Timber Trails in the Pocono Mountains, including the construction of an 18 hole golf course. Though he enjoyed the challenges provided there, acting more as a city manager than a golf course manager, Ray was ready to move on when he finished putting his kids through college (Ray has a daughter, Cheryl, in addition to son Kurt). He arrived in Florida in January of 1986, surprising friend and PSU classmate, Tom Burrows. Four days later he secured the superintendent's position at Ocean Reef Club on Key Largo. He stayed there for four years then moved up to Delaire CC in Delray Beach staying there for four years until his resignation this past November.

Reflecting on his many years in the golf business, Ray feels the best thing about being a superintendent is the satisfaction of providing a quality golf course for peoples' enjoyment, and the worst thing is trying to do the necessary renovation work in the summer with members around.

Having experienced both warm and cool-season golf courses, Ray sees no particular advantage of one over the other—the differences more or less offset one another.

His advice to anyone contemplating a golf course management career: Serve an internship under a qualified superintendent and work your way up slowly. Not surprisingly, he considers the plethora of turf graduates competing for too few jobs as the biggest problem our industry currently faces. When asked how he'd like to be remembered, Ray answered, "As a superintendent that gave something back to the profession."

There can be no more tangible proof of that than the 1994 Florida GCSA Distinguished Service Award!

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In the early years of the business, acceptance and enthusiasm soared as Dr. Max Brown and his associates promoted a philosophy stating: If you provide a unique service in a valuable way through trusting personal partnerships and you can do it in a way that meets or exceeds the customer's expectations, you've provided something of value.

"You work hard and develop a reputation - you work hard and make a commitment to doing something right and you put your whole self into it," Dr. Brown said.

Today, however, as they enter their third decade, Dr. Brown and the Liquid Ag Systems team are rededicating the company to the ideals upon which the business was founded.

The company is not just selling commodity products. Liquid Ag Systems is forming customer partnerships that develop unique, environmentally-responsible products being led by the new Enviro Products line.



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"Profit is not the goal, but the essential result of doing business. The goal is to provide unique solutions to problems in the industry," Dr. Brown said. "Customers need someone to bounce ideas off of, someone they can depend on. We want to be that for our customers."

To this end, Liquid Ag Systems also offers an analytical service, soil and tissue sampling/evaluation, irrigation water treatment, experienced consultation for growers' nutritional programs and environmentally sensitive alternatives that can reduce the need for harsh chemicals.

The common thread being an insatiable desire to remain on the leading edge of global technology.

Dr. Brown's summation: "We want to be working with our customers as partners doing something unique, something that makes a difference that we are there, something that says 'You're a partner.' "

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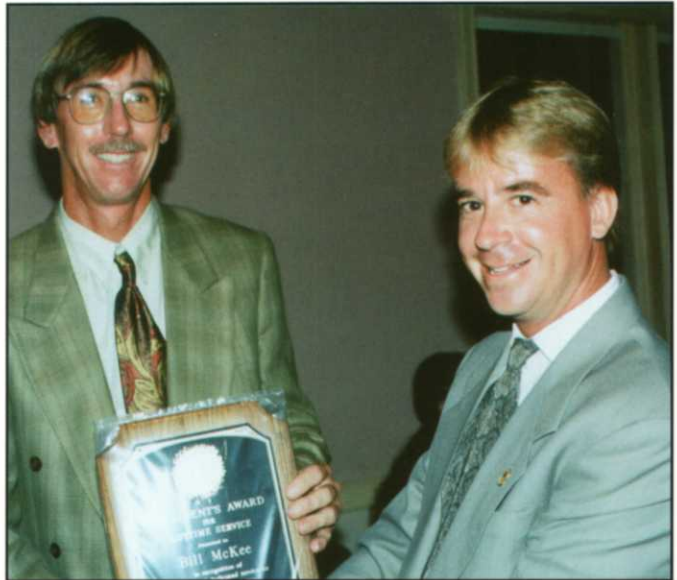
four years for him to figure this out? College in the 1960s. Those were the days!

After graduating from college, Bill decided to celebrate by torturing himself on a 650-mile bicycle trip from Pennsylvania to Boston in 10 days. Bill decided he had enough of the winters in Pennsylvania and he was lured to South Florida by the promise of year-round green grass, mole crickets and bikinis. He is still having problems with all three.

Bill still stays active by playing tennis during his time away from the golf course. One of his favorite playing partners is Allen MacCurrach III of MacCurrach Golf Construction. Allen did some renovation work at Deer Creek and at Oak Tree during the summer of 1993 and Bill would challenge Allen several evenings a week. (I believe the cigars must have finally caught up with Allen and given Bill the edge.)

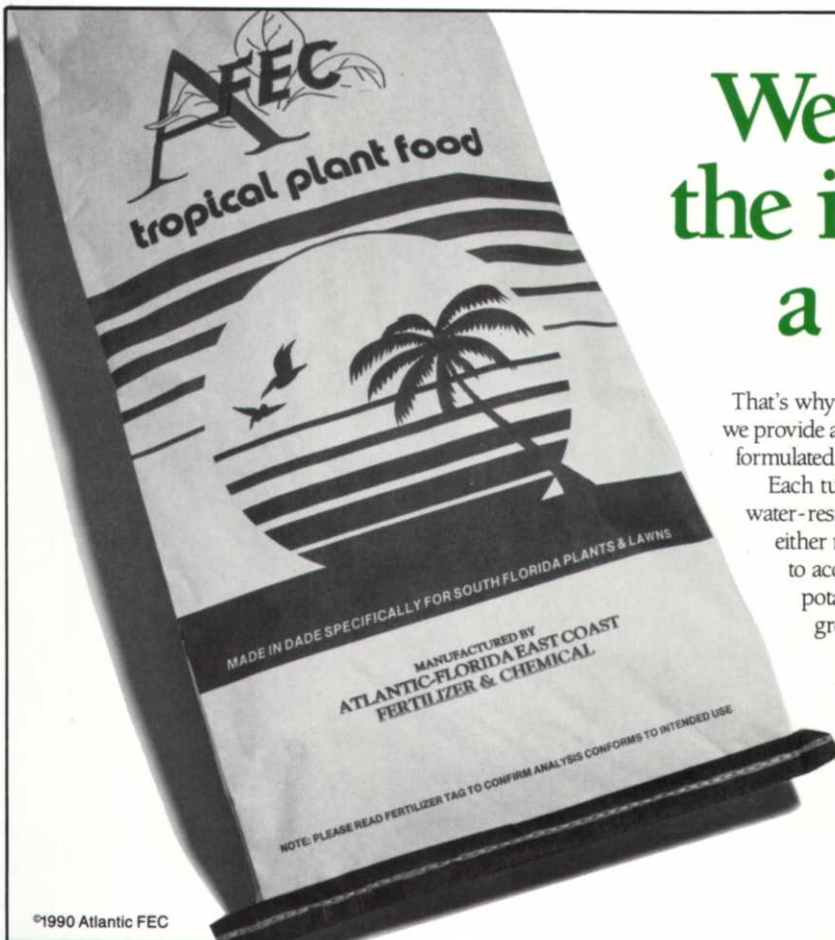
Bill started to work in Florida at the Golf Club of Plantation in 1973 as a laborer. He worked his way up to superintendent and left to accept the superintendent position at Oak Tree Golf Club in 1988. Bill is still the Golf Course Superintendent at this private club and is responsible for the 18-hole golf course, practice facility, and clubhouse grounds.

Bill was President of the SFGCSA for two years in the late 1980s and served on SFGCSA board for five years. He is a member of the GCSAA, FTGA, and has served on the Broward County School System AgriBusiness Advisory Board for two years. Bill has been a major part of the SFGCSA/Adam Walsh



Bill McKee (left), recipient of one of the 1994 FGCSA President's Awards was roasted handily by his good friend and presenter, Bob Klitz.

Golf Tournament Committee for the past seven years. This is a fund raising tournament for the Adam Walsh Child Resource Center that has raised over \$50,000 over the past ten years to help find and aid missing children and their families. This



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tournament took on even more significance for the superintendents involved in South Florida with the recent child abductions and murders that have made headlines nationwide.

During Bill's twenty years in South Florida he has been assisted by almost all area superintendents by trading equipment, ideas, and suggestions and borrowing equipment or supplies during a breakdown or shortage of materials. Early in Bill's career he attended a turfgrass course at Broward Community College with Dr. Max Brown as the instructor. Dr. Brown was of great assistance when Bill was learning to handle the difficulties of growing quality turfgrass in South Florida.

Phil Amman was another pioneer of the turfgrass industry in South Florida who had a significant impact on Bill's career. Phil built the Golf Club at Plantation, started the SFGCSA, and offered a great deal of encouragement to young Mr. McKee as he started out in this business.

Elroy Timmer, part owner of AmerAquatic, Inc., also was a significant contributor to Bill's early success in this area. Elroy was the individual who contacted Bill when Orthene first became labeled for mole cricket control in Florida. One of Bill's most memorable moments was experiencing the thrill of driving over hundreds of mole cricket bodies doing the "Orthene Shuffle" the morning after that initial treatment.

**1994 FGCSA  
Presidents Awards**

- Bill McKee**
- Paul Nevers
- Lou Oxnevad
- Joe Snook
- Royce Stewart
- Lonnie Stubbs

Some of the most dramatic changes in the industry that Bill has witnessed include the introduction of the Verti-Drain aerifier which brought him several years of successful aerifying programs at Oak Tree. Also, the changes from manual labor to complex equipment, walk mowers to triplexes, and back again to manual labor, has been an interesting display of how some of the older techniques are still the best.

As Bill reflected on some of his past experiences and thought about the future of our industry during our interview, he mentioned several key points that might be beneficial for those starting in our industry to ponder as they're mowing that first green in the morning. First, be patient. Spend your time on a crew gain-

ing the knowledge, making mistakes and suggesting improvements. Spend the early years developing and maintaining friendships and relationships that will be a benefit to you throughout your career. Second, take time to enjoy the environment and wildlife that is around you. We are all very fortunate to work in such beautiful surroundings and we should take every opportunity to appreciate the special environment we are maintaining. Third, don't get wrapped up in your own problems on your golf course! Stay in contact with other superintendents! Join your local superintendent's chapter! Go to meetings! Give yourself the opportunity to discuss your problems so your associates can help you find a solution. Bill's last words of wisdom are to develop some outside interest away from the golf industry. We all need a break to gather our thoughts and recharge our batteries. Too much of the best job will still cause you to lose some of your effectiveness.

Although Bill's family is still up in Pennsylvania, he has started a new family of friends in South Florida.

The close circle of people Bill has assisted over the years throughout the area will attest to his great attitude, willingness to help with area events, and his frequent phone calls and visits to check on fellow superintendents. We are fortunate to have Bill in South Florida, and we are proud of his accomplishments and commitments to the industry in South Florida.

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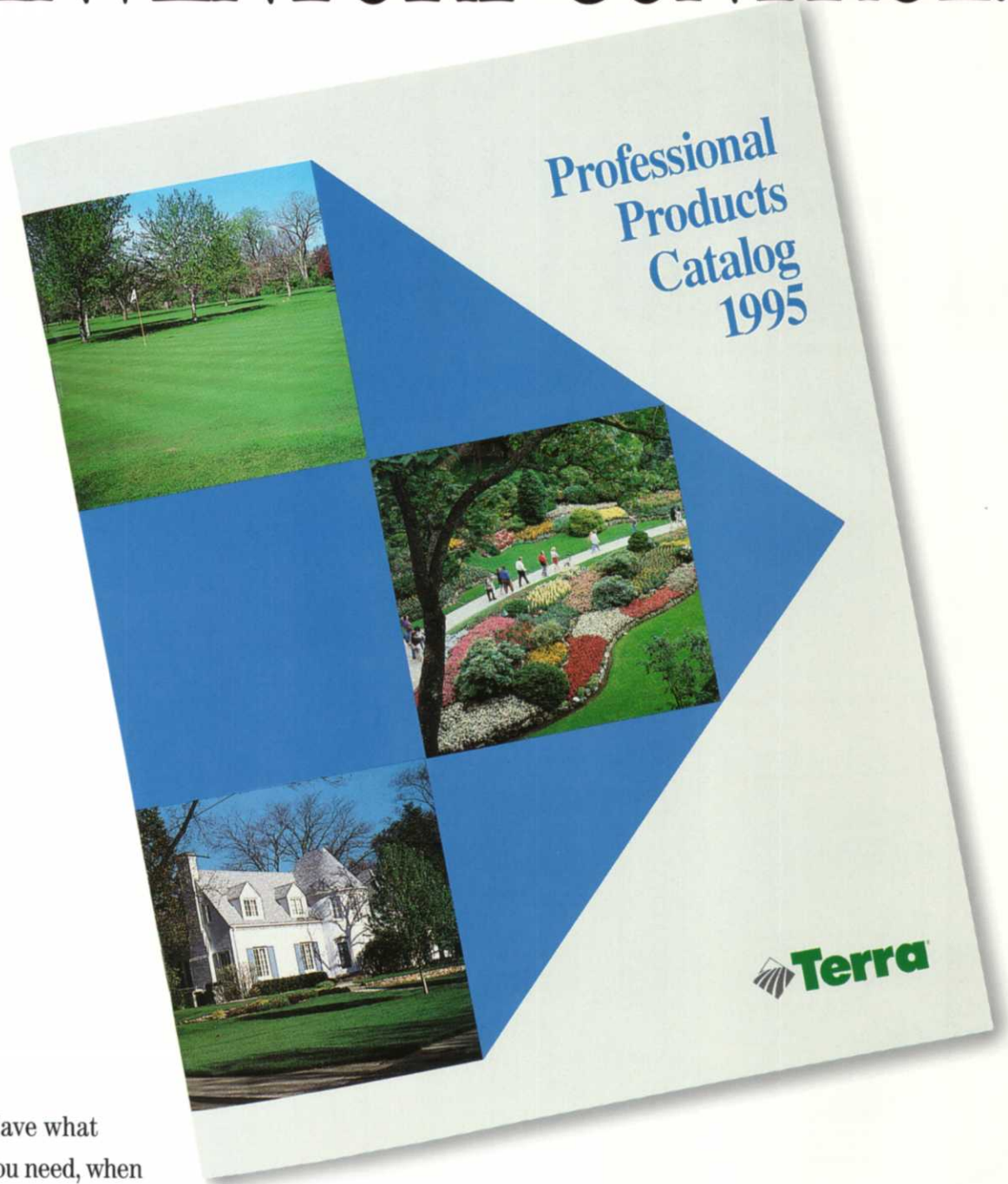
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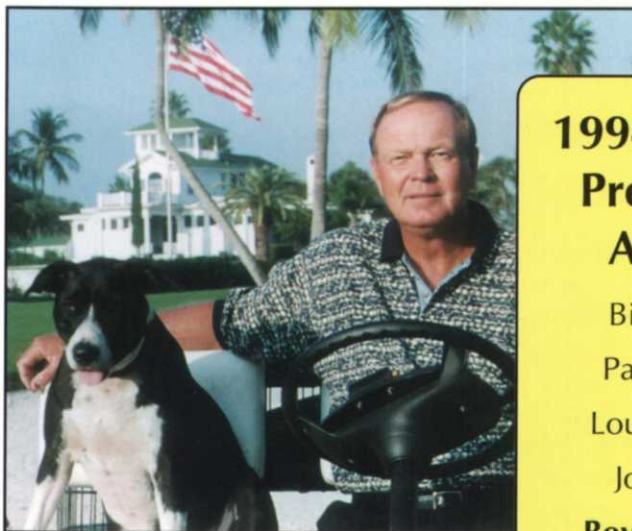


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## President's Award



Royce Stewart and Divot at the Gasparilla Inn.

### 1994 FGCSA Presidents Awards

Bill McKee  
Paul Nevers  
Lou Oxnevad  
Joe Snook  
**Royce Stewart**  
Lonnie Stubbs

## Royce Stewart —

## *Leadership by Example*

BY JOEL D. JACKSON, CGCS

If you worked on a golf course managed by Royce Stewart, you had a sense of belonging to a family. There is always a closeness, a togetherness of the staff. One of his best traits is his ability to foster a teamwork attitude among co-workers.

How does he do it? Quite simply, he walks the talk. Royce is the epitome of leading by example. As Jack Harrell, Sr. of Harrell's, Inc. put it, "Every day, he's always out there stirrin' amongst 'em." Tommy Morrow, former employee and current superintendent at Turtle Creek in Tequesta, adds, "Royce would often eat lunch and take breaks with the crew. He created a comfortable atmosphere of trust that eliminated the possibility of tension."

Tommy continued, "I started in the golf business at the age of 18 or 19 under Royce at the El Conquistador Country Club in Bradenton. I can remember being given a weedeater and a gas can and walking the course trimming as I went. I learned from Royce that being a superintendent was more than growing grass. As I look back on it now, it was the aspect of professionalism that he portrayed by his

actions. I must have recognized that he used a good formula for success, because I find myself working and eating with the crew like he did."

Royce displays another key behavior of a good leader. He shares information. For Tommy, that information changed his career path. "One day, as we were all taking a break together, Royce shared the results of the FGCSA Superintendent Survey with us. I had learned from Royce the value and potential of a career as a superintendent. It was easy to identify that the higher paying jobs were on the lower east coast. So, I chose to pursue my career from the "suncoast" to the "gold coast", but it was only because Royce cared about his people that I was able learn about the possibilities that existed."

Royce is very proud that five of his former employees have succeeded in becoming superintendents. Besides Tommy, there are David Jackson, Gary Mull, Jon Roxburgh, and Clinton Smith that spent time learning the trade from the "old master." Clint had this to say about Royce, "I was there at El Conquistador along with Jon and Gary. Royce

## Experience is also a good teacher

took the time to answer questions and teach us about the business. He's the man I learned it all from. He's as fine a gentleman as you will ever want to meet. I just want to thank him for all he's done for me." Staff development is another key skill of a good leader.

Just as these young men had Royce as a mentor, Royce had mentors and counselors along the way. Royce cites his father-in-law, the late Jamie Jackson, and Jack Harrell, Sr. as having the greatest influence in his early development in the golf business. In 1965, he helped Mr. Jackson build and operate the Skyview Lakes Golf Course in Lakeland, Florida. Royce recalled, "I helped build it, install the irrigation, grow it in, maintain it, and work in the pro shop. I wasn't the superintendent, just a jack-of-all-trades. My father-in-law taught me a tremendous amount about golf course management. He is the person most responsible for my becoming a superintendent. He showed me that this profession could lead me to meet many fine people and all the while providing a decent living for my family, financially."

"My other mentor was Jack Harrell, Sr. I have known Jack since I was sixteen years old. He has been a great friend and a tremendous influence on my life personally and professionally. I have always admired his honesty and integrity. He has offered very wise counsel to me for many years." And so it was that when Royce took his first superintendent position at Seminole Lake Country Club in Pinellas County in 1970, he and Jack used to talk turf management when Jack made

### Royce Stewart

**1965-69** Skyview Lakes Golf Course, Lakeland, FL

**1970-77** Seminole Lake CC, Seminole, FL - Superintendent

**1977-83** El Conquistador CC, Bradenton, FL - Superintendent

**1983-90** Imperial Lakes CC, Lakeland, FL - Superintendent

**1990-present** Gasparilla Inn, Boca Grande, FL - Superintendent

his calls. There are many of us who still "consult" with Jack, Sr. when we want a honest answer to a question.

Experience is also a good teacher. While time itself is not a benchmark for wisdom, after 28 years in the business, Royce has learned many lessons. I asked him to share one that he has found to be helpful. He said, "For new superintendents, do your job to the best of your ability and your knowledge. If you have a problem, don't be afraid to ask people for help. You can get into much more trouble by moving ahead into something that you really don't understand. People will actually have MORE respect for someone who is honest enough to admit they need help and are bold enough to seek it. I try to let all of our employees know that **THERE ARE NO STUPID QUESTIONS!** Do not hesitate to seek advice."

The great part about being in the position to receive the President's Award is that you've got lots of highlights and memorable moments to recall. Royce

began, "The Gasparilla Inn is a favorite retreat for former President George Bush. He has been here three times as the guest of the owner, Mr. Bayard Sharp, since I've been here. The first time was while he was still President. They flew in on the Presidential helicopter and landed on the 4th and 5th fairways. The helicopters were so heavy they left 6-inch deep indentations in the turf. I guess we can overlook that, considering who it was."

"The security was incredible in advance of the visit and while the President was there. There were even sharpshooters on top of the pro shop. Every morning at 7 a.m., he would jog the perimeter of the course. During his stay, he would spend half the day playing golf and the other half fishing. Mr. Bush was very nice and I was able to have my picture taken with him."

"Another of my fondest memories was during my stay at Seminole Lake C.C. We hosted the LPGA's Orange Blossom Classic three times. The Classic was one the early tournaments for the LPGA. It was a fun experience. And now, I have the pleasure of the great feeling that comes with being associated with the other recipients of the President's Award. I am privileged to be part of this group. It has been a very fast 28 years, 24 of which have been as a Superintendent."

Royce Stewart has left his indelible mark on those who know him best by setting an example worthy of following. He is a man of integrity, who has demonstrated that actions, indeed, speak louder than words.

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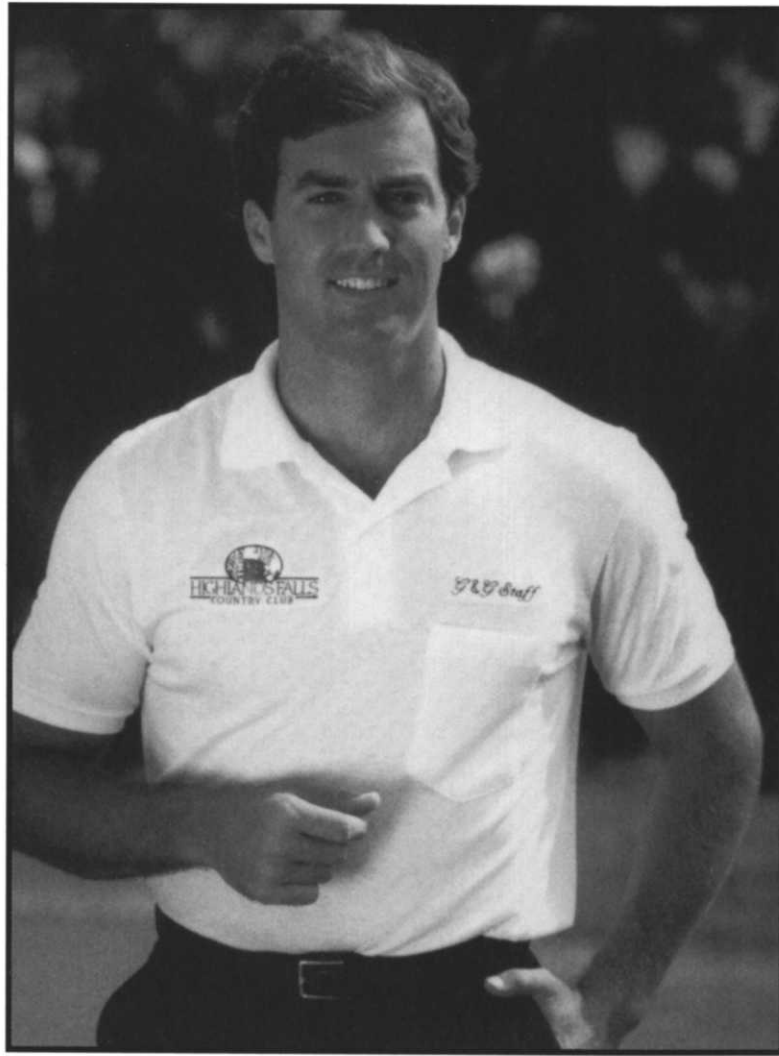
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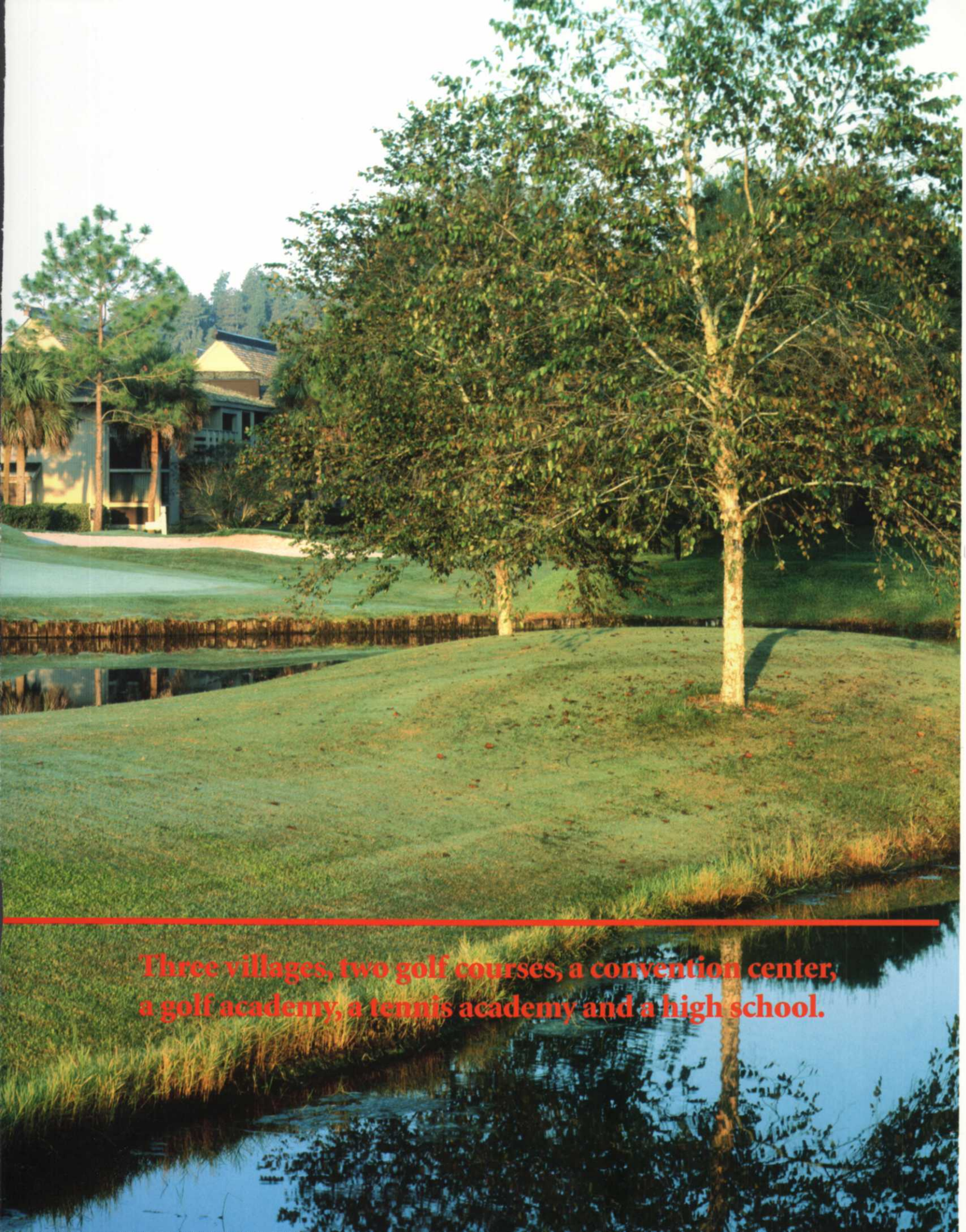
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A photograph of a golf course clubhouse and green with a pond in the foreground. The clubhouse is a large, light-colored building with a dark roof and several palm trees in front of it. A green is visible in the middle ground, and a pond with a wooden retaining wall is in the foreground. The word "Saddlebrook" is written in large, red, serif font across the bottom of the image.

# Saddlebrook

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**Three villages, two golf courses, a convention center,  
a golf academy, a tennis academy and a high school.**





Palmer Course. Aquatic plants border the water hazard on the 9th hole.

## Saddlebrook Golf & Tennis Resort

### *It's Mr. Rogers' Neighborhood*

BY JOEL D. JACKSON, CGCS

Our Mr. Rogers' neighborhood is a 490-acre golf and tennis resort just northeast of Tampa. It consists of three residential villages, two golf courses, a convention center, a golf academy, a tennis academy, and a high school!

If that isn't enough of a challenge, Chuck Rogers, CGCS, is currently serving as president of The Florida Turfgrass Association. He is also the immediate past president of the Ridge Chapter of the Florida Golf Course Superintendents Association and he serves on the Southwest Florida Water Management District's Green Industry's Advisory Committee.

Chuck's title, Director of Grounds, is an indication of a direction he sees in the future for more superintendents. "I'm doing a lot more develop-

ment work now than ever before. If you are at a resort or real estate development-type course, you really need to get to know the contractors, environmentalists, regulators, and water agency people in your area. You need to establish a good working rapport with them to help them do their jobs correctly and to help your own project function smoothly. Don't let anyone tell you it isn't a political world out there! I'm dealing with all of these folks on a pretty regular basis. Growing grass has become just one of many functions required of a modern superintendent."

With all the large-scale and long-range planning involved at the resort, Chuck relies on his department managers to carry out the vital daily routine to make the resort successful and keep it looking beautiful. "Behind the scenes we have Sue Morrison, our office manager, who keeps me or-

PHOTOGRAPHY  
BY  
DAN ZELAZEK

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*Saddlebrook Course. Pampas grass and pilings accent the first tee.*

## *Built in a cypress bayhead*

**‘We are the world headquarters for the Arnold Palmer Golf Academy ...’**

ganized and keeps the necessary paperwork flowing. Dick Gamelin, shop manager, oversees five mechanics to keep our fleet of vehicles and equipment in operation. Out where the green grass grows and the azaleas bloom, we have Golf Course Manager Al Schram and Landscape Manager Cecil Douberly. These folks do a great job.”

“Saddlebrook is a very unique resort. It was built in a cypress bayhead long before wetland regulations were in existence. But our owner, Tom Dempsey, and our management are committed to being an environmentally-friendly operation. We take daily piezometer measurements of the sub-surface water and also record pond

levels and outflow. We are on a total integrated pest management program which is quite challenging because of the severe year-round mole cricket pressure. There is a shopping center just down the road which is lighted all night. This attracts the mole crickets to the area and they find open pasture land next door. From there it is just a short flight to our bermudagrass turf. Like I said, it is a challenge!”

“The resort is also unique in that we are host to two world class sports academies. We are the world headquarters for the Arnold Palmer Golf Academy and home of the Hopman Tennis Academy.

“Because of the fairly large number of students who attend these academies on a year-round basis when not in tournaments, we have built a fully accredited high school for about 70 students. When not training they attend classes, and when

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## Both courses take advantage of the wetland topography and offer spectacular target golf layouts

they are on the road they submit and receive lessons via a computer network. We expect the enrollment could grow to about 150 in the future.”

As mentioned earlier, the resort consists of three villages. The Fairway Village is a section of about seventy private homes. The Lakeside Village is a section of privately owned condominiums which are sometimes placed in the rental pool by the owners when they are out of state.

The Walking Village is also a section of condominiums clustered about the Convention Center. It functions like a hotel, and as the name implies all the resorts amenities are within walking distance for the guest. The landscaping for all of these areas is performed under the management of Chuck and Cecil.

Chuck and Al Schram team up for the management of the Saddlebrook and Palmer Golf Courses and the Arnold Palmer Golf Academy teaching facility. The Saddlebrook Course was designed



Saddlebrook Course. The 18th green sports a fountain and a unique application of railroad ties.

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and built by Dean Refram in 1976. Harvey Jones added an additional nine holes, and in 1985, the Palmer Design Group added another nine holes to complete the Palmer Course and made minor modifications to the other 27 holes.

Both courses take advantage of the wetland topography and offer spectacular target golf layouts. The original Tifgreen 328 greens are on a program of rebuilding and replacement with Tifdwarf. That program may be accelerated by the request for lower cutting heights. This year on the Saddlebrook Course the greens will be overseeded with a blend of *Poa trivialis* and fescue. The Palmer course greens will remain in perennial ryegrass this winter. The Tifway 419 tees, fairways, and greens slopes will also be overseeded with perennial ryegrass. The roughs will not be seeded.

"The mowing program for our greens consists of using walking mowers as much as possible in what I call the "seed-ing season", Chuck explained. "On weekends and on shotgun tournament days, we have to park the walking mowers and use triplex mowers because of the time element. Once we get through transition, we generally use triplex mowers all summer."

When asked how the overseeded fairways were maintained at a resort course, Chuck replied, "We normally use a Jacobsen HF-15 and it works pretty well for us. Sometimes we have to mow and then drag clippings. However, because of our soil profile, we sometimes have to revert to using smaller National mowers. We have two Nationals and we're trying to get two more this year. When we get really wet, it is almost impossible to put anything out there on the turf. Fortunately, we only have about forty acres of fairway to maintain."

"Without a doubt, one of our most difficult challenges is managing and grooming turf on these heavy clay soils. We have developed a pretty intense growth regulator program to help ease the mowing pressure, especially during wet periods. We have been using Cutless for several years now, and we are also testing and using Primo to find what works best for our situation."



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## Chuck Rogers, CGCS

**Education** - Kennesaw College; Certified Golf Course Superintendent since 1986.

**Professional Affiliations** - President of The Florida Turfgrass Association; Past President of the Ridge GCSA; member of West Coast GCSA; member of the GCSAA.

**Previous Employment** - Georgia: Cherokee Town and Country Club; Oklahoma: Ponca City C.C.; Florida: John's Island C.C.(the Adam Yurigan years); Sun Air G.C.; Grenelefe; Saddlebrook Golf & Tennis Club.

**Family** - Wife, Sharon; Daughter, Deena(14 years); Son, Chris(12 yrs).

**Hobbies and Interests** - Golf when possible. Going to the beach. Not much free time lately!



Palmer Course. A creek meanders along the 7th hole.

*'Show me what you want, and stand back!'*

Improvements and projects are an integral part of any operation and Saddlebrook is no exception.

"We are in a long-range plan to rebuild and replant the greens with Tifdwarf. In addition to that, we are rebuilding many of the wooden headwalls at some of the greens, and we are going to be putting in concrete cart paths as well. In fact, it was one of these projects that gave me one of my most satisfying moments in the

business."

"We were having a problem with cart damage to the landscape and traffic congestion around the

cart staging area which could impact several guest areas including the pool. The owners had a plan to widen and reroute some of the pathways, but they balked when they ran into a couple of large oaks that interfered with the plan. They said, 'You can't move those trees!'. I said, 'Show me what you want, and stand back!'

Two days later we had a crane in there. We root pruned the trees and moved them out of the way."

"They still haven't gotten over that one! The really neat thing about it was that it opened up their eyes to the potential for other improvements that they had dismissed. They didn't realize what could be accomplished and how flexible we could be. Because of today's regulations, we must maximize the use of our land. I am pleased that we were able to react and deliver in a way that has made the impossible seem possible for future planning."

"Besides the satisfaction on the job, I really enjoy my involvement with the FTGA and the Ridge Chapter. In the FTGA, we address large issues that have statewide impact for the industry.



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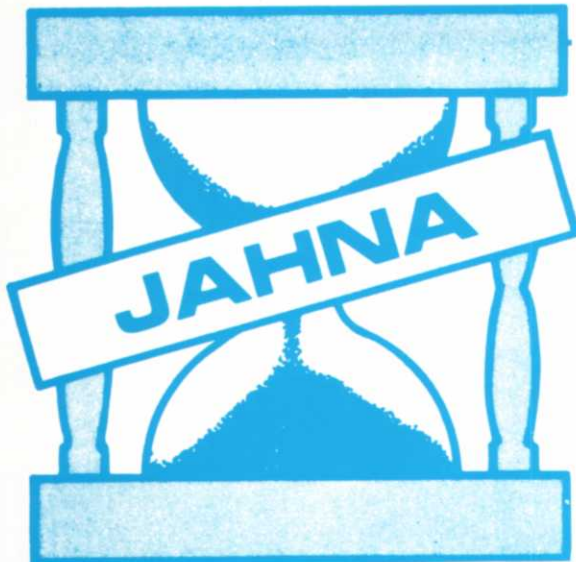
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But, I really get a lot of satisfaction meeting with a small group of my peers on a monthly basis and focusing on common everyday problems and helping each other out. That is the heart and soul of our business as far as I am concerned."

How does one become a Director of Grounds, able to pop mighty oak trees in and out of the ground at will? Well, you could have had a father who built and managed officer's clubs while in the military. After he retired, maybe he might have helped to develop the Cherokee Town and Country Club in Atlanta. And just maybe, he might have gotten you a summer job on the golf course while you were on break from Kennesaw College. That is exactly what happened to Chuck!

"Steve Wilcoxon was the superintendent at Cherokee and a good friend of my dad's. I worked for Steve for a couple of summers, and during my third year break, he moved back to Oklahoma to take the superintendent position at the Ponca City Country Club. I was twenty or twenty-one and looking for a career so, I joined Steve in Ponca City and spent two years learning the basics of turfgrass. He could be a real son of a gun, but he was a master at getting things done. He was a model of good work ethics and drive, and he taught me how to prioritize my workload."

"I returned to Florida and took a job at John's Island during the Adam Yurigan years. He was a most inquisitive man, and he taught me that there may be more than one solution or answer to a problem. He was a former golf professional, and I learned how a superintendent needs to be able to communicate with the owners and members. I definitely learned a lot about public relations from Adam."

"I then did a short stint at Sun Air G.C. in Haines City before moving on to work with Paul Hickman at Grenelefe. Paul was the Director of Grounds, and I became his Golf Course Manager. Under Paul's direction I fine-tuned my Florida turfgrass knowledge and took it to another level. He guided me through the steps necessary to manage a multi-course resort operation. I cut my teeth on planning and organizing while working with Paul."

"Then there are fellows like Dave

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For the ultimate in maneuverability and versatility, the Kubota F-Series diesel front mower offers hydrostatic transmission and is available with 24 HP (F2400) and 20 HP (F2100) with four-wheel drive and front differential lock. A fuel-efficient 2WD 20 HP (F2100E) front mower is also available.

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## 'Get your hands dirty'



Superintendent Al Schram oversees a bunker excavation project.

*Understand  
that this  
job is not  
just  
growing  
grass!*

Barnes and Mike Ayers who have been a wealth of information on technical matters and business management. They grew up in the G.C. Horn days of expanding turf-grass education. It is guys like these and my peers in the superintendent associations that keep me on the cutting edge of what's happening in today's turf industry. All of these people have had a very positive influence on me, and I am grateful for their help along the way."

And for those out there who would aspire to become a superintendent, Chuck had these words of welcome and warning. "Be ready to put in a lot of hours! Understand that this job is not just growing grass! If you think this job will give you easy access to play golf, think again. I get that from guys all the

time. Sometimes, playing golf is the last thing you'll have time to do. Learn how to be a good sprayman. Get your hands dirty. I have to laugh at some of the kids who come out of school and tell me they're going to put in a year with me and then move on to a superintendent's job somewhere.

They need more hands-on experience and a good taste of the real world before becoming a head superintendent."

The phone rang, and Chuck apologized for having to cut our interview short, but he was needed at another meeting involving future plans for Saddlebrook. Plans that would mean making more changes to Mr. Rogers' neighborhood.

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*The Saddlebrook Resort is the world headquarters for the Arnold Palmer Golf Academy.*

## Saddlebrook Golf & Tennis Resort

**Location** - Wesley Chapel, Florida

**Owner** - Tom Dempsey

**Playing Policies** - Private. Resort guests. Some public play in off season.

**Management** - General manager, Dick Boehning. Golf Professional, Neil Postlethwait.

**Designed by** - Saddlebrook course by Dean Refram in 1976, Palmer course by Harvey Jones(9 holes) and Palmer Design group(final 9 holes plus modifications to entire complex completed in 1985).

**Construction** - Dean Refram

**Number of holes** - 36 plus World Headquarters for the Arnold Palmer Golf Academy.

**Tees** - 6 acres in Tifway 419. Height of cut-1/2 inch. Overseeded with perennial rye.

**Greens** - 4 acres. Average size 6,000 sq. ft.. Thirty-three in Tifgreen 328. Three in Tifdwarf. Height of cut-5/32 inch or lower. Overseeding-Saddlebrook Course greens with *Poa trivialis* and *fescue* blend for 1993-94 season. Palmer Course greens with perennial rye.

**Fairways** - 40 acres in Tifway 419. Height of cut-1/2 inch. Overseeded with perennial rye.

**Roughs** - 100 acres in Tifway 419. Overseeding-none.

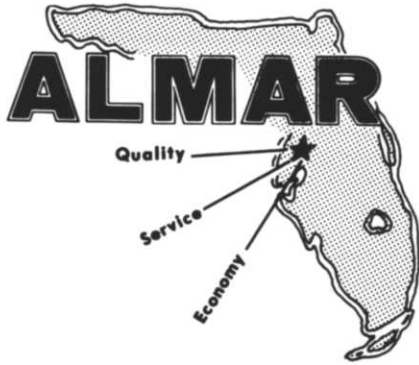
**Irrigation System** - Water sources include surface ponds and lakes, wells, and effluent.

**Four pumping stations** - Toro VT II and Varitime 4000 control systems.

**Staff** - Director of Grounds, Chuck Rogers,CGCS; Golf Course Manager, Al Schram; Landscape Manager, Cecil Douberly; Shop Manager, Dick Gamelin; Office Manager, Sue Morrison.

**Crew** - Golf Course Operations-Currently, 15 full-time and 4 part-time. Landscape Operations, 32.

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## ACSP Water Conservation



# Making water conservation an everyday practice

BY TOM BENEFIELD, CGCS

Every living organism, plant and animal is wholly-dependent on water. No other aspect of daily survival of life is as important as the need for this precious resource.

One needs only to look at the bleak conditions of drought-ravaged parts of the globe to understand the unique interwoven relationship between water, life and death.

It is through this knowledge that we gain an appreciation for the concept of water conservation. Our country has become the advanced civilization we call home because of our abundant fresh water supply and our ability to use it. If our country is to continue prospering, it will

be because we have learned to develop and wisely use this resource many take for granted.

Water conservation means using water wisely.

Even in places like South Florida, home to one of the world's greatest wetlands, we find a pressing need to utilize and develop an attitude of conservation. With the recent deluges of Tropical Storm Gordon and the closing of golf courses being for prolonged periods of time due to inundation of rain, it is difficult to maintain focus on the conservation message.

However, one only needs to look back a few short years to the droughts of 1989, 1990 and 1991 to see that from a histori-

cal perspective, what we are now experiencing will be viewed as a brief moment in time. With the addition of a thousand people a day to this state, using 400 gallons per day, we will need an additional one and a half billion gallons of water per day just for the newcomers.

One day soon, we will again be living on the edge of available water resources. Couple this with a direct correlation of less available water recharge and collection basins acreage and you can understand the need for starting now to prepare for tomorrow.

With society's increased need for top-grade drinking water comes the realization that some water usage of our culture will be forced to adjust. Along with this

## ACSP: Part IV

In Part 4 of this series on the Audubon Cooperative Sanctuary Program for Golf Courses, ideas for fulfilling the *Water Conservation* category are presented.

- ✓ Environmental Planning
- ✓ Member/Public Involvement
- ✓ Wildlife & Habitat Management
- ✓ **Water Conservation**
  - ❑ Water Quality Management
  - ❑ Integrated Pest Management

adjustment will also be large-scale acceptance and usage of reclaimed wastewater. The goal is to save high-quality ground water resources for usage by the masses.

What this leads to is a shrinking of the water resource pie we currently use for irrigation. When the pie shrinks, we must turn inward to cope and deal with the problems encountered by managing turf under different attitudes.

Most of us practice some aspect of conservation on a daily basis. The use of computerized irrigation systems, utilizing weather stations, installing moisture sensors or automatic pump shutdown switches in the event of significant rainfall are all excellent examples of water conservation.

Each and every day that we make an analysis of the golf course to determine the irrigation needs, we are not only practicing sound turf management principals, but subconsciously we are also applying conservation measures.

We know conservation will be a major part of golf course life in the coming years. Our goal at this point should be to work diligently with the water agencies to position our industry at a sustainable degree of certainty for tomorrow.

## Irrigation Practices



*Irrigation weather station monitors conditions and adjusts run times.*

## Water Conservation and healthy turf are compatible

BY MATT TAYLOR

*Assistant Golf Course Superintendent  
Collier's Reserve Country Club*

At Collier's Reserve, water conservation is a top priority. Beginning with the irrigation system design, selecting the best equipment available, and controlling water frequency, we are intent on maximum efficiency and minimum energy use and maintenance, as well as optimum water conservation.

Incorporating sound Integrated Plant Management (IPM) and agronomic practices, we keep a healthy turf, which translates into water conservation.

### **Irrigation System Design Golf Course and Common Grounds**

The irrigation system at Collier's Reserve is a state-of-the-art, computerized prescription irrigation program and is controlled through a weather station.

Run times are calculated daily by the weather station which monitors and compares evapotranspiration (ET) rates and automatically sets each head's run time for that day. The computer program allows each head on the golf course to be manually fine tuned for irrigation cycles if adjustments are needed for wet or dry areas on the course, and delivers only the amount of water needed, where it's



needed. This keeps the turf healthier and results in water and energy conservation.

The system is a low-volume water delivery system. Its reduced water pressure cuts down on wind drift, misting and possible irrigation line breaks. Sprinkler heads throughout the course were individually staked to insure maximum coverage while avoiding throwing water into native plant areas, pine tree beds, preserves and lakes. Part- and half-circle heads throw irrigation water from the outside of the roughs to the inside of the fairways.

Historically, fairway irrigation designs would place heads in the middle of the fairways with water patterns throwing to the outside. The initial cost of a system like Collier's Reserve's is greater in design and construction, but the finished product produces exact coverage on the target turf areas.

At Collier's, we added 250 irrigation heads to the original design, at an approximate additional cost of \$120,000. However, we will realize a 20% reduction in water and energy costs which will reap tangible and intangible benefits.

Projected pumping costs for both pumpstations combined, in 1995, is approximately \$16,000. Off-peak pumping contributes to this low figure.

### Greens and tees

Greens heads are individually set and controlled which allows heads to irrigate in varying amounts, depending on slopes or low areas on the greens. All heads are half-circles, or adjustable, and irrigate only the greens. This is a benefit because you do not irrigate greens' slopes or approaches when watering-in a product or during the normal irrigation cycle.

The tee complexes are designed to support native grasses on three sides of the tee slopes and turfgrass on the fourth side. Cost savings are realized in maintenance and water because the native grasses do not require irrigation or hand labor — except to pull the few weeds which emerge through the tight canopy of native grasses.

Irrigation heads on the tee tops are more site specific and smaller because they do not irrigate large areas, such as tee

slopes, which require larger heads. Again, we realize water and energy savings.

### Equipment – Pumps

The highest quality premium efficiency pump motor with variable frequency drive (VFD) was selected to run the irrigation system. The pumps are 2% more efficient than any other pump available at that time. Because the property is separated by the Cocohatchee River, two pump houses were built; one on each side of the river.

Twin, premium-efficiency motors, driven by VFD's were installed in each pump house.

The VFD's expend only the energy required to meet the demands of the pumps. For example; if only 40 GPM (gallons per minute) is demanded, the VFD supplies only the energy needed to provide 40 GPM. We have already seen reduced costs due to energysavings from efficient irrigation pumps.

### Irrigation Frequency

During most of the year, we water every other day, except greens. If weather conditions are favorable (i.e. rain, cool weather) we may skip several irrigation cycles. There is no set schedule for watering greens. Greens are checked daily by the Integrated Plant Management (IPM) Specialist, the Cup Cutter, and myself. We check moisture, root structure, etc. When watering is done on the greens, we water deeply enough to wet the entire root zone. We also monitor and hand water any "hot spots" on the greens on a daily basis. Our goal is to have 100 non-irrigation days per year at Collier's Reserve.

### Other Irrigation

Newly-planted trees and native vegetation on the golf course and common grounds have low volume drip irrigation which will be removed when the new plantings are fully established.

### IPM and cultural practices

At Collier's Reserve, we follow specific Integrated Plant Management (IPM) guidelines. Coupled with sound agronomic practices, we strive to produce the

healthiest turf possible. A strong healthy turf will by itself greatly conserve water.

By controlling weeds, pests, disease, and using the proper fertility levels, you increase the turf's vigor.

We control the cart traffic which helps eliminate turf compaction on the fairways and roughs. When compaction does occur, aerification of the turf helps restore it. We have a testing program schedule for soil, grass tissue and our irrigation pond water quality.

Acid injection helps control high water pH and bicarbonate levels and can increase the efficiency of our irrigation water.

Water conservation must start with the pump stations and be carried through by checking every sprinkler head to ensure a properly working system.

Past routines of watering every other night or sometimes every night to keep the golf course green "wall to wall" have been reevaluated. We may let the turf go unwatered one more night if it appears to be on the border of needing water; thus begins true water conservation.

You not only conserve water, energy and wear and tear on your irrigation system, but will strengthen the root systems on the turfgrass plants.

Caution: If you let the soil become hydrophobic, you will need excessive water to restore proper or desired soil moisture levels.

### Summary

Not only is it wise to have a state-of-the-art irrigation system with the hardware and software to support it, it must be a well-managed and maintained system. Understanding the philosophy of IPM and water conservation principals are essential for a successful water conservation program.

Although a state-of-the-art irrigation system may initially cost more, with the proper management, these extra costs will eventually be recovered. Combining a modern, well-designed irrigation system, and using sound IPM and agronomic practices, you can be assured of a successful water conservation program for your golf course.

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<b>REEL TO BEDKNIFE ADJUSTMENT</b>	Reel is adjusted to bedknife with precision screw-type adjusters. Stainless steel and sintered bronze components.												
<b>REAR ROLLER</b>	3.5" (9 cm) diameter, heavy duty rear roller with bearings and seals. Roller bearings are greased through protected fittings on shaft ends. Steel roller has greaseable tapered roller bearings with double lip seal. Zinc plate shaft for long, trouble-free service in corrosive/high moisture environments.												
<b>HEIGHT OF CUT (HOC) ADJUSTMENT</b>	Heavy duty casting supports on either end of roller are adjustable for different HOC ranges. Supports locked in place on stainless steel shaft with two self centering steel nuts.												
<b>HEIGHT OF CUT &amp; CLIP FREQUENCY</b>	<table border="1"> <thead> <tr> <th></th> <th>5 Blade Cutting Unit</th> <th>7 Blade Cutting Unit</th> <th>11 Blade Cutting Unit</th> </tr> </thead> <tbody> <tr> <td>Height of Cut range:</td> <td>1 – 4" (25 – 102 mm)</td> <td>1/2 – 2" (12.7 – 51 mm)</td> <td>3/8 – 1" (9.5 – 25 mm)</td> </tr> <tr> <td>Clip Frequency (adjustable):</td> <td>0.176" clip per mph (4.47 mm per 1.609 km/h)</td> <td>0.126" clip per mph (3.2 mm per 1.609 km/h)</td> <td>0.080" clip per mph (2.03 mm per 1.609 km/h)</td> </tr> </tbody> </table> <p>Multiply clip by operating speed. All @ 1200 rpm maximum reel speed.</p>		5 Blade Cutting Unit	7 Blade Cutting Unit	11 Blade Cutting Unit	Height of Cut range:	1 – 4" (25 – 102 mm)	1/2 – 2" (12.7 – 51 mm)	3/8 – 1" (9.5 – 25 mm)	Clip Frequency (adjustable):	0.176" clip per mph (4.47 mm per 1.609 km/h)	0.126" clip per mph (3.2 mm per 1.609 km/h)	0.080" clip per mph (2.03 mm per 1.609 km/h)
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Width of Cut:	29.5" (75 cm)	83" (211 cm)	110" (279 cm)	137" (348 cm)									
<b>CUTTING CAPACITY</b>	Up to 10.5 acres (4.25 hectares) per hour maximum at 7.5 mph (12 km/h); assumes no overlap or reduction due to turns, stops, etc.												
THATCHING REELS													
<b>THATCHING UNITS</b>	Model 03730: left, 2 required per machine. Model 03732: right, 3 required per machine. Skids are included with each unit. The fixed head mount kit is recommended to facilitate the mounting of thatching reels.												
<b>THATCHING WIDTH</b>	Effective width per unit — 27" (68.5 cm); overall width of set of 5 units — 134" (340 cm).												
<b>PENETRATION DEPTH</b>	Infinitely variable through rear roller up to a maximum depth of 1.12" (28 mm).												
<b>REEL CONSTRUCTION</b>	Reel diameter: 9" (23 cm). Hardened steel blades are .105" (2.7 mm) thick. Spacing between blades — 1.25" (31.8 mm).												

REELMASTER 4500-D ACCESSORY MATRIX						
	5 Blade Cutting Units Model 03752/L Model 03753/R	7 Blade Cutting Units Model 03754/L Model 03756/R	11 Blade Cutting Units Model 03741/L Model 03751/R	Thatching Reels Model 03730/L Model 03732/R	Cruise Control Kit Model 03770	4-Post Roll Over Protective Structure
2 Wheel Drive Traction Unit, Model 03702	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
4 Wheel Drive Traction Unit, Model 03704	Opt.	Opt.	Opt.	Opt.	Opt.	Std.
Flotation Mounting Kit (5), Model 03760	Opt.	Opt.	Opt.	Opt.	—	—
Fixed Head Mount Kit (5), Model 03762	Opt.	Opt.	Opt.	Opt.	—	—
Full Front Roller Kit (5), Model 03742	Opt.	Opt.	Opt.	—	—	—
Wiehle Front Roller Kit (5), Model 03740	Opt.	Opt.	Opt.	—	—	—
Side Skid Kit (5), Model 03744	Opt.	Opt.	Opt.	Std.	—	—
Sectional Front Roller Kit (5), Model 03738	Opt.	Opt.	Opt.	—	—	—
Rear Roller Scraper Kit (1), P/N 59-6090	Opt.	Opt.	Opt.	—	—	—
Front Roller Scraper Kit (1), P/N 62-6220	Opt.	Opt.	Opt.	—	—	—

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## Superior Cutting Technology.

Several factors afford the 4500-D its reputation for superior cutting quality. Like equal cutting unit suspension. This means each reel places the same pressure on the turf, so there's no mismatch.



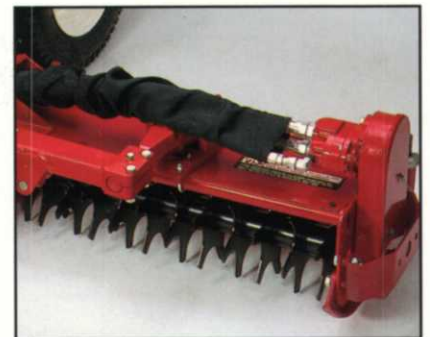
Toro's exclusive reel speed adjustment knob allows you to maintain a higher quality of cut over a variety of turf conditions. Only you know if the turf is wet, dry, short or high. So Toro gives you the ability to adjust for these and other factors.

You can infinitely adjust height of cut on both sides of the reel. Positive adjustments lock the roller into place and assure constant reel to bedknife positioning for an even cut your golfers will surely appreciate.



## Accessorize.

Customize your Reelmaster 4500-D with 5, 7 or 11 blade, fixed or floating cutting units. Other options include full, sectional or Wiehle rollers, thatching reels and cruise control.



# Reelmaster® 4500-D Specifications\*

2-WHEEL DRIVE, MODEL 03702, OR 4-WHEEL DRIVE, MODEL 03704 TRACTION UNITS																			
<b>ENGINE</b>	Mitsubishi, 4 cylinder, 4 cycle, liquid cooled diesel engine rated at 55 hp (41 kW); governed to 40 hp (30 kW) @ 2300 rpm. Displacement: 139 cu. in. (2278 cc). Compression ratio: 21:1. Oil capacity: 6.9 quart (6.5 liter); with replaceable spin-on filter. Heavy duty 3-phase air cleaner.																		
<b>RADIATOR AND OIL COOLER</b>	Full flow hydraulic oil cooler. Heavy duty radiator with 7-row staggered tube construction. Oil cooler swings away for cleaning access. Engine cooling system capacity: 3.7 gallons (14 liters). High efficiency 2-speed engine fan.																		
<b>FUEL SYSTEM/CAPACITY</b>	Rotary fuel injection pump with energized-to-run fuel flow and temperature controlled automatic timing advance. Replaceable spin-on fuel filter/water separator has built-in water sensor with front console warning to protect engine. Fuel capacity: 15 gallons (57 liters); No. 2 diesel fuel.																		
<b>FRAME CONSTRUCTION</b>	Chassis construction is precision welded high strength tubular steel.																		
<b>TIRES/WHEELS/PRESSURE</b>	Front: (2) 31 x 13.50-15, 4-ply high flotation turf tire with tubes on bead-lock wheels. Rear: (2) 23 x 10.50-12, 6-ply high flotation turf tires. Recommended tire pressure: 13 psi (90 kPa) – front; 15 psi (103 kPa) – rear.																		
<b>BRAKES</b>	Hand brake has mechanical interlock. Twin disc brakes for parking/emergency brake. Dynamic braking through closed-loop hydrostatic drive.																		
<b>STEERING</b>	Automotive-type full power steering.																		
<b>GROUND SPEED/CLEARANCE</b>	Mowing speed: 0-7.5 mph (12 km/h). Transport speed: 0-12.5 mph (20.1 km/h). Ground clearance: 7" (178 mm) at 1/2" (12 mm) height of cut measured at No. 1 cutting unit.																		
<b>TRACTION DRIVE</b>	<b>2 Wheel Drive:</b> Closed loop hydrostatic system driving industrial double planetary gear reduction front wheel drives. <b>4 Wheel Drive:</b> Closed loop hydrostatic system driving industrial double planetary gear reduction front wheel drives in parallel with two high torque wheel motors. Solenoid-operated selector valve.																		
<b>CONTROLS</b>	Foot operated traction pedal and front cutting unit latch release. Adjustable traction pedal stop. Ergonomically designed reel lift, on/off and reel speed adjustment controls. Special link allows simultaneous operation of controls during cross cutting applications. Backlap position has interlock to prevent chance reverse. Hand operated engine throttle and parking brake.																		
<b>GAUGES/DIAGNOSTICS</b>	Gauges: speedometer, fuel level, engine temperature, hour meter. Diagnostic pressure test ports: traction forward/reverse; cutting, lift and steer circuits; charge pressure, and counterbalance circuit. Warning systems (with light and alarm): low hydraulic oil level, hydraulic filter change required, low voltage indicator, high reservoir oil temperature, low engine oil pressure, water in the fuel, high engine temperature (override button allows unit to be moved short distances), air cleaner restriction.																		
<b>INTERLOCK SYSTEM</b>	Prevents engine starting unless parking brake is engaged, traction pedal is in neutral, and cutting units are disengaged. Seat switch. Low hydraulic oil level and engine high temperature protection system also prevent starting engine.																		
<b>ELECTRICAL FEATURES</b>	2 kW electric starter with 35 amp alternator. Heavy-duty, maintenance free, 12 volt, 65 amp-hour battery. Ignition switch, glow plug, push button, and voltage indicator light.																		
<b>SEAT</b>	Deluxe seat with armrests, adjustable backrest angle and suspension adjustable for operator's weight. (Seat belt standard on Model 03704.)																		
<b>OVERALL DIMENSIONS (approx.)</b>	<table border="1"> <thead> <tr> <th></th> <th>Height</th> <th>Length</th> <th>Wheelbase</th> <th>Wheel Tread</th> <th>Width</th> </tr> </thead> <tbody> <tr> <td><b>Model 03702:</b></td> <td>57" (145 cm)<sup>1</sup></td> <td>112" (284 cm)<sup>2</sup></td> <td>58" (145 cm)</td> <td>51" (130 cm)</td> <td>89" (227 cm)<sup>1</sup>/ 147" (374 cm)<sup>3</sup></td> </tr> <tr> <td><b>Model 03704:</b></td> <td>81" (207 cm) w/ROPS</td> <td>116" (295 cm)<sup>2</sup></td> <td>58" (147 cm)</td> <td>51.5" (131 cm)</td> <td>89" (227 cm)<sup>1</sup>/ 147" (374 cm)<sup>3</sup></td> </tr> </tbody> </table> <p><sup>1</sup>With cutting units raised; <sup>2</sup> with cutting units; <sup>3</sup> with cutting units lowered</p>		Height	Length	Wheelbase	Wheel Tread	Width	<b>Model 03702:</b>	57" (145 cm) <sup>1</sup>	112" (284 cm) <sup>2</sup>	58" (145 cm)	51" (130 cm)	89" (227 cm) <sup>1</sup> / 147" (374 cm) <sup>3</sup>	<b>Model 03704:</b>	81" (207 cm) w/ROPS	116" (295 cm) <sup>2</sup>	58" (147 cm)	51.5" (131 cm)	89" (227 cm) <sup>1</sup> / 147" (374 cm) <sup>3</sup>
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<b>WEIGHT</b>	<b>2-Wheel Drive:</b> 4,040 lbs. (1,832 kg) with 11 blade cutting units, baskets and full fluid levels. <b>4-Wheel Drive:</b> 4,360 lbs. (1,978 kg) with 11 blade cutting units, baskets and full fluid levels.																		
<b>WARRANTY</b>	One year limited warranty. Refer to the appropriate Operator's Manual for further details.																		
<b>CERTIFICATION</b>	Certified to meet the B71.4-1990 specifications of the American National Standards Institute's safety standards for riding mowers when equipped with rear ballast per operator's manual.																		
HYDRAULIC SYSTEM																			
<b>CUTTING UNIT DRIVE SYSTEM</b>	High efficiency fixed displacement pump. Filtration and cooling of the full cutting circuit flow for cool running, long life. Flow control system maintains constant reel speed regardless of cutting load. Reel speed is adjustable to permit matching clip length to ground speed while maintaining full engine power availability. Backlap capability. High torque toothed belt on reel drive.																		
<b>CUTTING UNIT LIFT SYSTEM</b>	Hydraulic lift system provides for simultaneous or independent lift control. Lift valve has automatic float position feature. Center three cutting units operate together; two wing units operate individually. Reels automatically shut off when raised. Mechanical transport locks may be released without leaving operator's seat. Single acting lift cylinders with air bleed screws.																		
<b>HYDRAULIC OIL RESERVOIR</b>	11 gallon (42 liter) capacity with large diameter fill cap with stainless steel strainer. Sight glass level indicator. Remote-mounted 40 micron replaceable breather element. Water collector/drain fitting. 125 micron suction screen. Internal baffle system. Oil level warning protection switch.																		
<b>HYDRAULIC FITTINGS</b>	Hydraulic system utilizes O-ring face seals at all connections.																		
<b>HYDRAULIC FILTRATION</b>	A single large spin-on hydraulic filter element. A filter change warning light is on the front console.																		
REELMASTER 5, 7 OR 11 BLADE CUTTING UNITS																			
<b>TYPE OF CUTTER</b>	Five 30" (76 cm) reels.																		
<b>CUTTING UNIT CONSTRUCTION</b>	Welded steel frame, welded reel with heavy duty, self aligning bearings. Precision machined cast iron bearing housings support reel. Bedbar and rear roller are isolation-mounted in rubber bushings. Adjustable deflector shields standard.																		
<b>REEL CONFIGURATION</b>	8" (20 cm) diameter; 5, 7 or 11 blade reels available. Heavy duty, all welded construction with hardened alloy steel blades.																		
<b>CUTTING UNIT SUSPENSION</b>	Patented cutting unit head using heavy duty U-joint provides precision mounting; choice of 1-axis or 2-axis cutting unit flotation. The fixed head, 1-axis flotation is suitable where ground contours are minimal. High strength forged alloy steel pivot with sealed needle bearings for all direction free flotation. Equal length lift arms act uniformly on all five cutting units. Counterbalance force is adjustable to match the cutting unit options installed and local conditions. Plated lift arm pivot and cylinder pins.																		

\*Specifications and design subject to change without notice.

# Irrigation Equipment

## *Irrigation equipment and sound water management practices*

BY SCOTT MORGAN

*Marketing Manager, Golf, TORO*

The golf course superintendent's responsibility is to use the least amount of water necessary to fulfill customer's minimum playability and aesthetic expectations, staying within budget and regulatory guidelines.

Golf course irrigation equipment manufacturers are tasked with supplying tools to help the superintendent satisfy this challenging responsibility. Irrigation equipment manufacturers strive to fulfill this commitment every day. Their focus may not be aimed directly at water conservation. Instead, manufacturers promote responsible water application indirectly through product development that is sensitive to the golf course superintendent's role.

Manufacturers perceive that golf course superintendents employ sound water management practices and superintendents have always wanted irrigation equipment manufacturers to support these intentions with appropriate products and services.

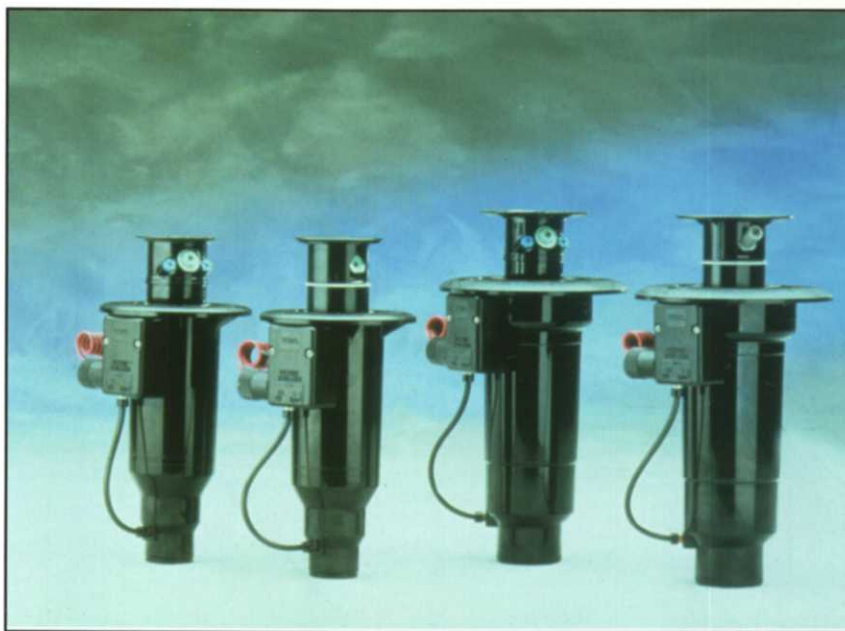
Simply stated, sound irrigation management is the application of the correct amount of water when and where it is needed.

What is the correct amount of water? The current standard in the industry is evapotranspiration (ET). ET is an agronomic measure of a plant's need for water due to evaporation and the plant's own transpiration. Irrigation equipment manufacturers have developed central control systems based entirely on ET.

These systems calculate the projected water need of plant

materials on a golf course based on ET, rainfall, plant type, soil types, soil compaction, terrain slope, geographic location and pH factor.

When do you apply the correct amount of water? We all know golf courses have very specific times when water can be applied. Generally, manual watering and syringing are the only daytime irrigation activities on a golf course.



*Modern sprinkler heads can conserve from 25 to 50% of their previous usage.*

The summer irrigation window for a typical golf course is eight to ten hours, which seems ample. However, if there are 1,200 sprinkler heads on a golf course with average sprinkler precipitation rates of approximately .7 inches per hour, average water demands of 40 gallons per minute per sprinkler, an ET replacement target of .21 inches per day, and a targeted water usage from the pump station of 1500 gallons per

minute, the absolute best you can do is a 10-hour watering window.

Because of these limitations, irrigation equipment manufacturers have loaded features into their control systems to support complex irrigation schedules.

Where do you apply the correct amount of water? Thirty years ago, certain manufacturers perceived that their customers wished to individually control each sprinkler head on their golf course. The valve-in-head sprinkler was created to allow the superintendent to manage every point of irrigation application.

Combined with control innovations such as solid-state field controllers and personal computer-driven central controllers,

*With continued focus on water distribution, dramatic percentage decreases will continue to occur*

valve-in-head sprinklers offer the most precise water applicator feasible at this time.

We may conclude that valve-in-head sprinklers, sophisticated scheduling features and ET-based central controllers are adequate tools to support sound water management. However, irrigation manufacturers feel there is ample room for technological innovation and improvement.

First and foremost, irrigation manufacturers understand that their products need to be easy to install. Sound water management cannot be supported by the latest technologies if those technologies are problematic to install. Irrigation manufacturers will continue to invest in radio technology, which eases installation problems and hastens system upgrades.

In fact, some manufacturers will search out or intensify strategic alliances with companies that already supply state-of-the-art radio solutions to other industries.

Second, even with a sophisticated central control system, sprinkler heads need to apply water evenly, causing manufacturers to continually improve water distribution. Assuming that a control system supplies adequate tools for sound irrigation practices, the most important component of an irrigation system is the sprinkler head.

For example, some manufacturers can now produce sprinklers with scheduling coefficients (the application rate multiplier used to insure that the area of a sprinkler's pattern that gets the least amount of water is sufficient to replace water consumed by ET) of 1.2. Scheduling coefficients of sprinklers have improved from an industry norm of 2.0 - 2.5 to a current industry norm of 1.3 - 1.5.

That means that golf courses that employ the latest sprinkler technology automatically conserve at least 25% (and up to 50%) of their previous water usage and reduce waste by 50%.

With continued focus on water distribution, dramatic percentage decreases will continue to occur.

Finally, central irrigation system software needs must be intuitive to the system user or the system will not fulfill its potential. Irrigation equipment manufacturers do not have intrinsic expertise in software development.

However, they do understand that superintendents have very specific control needs. The challenge before irrigation manufacturers today is to translate control needs into more understandable central software systems. New developments in central software will continue the progression toward a more consistent and intuitive user interface.

Editor's Note: The FGCSA does not endorse or promote any product or service. Articles and photographs by suppliers may be used from time to time merely to help cover a topic under discussion.

## Recycled Water Treated Effluent as an Irrigation Source

BY RON ANDREWS

*Grand Harbor*

Whether you are gearing up an irrigation system for a new golf course, trying to find another water source, or simply up for renewal on your consumptive use permits, it is likely that the subject of effluent irrigation will arise.

Treated sewage effluent, or reuse water as it is commonly known, is becoming available on a much wider scale than it has been in the past. Sewage plant operators are coming under much greater pressure to dispose of effluent water in the most environmentally appropriate manner.

Direct discharge to state bodies of water, long a common practice, is no longer a preferred choice. Plant operators are also finding mounting pressure on deep well injection disposal systems. Both of these methods have had the sling and arrows of pollution watch guards launched at them.

The two modern alternative disposal methods that are receiving the most attention are reuse as an irrigation source and the recharging of systems of artificially created wetlands linked to state water bodies.

Each of these methods has its advantages and both are likely to impact golf courses. For new golf course developments with home sites, this pressure to find better disposal methods will cause plant operators to force these communities to take back the treated effluent that is generated from the sewer tie-ins. This is one of the reasons Grand Harbor uses effluent water.

As more pressure comes on plant operators to dispose of treated effluent through irrigation re-use, they are naturally going to look to all properties with large consumptive uses. To many this means golf courses. Never mind that golf courses don't use the quantity of water that many people think they do.

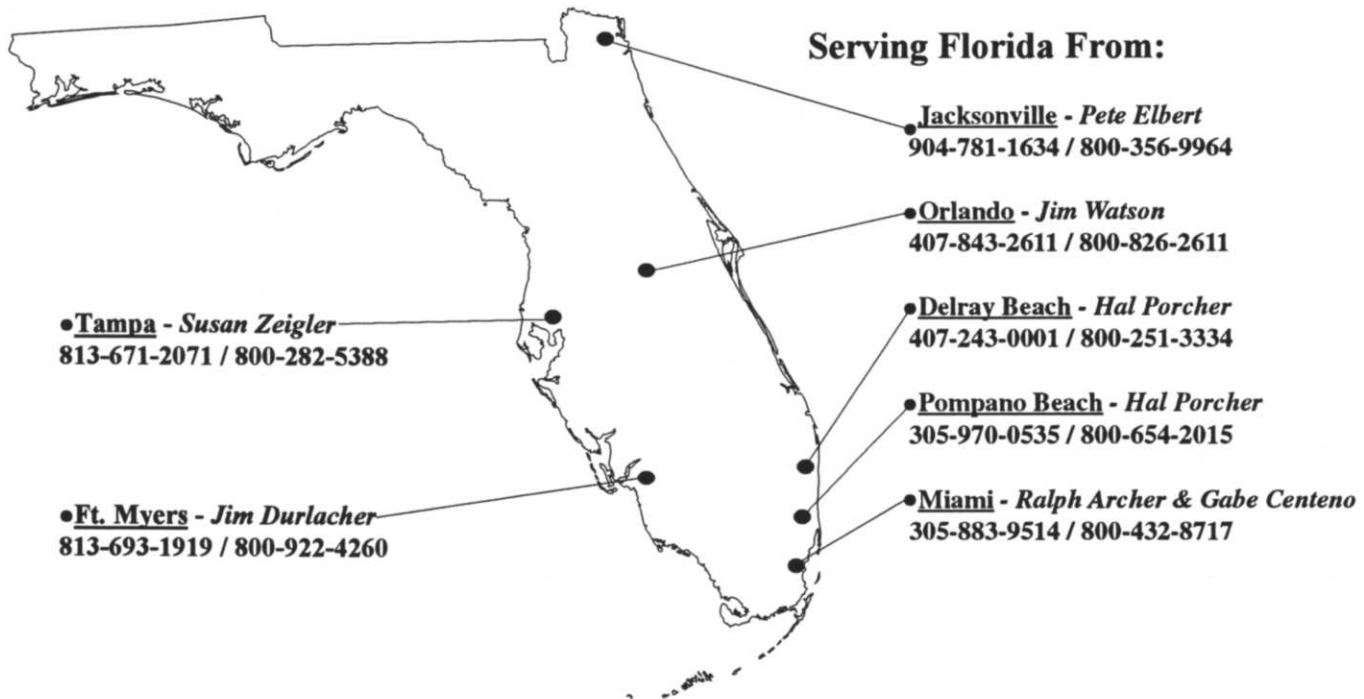
Also, do not expect plant operators to market their water as something that they need to dispose of. No, more likely it is now a valuable resource for which you should be willing to pay. Perhaps it is, but there are a lot of complicated issues when it comes to irrigating with effluent.

The intent of this article is to discuss these issues from the point of view of a golf course operation that has used effluent for several years.

The first thing you need to consider is what your water sources are now. You are a much better candidate for effluent irrigation if you are using a non-renewable or a potable water source as part of your irrigation programs. At Grand Harbor, the bulk of our irrigation water comes from a system of storm water treatment lakes and wetlands.

Such a system is already a highly efficient re-use strategy that

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carries the side benefit of providing a diverse habitat for many different species. However occasionally, we will enter a drought that is significant enough to lower our lake levels and impact our ability to irrigate from this source.

This is where effluent irrigation is most important. Without this resource, we would be forced to turn to our Floridan aquifer wells much sooner and more often. This is a second reason why during the permitting of Grand Harbor we were required to accept treated effluent.

However, most of the time, the storm water lake system has plenty of water and meets our needs nicely. Clearly, effluent would be a more valuable resource to a golf course that did not have such a strong first line source.

The quality of the effluent source available to you is also going to be important.

Talk to the plant manager. He or she will have a good idea who is contributing to their input stream and what level of treatment the plant is providing. Most plant managers can provide a good lab report on the irrigation suitability of the effluent leaving their plant. Failing that, obtain a sample and pay for an irrigation suitability analysis.

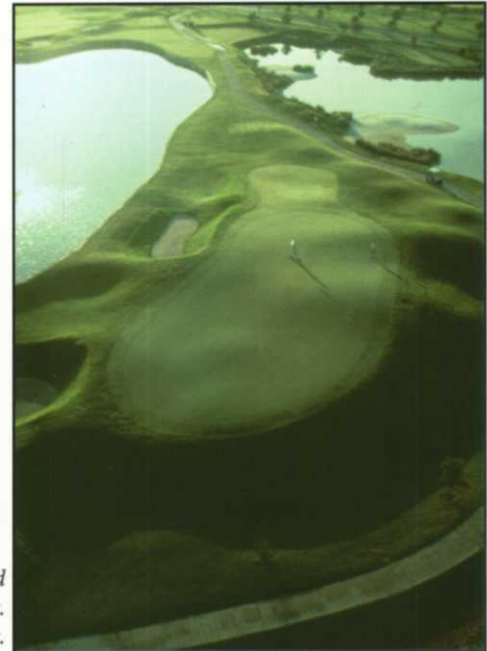
Test your other water sources while you are at it. For us, this process did a lot to dispel many of the myths of poor quality effluent water. The effluent we receive has a more desirable pH (6.4 - 6.9), lower total salts, lower sodium and bicarbonate than either of our other water sources.

The total nitrogen level is usually very near 10 ppm, which is 2.5 times higher than our storm water lakes. Phosphorus (p not P O ) levels are 4 - 6 ppm, or 30 times the level of our storm water lakes. These differences are contributory to a fertilizer program. However, it takes 16 inches of irrigation (0.04 inches/day) to provide 1/2 lb. N/1000 sq. ft. The same quantity of irrigation with effluent would provide 1/3 of a lb. per 1000 sq. ft. more than what irrigation with our storm water would provide.

These are not exactly fertigation levels, but they are significant, especially for the phosphorus. Minor elements are in a suitable range, but zinc (0.5 ppm) and

**People are concerned about where you are putting this water. We do not use it for clubhouse irrigation.**

*From behind Grand Harbor #7. Lined and walled effluent receiving lake to the right. Percolation pond in use of the left.*



boron (0.3 - 0.4 ppm) levels are somewhat elevated. We have removed zinc and boron as much as possible from our fertilizer sources and have not seen any build-up to date.

In short, we have not found quality to be a problem. It would be remiss of me to not at least mention the perception issues. People are concerned about where you are putting this water. We do not use it for clubhouse irrigation. Minimize over-spray to adjacent properties.

The treatment levels provided by most plants will kill the majority of potentially harmful bacteria or viruses that may be present. However, when this water leaves the plant, it looks potable, so you will need to provide warning signs.

If you are still considering effluent for irrigation purposes on your property, you now have to work out the storage problem. Most of us will not be lucky enough to have effluent delivered to us in a pressurized main that we can tap on demand.

In Florida, it may be possible to obtain a DER permit to store this water in on-site unlined lakes, as long as these lakes are used for irrigation. We elected not to pursue this route for a couple of reasons.

First, our concern was that a certain amount of water would leach away through the lake bottoms, especially during drought periods. Second, we were

concerned that the nutrient levels of the effluent, when added to our lakes, would give us greater difficulty with water quality and appearance issues in our freshwater lakes. Instead, we built a 2-acre lined lake that can fluctuate 6 ft. in level.

Adjacent to this lake, we constructed 1.5 acres of cleverly disguised percolation ponds to add to our storage and to increase our ability to dispose of excess effluent during rainy periods.

It was necessary to add aeration equipment to the storage lake to eliminate algae problems in the water. When we do not receive enough treated effluent, we have a high volume transfer pump that moves water from the storm water lakes to the lined lake. This adds about 8% to our cost of pumping this portion of our irrigation.

If the treated effluent is not available in sufficient quantity and the storm water lakes are getting too low, then we can free flow artesian water from the Floridan aquifer into this same lined lake. We have gained the significant advantage that we will not be leaching this well water away through the bottom of an unlined lake.????

This storage strategy has worked well for us and has helped deal with the reality that we have to receive effluent every day, whether we need it or not.

In fact, in Florida at least, I would say  
*Continued on Page 47*

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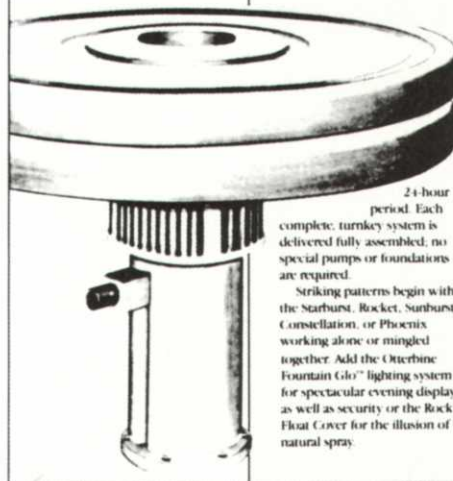
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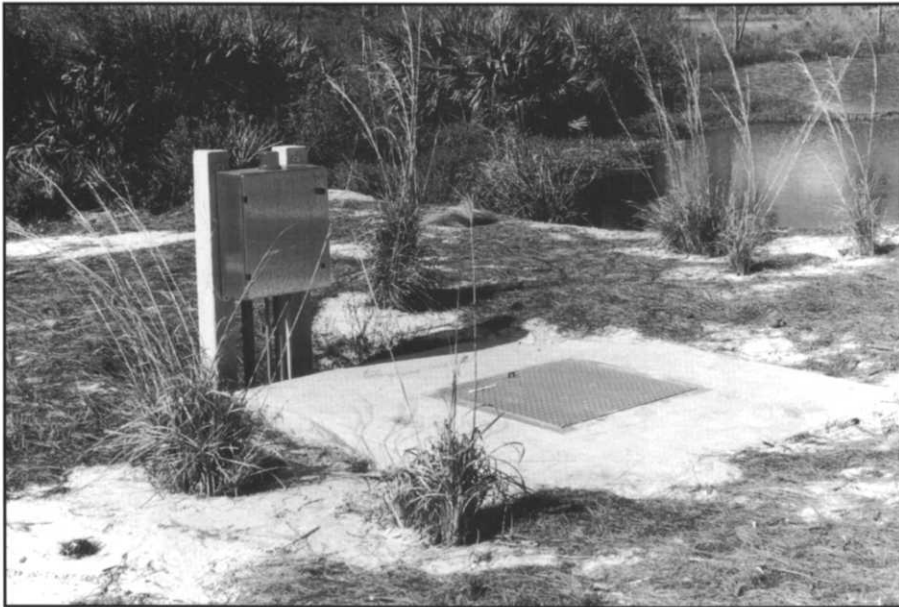
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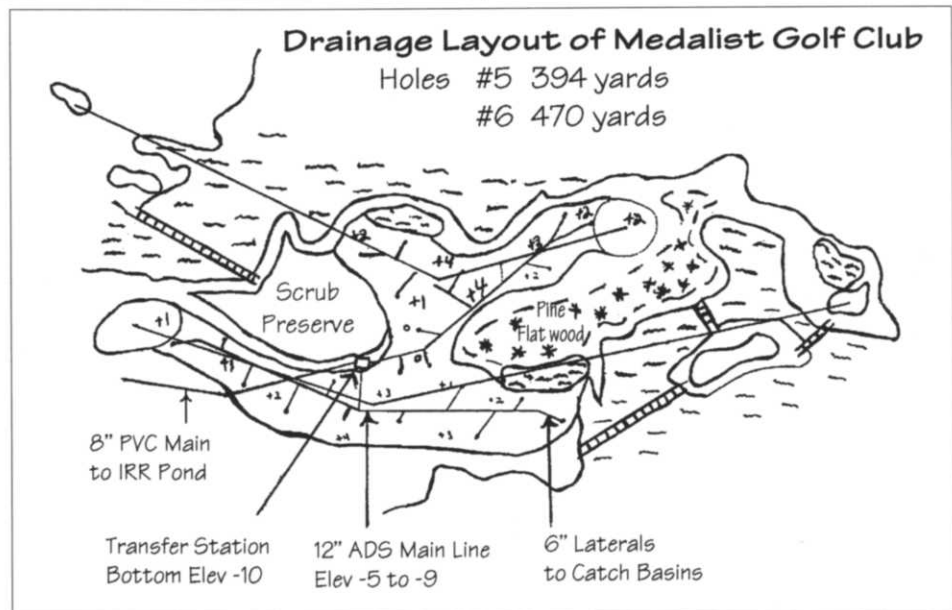
# Water Recapture and Re-use



#18 Medalist Golf Club. One of 11 lift stations.

Below, a diagram of drainage plan for holes 5 and 6 at the Medalist Club.

**It has been estimated that we've been recycling somewhere in the neighborhood of 200,000 to 300,000 gallons per watering cycle during grow-in.**



BY JASON MCCOY  
AND DANNY FORE

*Jason McCoy is Project Manager and Danny Fore is Golf Course Superintendent at the Medalist Golf Club in Hobe Sound*

The drainage system at the Medalist Golf Club in Hobe Sound, Florida, is one of the most elaborate efforts yet by Architect, Pete Dye. The system has evolved since its inception at Old Marsh Golf Club in Palm Beach County.

The system at the Medalist Club is a complete recycling of excess water in all grassed areas. The system contains 11

transfer stations strategically placed through the golf course. Each system consists of a 10-foot deep concrete vault with a 10 HP ABS submersible pump on a slide rail which is capable of 1500 GPM.

There are electronic float switches which operate the system on and off. Each system has a double check valve which in turn lets us connect each together with an 8" PVC main discharge line which flows to the 30 mil VLDPE lined irrigation holding pond.

It has been estimated that we've been recycling somewhere in the neighbor-

hood of 200,000 to 300,000 gallons per watering cycle during grow-in.

Each system is fed by a 12" N-12 ADS pipe-line with laterals to each basin in the turf. The irrigation system is also a vital entity to our drainage system. We have installed a Maxi V system with the new Eagle heads.

We have installed all part circle heads on fairways to keep any drift from getting into wetlands or upland buffers. With this type of irrigation heads, we feel we'll be able to retrieve as much as possible through our system.

# Effluent —

*from Page 44*

this is the most significant problem with using treated effluent for irrigation. We are relatively lucky in that we receive only slightly more treated effluent in the winter than we do the rest of the year.

Despite this, we still receive more water than we need for irrigation in the winter and less than we need in the hot dry months. We also receive too much during the rainy season.

Our ability to store a lot of water helps us match supply and demand and the percolation areas we built help even more. We linked the two golf course irrigation mainlines and this gives us more demand, and therefore better balance during these difficult periods.

Lately, we have added spray disposal areas that we can irrigate without impacting playability. Still, it is sometimes a challenge to use all they send. Our initial costs were quite high.

We paid for the construction of the lined lake, the transfer lines from the plant, and the pump to pump the water to the property.

In exchange, we were to receive the water free for a period of time, with a negotiation process to determine a fair price set at a future date.

The reality is; everybody's deal is different. That's the way life works.

Educate yourself about the issues and negotiate as strongly as your position will allow.

Your course will probably have to sign an agreement that will dictate that you must take a certain quantity daily. Keep that number small and your storage large. Despite the difficulties of using treated effluent as an irrigation source, we are happy to have it during drought years.

This year has been challenging though, as we have received 66 million gallons of effluent in the first 10 months, and it has been a very rainy year.

During September, October and November, we were blessed with over 30 inches of rainfall. Still, the difficulties have been manageable and are offset by the relatively high quality of the water and the less restrictive covenants about how and when you can use it.

Maybe it will be drier next year. 🌧️

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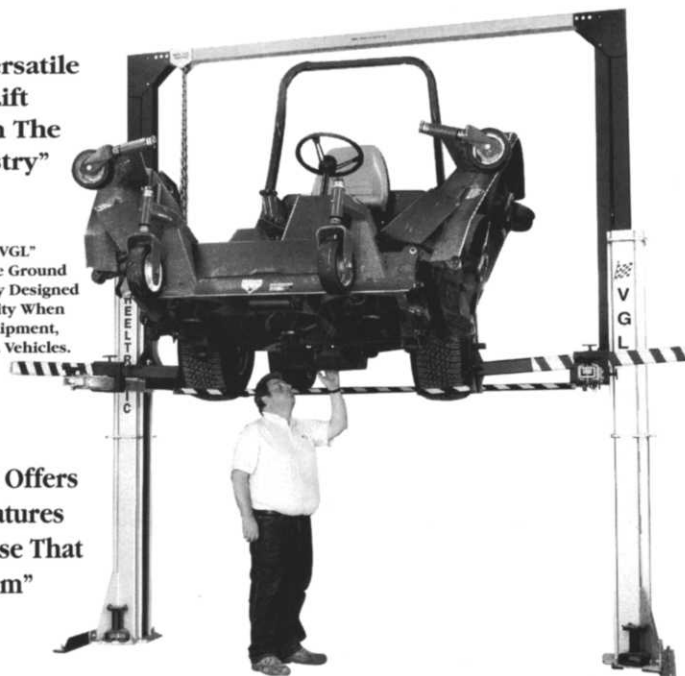
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# Stop wasting water by pouring it down the drain

BY SHELLY FOY

Have you ever thought about how much water you use daily just on flushing toilets, washing your hands, and taking a shower? Each time your toilet is flushed, you use 5 to 7 gallons of water, and the normal faucet flow is 3 to 5 gallons of water per minute (gpm).

The average flow rate for showerheads is 6.5 gpm, meaning a 10 minute shower would use 65 gallons of water. Did you know that a leaking toilet can use 50 - 100 gallons of water per day?

If your faucet is dripping at the rate of one drop per second, you can waste 2,700 gallons of water per year.

The National Energy Policy Act, signed by the President in 1992, addresses water conservation through fixture requirements. As of January 1, 1994, all manufacturers are required to meet the criteria listed below (*See table*).

What can you do to save water if you have old fixtures, manufactured before January 1, 1994?

- ◆ **Place a plastic bottle** in your toilet tank (dishwashing soap, juice bottles, soda bottle, etc..) Take the label off, fill with water, put the cap on and place in the tank. You can put a few stones in the bottle to weight it down. You may need to experiment with bottle size. SAVINGS: 1-2 gallons per flush.

- ◆ **Put a displacement bag** in your tank. They're available free

from some utilities or relatively inexpensive to buy at a hardware or plumbing store. Fill the bag with water and place it in the tank. SAVINGS: 1-2 gallons per flush.

- ◆ **Toilet Dams are plastic barriers** that isolate part of your tank so that the water in that section doesn't run out when you flush. Each dam can hold one gallon of water, and you can use 2 in a tank. They are also available at hardware and plumbing stores. SAVINGS: 1 gallon per flush.

By using any of these conservation methods, you can save 8-16 gallons of water per day, based on the average 8 flushes a day. Those numbers may not sound that impressive, but if you think about 56-112 gallons a week, or 2,900 -5,800 gallons a year, that's a pretty significant water savings.

And on a golf course, you can believe that your toilets are flushed more than 8 times a day. If 10,000 people were to try one of these water conservation tips, we could save 29 to 58 million gallons of water a year! Now, that's impressive.

For your older faucets which use 3-5 gallons of water per minute, you can reduce this by 50% if you attach a low-flow faucet aerator.

The aerator mixes air into the water that leaves the tap, so it may look like you're using more water, not less. Ask the hardware or plumbing stores about these aerators or other water saving devices they may have for faucets. ➡

Fixture	National Energy Act	Prior Florida Law *1	Most Existing Fixtures *2
Tank-type toilets	1.6 G/Flush	3.5 G/Flush	6.0 G/Flush
Urinals	1.0 G/Flush	N/A	2.0 G/Flush
Showerheads	2.5 GPM	3.0 GPM	6.5 GPM
Lavatory Faucets	2.0 GPM	3.0 GPM	5.0 GPM

\*1 Chapter 553 Florida Statutes

\*2 Maddaus, Water Conservation, AWWA, 1987

## Dear Friends of Turf Management:

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On December 10th, 1993, the EPA published its final rule to regulate methyl bromide as an ozone depleting chemical under the Clean Air Act. This rule schedules a complete phase-out of methyl bromide production and consumption on January 1, 2001.

The methyl bromide industry is challenging the EPA's rule on the basis that the science of ozone chemistry, as it applies to methyl bromide, is not well established and that suitable substitutes for many of its uses do not exist.

The immediate effect of the final rule during 1994-1995 will be felt on the pricing of methyl bromide products for the following reasons:

- Producers will need to increase their prices to cover the cost of methyl bromide's defense.
- Demand for methyl bromide products will continue to increase as production becomes restricted to 1991 levels beginning in 1994.
- Methyl bromide products may be levied an excise tax because of formal listing as an ozone depletion substance.

### What this means:

Although the bulk of methyl bromide usage is confined to agriculture, methyl bromide's role in turf establishment remains substantial as the best product available for the control of nematodes, soil pathogens and weed seeds.

If your long range plans include methyl bromide fumigation to rectify contaminated fairways, as an example, it may be time to accelerate your plans while the product is *still* available.



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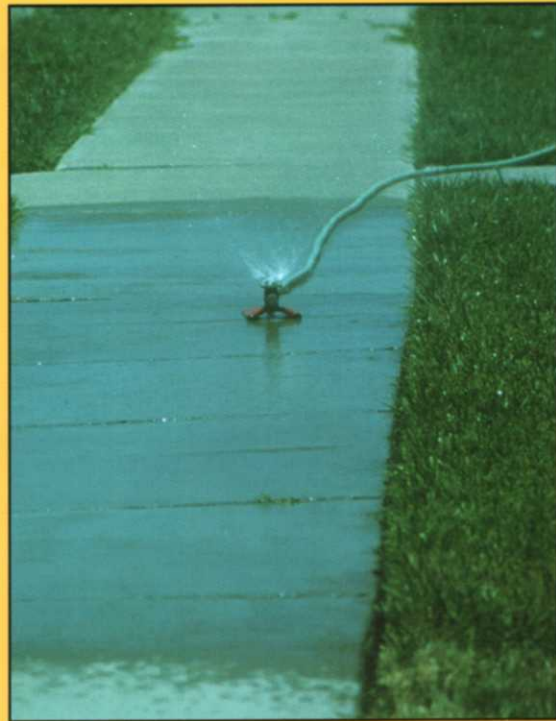
1-800-872-0644

Below are several water saving tips from the Water Management Districts:

- ◆ **Never put water down** the drain when there may be another use for it.
- ◆ **Verify that your faucets** are leak free by reading your water meter before and after a 2 hour period when no water is being used.
- ◆ **Check for toilet leaks** by adding food coloring to the tank. If you have a leak, color will appear within 30 minutes. Don't leave the food coloring in to stain your tank however.
- ◆ **Want to get rid of a dead bug** or a used tissue? Throw them in the trash, not the toilet.
- ◆ **Take shorter showers.** Replace your showerheads with the ultra low volume version.
- ◆ **Be sure your irrigation system** isn't watering cart paths, roads, etc.
- ◆ **Make sure you have a rain sensor** device which cuts the irrigation cycle in case of rain.
- ◆ **Mulch to retain** moisture in the soil.
- ◆ **Plant native and/or drought** tolerant grasses, ground covers, shrubs and trees.

Since water demands are different in each district, check with your local utilities, municipalities and local Water Management District to see if they offer incentive programs for upgrading or retro-fitting your current fixtures.

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*Pine straw mulch has good water retention for beds.*

# Much ado about Mulching

BY SHELLY FOY

Mulch is defined as any organic or inorganic material placed on the soil surface to modify the soil environment and enhance plant growth. What can you use as a mulch cover?

Cypress mulch, pine bark, pine straw, grass clippings, gravel, plastic, just to name a few.

What are the benefits of mulching?

- ◆ Prevents water loss by evaporation
  - ◆ Suppresses weeds
  - ◆ Maintains uniform soil temperatures
  - ◆ Prevents crusting of the soil surface
  - ◆ Organic mulches can improve soil structure by decaying and adding nutrients to the soil
  - ◆ Improves appearance
  - ◆ Mulched plants produce more roots
- So how do you know which mulches are better?

Let's compare a few of the most commonly used mulches. A survey by the University of Florida indicated that Cypress mulch is the favored material. It has a deep brown color and is known for its longevity.

Cypress mulch has a high water holding capacity which may reduce the amount of water reaching the plant. However, moist cypress mulch prevents loss by evaporation. In wind tests, 80 – 100% of cypress mulch remained intact.

In tests performed, *grass clippings* subsided more than any other mulch, they dry and decompose quickly, and are not good in terms of longevity. They change color rapidly, and in wind tests, only 20 – 40% of the grass clippings remained intact. While grass clippings may not make a good mulch for landscape plant beds, they are a good nitrogen source and can be used in out of play areas as a supple-

mental nutritional source.

Pine bark is another dark-colored mulch. The large size particles (1.5 to 3 inches in diameter) are more attractive and last longer. The larger material is also better for weed control than the smaller sized bark.

Pine straw has good water retention, holds color fairly well, and performed well in the wind tests. However, it decomposes rapidly and can contain weed seeds.

According to Florida's Solid Waste Management Act of 1988, yard trash (branches, leaves, or grass clippings) may not be disposed of in municipal landfills. Utilizing this material as a mulch is an alternative. One concern in using this yard trash however, is fungal contamination (mushrooms). Not only are these mushrooms not aesthetically acceptable, they may restrict water infiltration.

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## Mulches can be used through entire landscape beds or around trees and shrubs.

Those surveyed in the University of Florida tests were interested in using a combination of a layer of the expensive cypress mulch on top of this yard trash material. The combination of the two helps cut down on the cost and also provides an avenue for disposal of this yard trash material.

Perhaps some test areas of this combination can be tried on your golf course to see what the effects would be. Inorganic mulches such as gravel, pebbles and stone are occasionally used. They are permanent, fireproof and there are many colors available to pick from to better blend in with their surroundings.

The disadvantages would be that mowers could be damaged by this material or flying debris could possibly hurt someone. They also reflect solar radiation, and therefore would create a very hot environment during the summer.

Plastic films are good for weed control, however they don't allow water or air movement and therefore can deplete the soil over time. They would need to be covered with an organic mulch to make them aesthetically pleasing. They are not recommended for poorly draining areas because they would keep the soil too wet and might result in disease problems.

Can you restore color to mulches?



*This cypress mulch walkway suppresses weeds and keeps a high-traffic profile area looking neat.*

You can apply a thin (1-inch or less) layer of fresh mulch, however this can be costly. You can rake the existing mulch and restore its appearance. There is also a mulch colorant, which is a dye that is sprayed on to restore color. If a colorant is used, apply carefully because they can cause skin and eye irritations.

So now that we have familiarized ourselves with some different mulch materials, where, when and how do we use them?

Mulches can be used through entire landscape beds, or around trees and shrubs. For trees, create a circle of mulch 2 feet in diameter for each inch of trunk

diameter. Increase this area as the tree grows.

Keep mulch 1 to 2 inches away from stems and trunks of plants in order to minimize possible disease outbreaks. If using wood or bark mulches, do not exceed 2 or 3 inches in depth. Too much mulch can result in shallow rooted plants suffocating. Pine needles and pine bark can be as deep as 4 inches because they allow good air movement.

Mulches can be applied anytime. How often to mulch would depend on which material is used. Cypress mulch, pine bark and wood chips only need to be replenished every 1 - 2 years.



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The certification guidelines you receive when you become an ACSP member gives you an overview of water conservation and the information needed to apply for certification in this category. The following example will give you a feel for the level of detail required. Hopefully this will help and encourage you to apply.

## Water Conservation Irrigation System

**Goal:** Maintain the system to keep it as energy efficient and accurate as possible.

**A.** We have installed a computer controlled irrigation system which regulates the amount of water used on a daily basis. Use of this system has reduced the normal watering cycle from 12 to 8 hours. We are using low pressure irrigation heads which reduce drift and lower the volume of water used.

**B.** The system has a rain hold module which will shut the system off when the rain equals the evaporation transpiration rate.

## Water source

The source of irrigation water is primarily "effluent", which we receive from a nearby utility. If the effluent supply is reduced or is down, we can use canal water on a temporary permit from the water management district. When this is not available, we have a well we use in emergencies.

## Watered Areas and Frequency

Water will be distributed on an as needed basis with an emphasis on deep, infrequent watering to support healthy turf. We keep our turf on the dry side for playability and agronomics. We scout turf areas daily and use a soil probe and weather data to determine watering needs. Based on this information we water as needed, generally at about 70% of the ET rate.

Top priority is given to greens, then tees and fairways. Roughs are watered less often, and club-

house grounds are on a drip irrigation system to conserve water. out of play areas and environmentally sensitive areas do not receive irrigation.

Watering takes place between 3 a.m. and 8 a.m. to reduce evaporation and promote drying of the leaf blade.

## Water Recapture and Reuse

Special drains throughout the property capture runoff and pump it back into the irrigation pond, which is then reused through the irrigation system.

## Turfgrasses

Greens and collars are Tifdwarf bermudagrass. The fairways, roughs and tees are Tifway (419) bermuda. Most of the out of play areas are native plant beds, which require minimum water.

## Water Distribution

Our irrigation system uses smaller watering heads and requires less pressure to operate. Since the system is computerized, it is constantly being monitored. Irrigation heads are checked daily to insure that the correct amount of water is being placed in the correct areas.

## Mulches

We use cypress mulch in all plant beds to conserve water. We have a chipper which we use periodically when we lose trees and use this chipped material in out of play areas as well.

## Water reduction

We have reduced our water consumption by 10% over the last 2 years. We hand water when needed in dry areas. We have eliminated 2 acres of turf by returning this area to native plant materials. All landscape material planted on the golf course is native and therefore requires less water. We do everything in our power to limit our usage because it makes good agronomic and environmental sense.

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Checking our ads in some of the professional publications you read will help! The first 250 entries with the six blanks completed correctly will receive a sleeve of three Titleist golf balls.

1 This variety of grass, developed by Dr. Richard Hurley, is played and putted on each winter and spring at many famous professional tournament sites throughout the Southern U.S. When winter overseeding dormant Bermudagrass, use it either alone, with a chewing fescue, with a creeping bentgrass or to enhance the performance of perennial ryegrasses in creating smoother spring transitions.

2 It's a relatively new creeping bentgrass variety that's gaining popularity. Its performance is so successful that many new courses are being seeded with this variety. At Shinnecock Hills Golf Course it has

been used to interseed the greens in preparation for the 1995 US Open while Congressional Country Club is preparing for the '95 Senior US Open by overseeding their fairways with this new bentgrass.

3 Many famous Scottish golf courses have natural populations of this type of grass. U.S. courses now use this species to create the "Scottish links" look. Name this most popular variety developed by Dr. Skogley at the University of Rhode Island.

4 This is a cool season grass that satisfies some environmental concerns since it requires almost no fertilization or mowing and contains endophytes for natural control

of insects. This grass creates a very attractive, natural look for out-of-play roughs or wherever a low-maintenance grass is desired.

5 What turf-type perennial ryegrass is named after the "King" of all professional golfers and is used as a fairway grass on many of "the highest-rated golf courses in the world"?

6 Named after a famous professional golfer, this new "heat-tolerant" creeping bentgrass was developed by Drs. Engelke and Lehman at Texas A&M. The Atlanta Athletic Club is in the process of renovating all 18 greens and seeding with \_\_\_\_\_ in order to maintain the high standards members have come to expect.

## ANSWER BOX

Reliant Hard Fescue

Laser *Poa trivialis*

Southshore Creeping Bentgrass

Pinto Wildflower Mix

Crenshaw Creeping Bentgrass

Rebel 3D Tall Fescue

Nassau Kentucky Bluegrass

Jamestown II Chewing Fescue

Palmer II Perennial Ryegrass

Repell II Perennial Ryegrass

Salty Alkaligrass

Prelude II Perennial Ryegrass

Azure Sheep Fescue

Baron Kentucky Bluegrass

Yorktown III Perennial Ryegrass

Preakness Kentucky Bluegrass

Of these Lofts' varieties, choose the six that correctly answer questions 1-6 above.



Now, a correct answer to the following question qualifies you for the grand prize — the all-expense-paid trip to the US Open, June 1995. In the event of ties (all seven questions answered correctly), a winner will be selected by a random drawing.

Which professional golfer won the Vardon Trophy twice in his tour career and finished second behind Jack Nicklaus in four major championships?

Chi Chi Rodriguez  Bruce Crampton  Tom Weiskopf



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# Our Watered-Down Game

## Turn Off the Sprinklers and Play Some Real Golf

BY BRAD FAXON

Golf in America is too green.

I'm serious. What American golf needs is a good old-fashioned water shortage. Green is pretty. It's beautiful. It's pleasing to look at. I like green. But it doesn't make golf courses play the way they should — the way they were meant to play.

Green means lush. Green equals soft. And soft isn't good. Over-watered golf courses have become standard in America. The word "roll" isn't even in an American player's vocabulary anymore. I think that's unfortunate. The scope of the problem, however, goes way beyond the setup of PGA Tour courses.

America's obsession with green has changed golf. The way American courses are maintained has changed the way equipment is made, the way courses are designed and the way people swing.

Look at the courses. All of a sudden, we're playing courses where you've got to hit the ball up in the air and stop it. Architecture went from Tillinghast, Mackenzie and Ross to Nicklaus and Dye. The game went from horizontal to vertical.

Look in your bag. Perimeter-weighted clubs make the ball go higher. (The better to play those new courses.) Square grooves make the ball spin and stop quicker out of the rough. And then there's the lob wedge. (The better to escape Pete Dye death-bunkers.) The old Brits never had an L-wedge. They never needed one off those tight lies.

Look at the swings. We went from swings like Ben Hogan and Byron Nelson to more upright swings like Tom Watson and Jack Nicklaus, guys who hit the ball real high. The current popular swing has become more upright.

Go back to the history of golf in Scotland. Courses were just laid out on the ground somewhere near the coast. They had no irrigation. They relied totally on the weather. Golf was played along the ground. The elements made the conditions tough. And you had a sand-based soil that was easy to keep firm. There were a lot of tight, hard fairway lies and you had to bump the ball along the ground and allow for roll.

I'm not blaming American superintendents. If there's a brown spot on a country club these days, the greens committee calls an emergency meeting. I think club members see the Bob Hope Classic or the Masters on television and say, "That's what we ought to have."

So their courses look great but they don't play the way they should. I grew up on a classic old Donald Ross course, Rhode Island CC. The first hole is a short par 4, open in front of the green. When I started out as a caddie, the members would hit a 5- or 6-iron, land it 10 or 15 yards short of the green and let it bounce onto the putting surface. That's how you played. You used the contours and allowed for them.

When I went back to play there during college, maintenance had changed the course. I hit 5-irons out of the rough that backed up. Balls stuck on the greens. The course was so much softer and easier. People at the club said, "Brad, this is the best this course has ever been." I said, "No, this is the greenest it's ever been." And they didn't know what I was talking about.

Green is OK if it's firm. That isn't usually the case in the U.S., where over-watering reigns. Warwick Hills, home of the Buick Open, is one of the longest courses we play and always gives up some

of the lowest scores. I played there Monday after the tournament and talked to the head pro. He told me the superintendent is scared to death the tour will starve his course and he won't be able to keep it green after the tournament. So he drenches it for two weeks before, but we had rain this year, our drives plugged and we played preferred lies the first few rounds.

You want to know why foreign players are dominating professional golf? Because they play firm courses in the wind and still play bump-and-run shots and have a lot of imagination. American players have had those shots taken from them. The courses are too lush.

Remember what Jose Maria Olazabal did at the final hole of the Masters? He pulled his iron shot and it ran down the slope. He was past the hump in the middle of the green. He played what I think was the shot of the tournament, a bump-and-run down the hill, and saved par. It was an incredible shot. If that had been the Buick Open, say, he would've just pulled out a sand wedge, flipped it up and stuck it next to the flagstick. Where's the challenge in that?

The United States GA has the right idea. When it was deciding whether to go back to Newport CC, a true links, for the 100th anniversary of the U.S. Amateur, the club's membership was in favor of the idea and said, "Don't worry, we'll make sure you get a sprinkler system in by 1995." The USGA told them, "If you put in a sprinkler system, we're not going to hold the event there."

That's the way golf was meant to be. Now, what do you say we turn off the sprinklers and play some real golf?

LETTER

# Senator Answers on Biological Diversity

Dear Mr. Jackson:

Thank you for contacting me regarding the Convention on Biological Diversity.

As you know, this treaty is the product of formal multilateral negotiations designed to encourage global conservation of genetic resources. While this treaty is well intended, I am concerned about several provisions, most notably its potential implications for U.S. domestic law and environmental policies.

I recently signed a letter, along with 34 of my Senate colleagues, urging (former) Majority Leader (George) Mitchell to postpone consideration of the treaty until these concerns are appropriately addressed. You can be assured, I will closely monitor this legislation and will keep your thoughts in mind.

Again, thank you for sharing your views with me.

Sincerely,

Connie Mack, United States Senator

**Editor's Note:** Write your legislators urging defeat of this treaty.



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The sedges seem to be the #1 weed control problem today.

# Weed Control

## Preemergent & Post Emergent Programs

Some very obvious themes and trends emerged from the contributions of our peers on this topic. Wall-to-wall treatments of herbicides are declining in frequency in response to environmental stewardship initiatives. "Spot treatment" is the new wave. It is environmentally sound and cost effective. Planning, timing, and mapping reduce the number of applications needed to eliminate a problem. Manual removal of weeds is making a comeback. Healthy turf is still the best deterrent to weed encroachment. It seems sedge has replaced goosegrass as the #1 weed problem. And last but not least - Mother Nature still rules! – *Joel Jackson, CGCS*

### Staying on Schedule is a Must!

Thirty holes at Grand Cypress Golf Club are overseeded wall to wall. We used to apply 1/2 rates (two applications about ten days apart) of Ronstar in late February to control primarily goose grass in the early summer. We never thought we had much of a problem, so we decided to try a year without any preemergent type herbicides. The experiment worked for us and now we are on a weekly spot treatment post-emergence program only

(after the ryegrass has transitioned).

Our weekly rotation includes MSMA, 2+2, Basagran, Image and Illoxan. Illoxan is the main reason why we no longer worry about goose grass. By staying on a rigid schedule, weeds may appear, but we get them when they are extremely young, so most of our guests do not see them.

In mid-April we apply 1/4 ounce of Simazine per 1,000 square feet over our ryegrass on roughs, fairways and bunker faces. At the 1/4 ounce rate, we will eliminate our overseeding in two to four weeks, depending mostly on temperatures.

Higher rates of Simazine will take the grass out faster. We like the slow transition so again our guests do not see it happening.

In the early summer, we will pre-emerge along the base of our grassy mounds. The mounds generate most of our problems and the pre-emerge along them helps keep us clean. Surflan and Barricade are the two products we have used in these areas.

Lastly on the overseeded courses, we have to stop all herbicide applications at a minimum of 30 days in advance of our

overseeding. Many of the post emergence herbicides will have preemergence effects on the ryegrass if applied too close to overseeding.

Prior to Christmas we will apply Kerb in all other bermuda grass areas at 2 pounds per acre. This will get any poa annua that has emerged, as well as hold back any that is coming. This will keep us very clean through February.

We will pre-emerge all bunker faces in October/November for winter annuals. We use a Gallery/Surflan combination for this and it will help keep us clean through spring.

The bermuda grass fairways on the New Course are spot treated with post emergence products just like the others in the summer. It is good for the environment (less chemical) and good for our budget. Again, weekly applications are a must to keep the populations to a minimum.

These are our simple programs at Grand Cypress Golf Club. We have been lucky to start clean and keep clean. I think this is why we get away with limited preemergence programs.

*Tom Alex*

Grand Cypress Club  
Orlando, Fla.

## How Weeds Gain a Foothold

Emerald Dunes is surrounded by open fields of disturbed soil that provide a constant source of potential weed contamination to the golf turf. Seed is carried by wind, carts and water across virtually the entire playing surface. A dense stand of turfgrass, healthy enough to resist weed intrusion, is our goal. Unfortunately factors such as poor environmental conditions, compaction, renovation procedures, insect or disease pressure, and inefficient irrigation often cause turf to thin, allowing seed to soil contact. Usually the weed seed germinates unhindered or even encouraged by the very conditions that slow the growth of the turf. As with any "pest," the weed is only a symptom, and we make every effort to



*Weak or disturbed turf creates a niche for weeds to sprout.*

identify and correct the underlying problem that encourages its establishment.

The next line of defense for us is the use of preemergent herbicides. This year we applied fertilizer with Ronstar to all areas except greens in the spring, and fertilizer with Surflan in the fall and winter. The Surflan is not applied to tee or green slopes to avoid effecting our overseed, and these areas are carefully sprayed with Barricade.

As to the use of post-emergent herbicides, we first try to positively identify the weed, then use the IFAS Florida Weed Control Guide to select our treatment procedures. The book *Weeds of Southern Turfgrasses*, published by the Florida Cooperative Extension Service IFAS, has been a great help to us in weed identification.

We find our biggest failure in post-emergent weed control to be missed or improperly timed follow up applications. This was a problem this year because of the numerous rain days that made spraying impossible. We hope next year to time our post-emergent applications to better avoid months of high rain probability. The single most persistent weed for us this year was Alexander grass. We originally treated it like crabgrass and had little or no success and found that is not listed on any selective herbicide labels. It was brought to our attention that some successful control had been

achieved using Trimec Plus and we found this very effective when applied with a silicon surfactant and iron sulphate.

*Chip Fowkes*

Emerald Dunes C.C.  
West Palm Beach, Fla.

## A Weed is a Weed — or is it?

The American Heritage Dictionary defines a "weed" as a plant considered undesirable, unattractive, or troublesome, especially one growing where it is not wanted, as in a garden. This highlights the fact that even the finest most stress-resistant Tifdwarf bermudagrass could be considered a weed. The inverse of this statement is that a plant cannot always be considered a weed.

The Fort Myers Country Club was built in 1917. The fairway turf is a combination of common bermudagrass and other stuff. Many of the fairways are lined with huge eucalyptus trees and have extensive areas of heavy shade.

When I started working for the City of Fort Myers in the spring of 1991, I saw many things that I thought I could improve. Near the top of this list was the removal of all of that obnoxious *Poa annua*. What an ugly mess! I knew that



my efforts to remove that universally accepted weed would be applauded.

I was still riding high the following fall when I applied my pre-emerge herbicide. I could still clearly envision all of those ugly white seedheads blowing in the breeze. Wow! I was going to make the place even better for the heavy winter play. As the year progressed and the holidays came and went, it became clear I had been successful. I had eliminated the vast majority of those obnoxious weed patches.

A funny thing happened to me on the way to the turfgrass Hall of Fame. At the end of December, I realized that the heavily shaded areas were getting a little thin. After another 8,000 rounds for the month of January, thin would have been very acceptable to me. A more accurate description would have been simply "dirt." It had sure been a quick change from riding high to laying low. The members were all quite concerned. There had never been a problem with grass in these areas. That new Greenskeeper had sure screwed it up.

Rest assured the next winter I did not cringe when I saw those white seedheads blowing in the breeze. I had learned an important lesson — a weed is not always a weed.

*Mike Mongoven, CGCS  
Fort Myers C.C.  
Fort Myers, Fla.*

## Mapping Pays Off!

Here at Lake Region we only use pre-emergents in two different applications. We primarily use them for our winter weed program mainly for control of *Poa annua*.

We will come in with Surflan at a full rate and will do the golf course wall to wall. We begin this application in the middle of October and try to have it done by the end of the month. We ring all tee and green surfaces first and then proceed to finish the rest of the golf course from there.

We will come back in February and March and begin post treatments from there for any secondary rye or *Poa*. We



*This goosegrass plant needs pulling — not spraying.*

are still trying to find the best product for that application but have tried many other avenues. I have used Sencor in some fairway areas at that time with some degree of success. Of course, I think everyone has their own ideas on post treatments. This basically is our strategy for the winter months.

As for the spring and into the summer we will map hot spots mainly for goosegrass and will spot treat these areas. This is a very limited application due to years of keeping up with the problem of goosegrass.

We seem to be able to keep goose down to a very minimal issue due to products like Illoxan that do such a good job with a post treatment. Also with some of the environmental issues about pre-emergents staying the soil longer we do try to keep their use down to the most extreme limits as possible.

Here at Lake Region if we can survive without them we definitely try to. We are very involved with the concerns of the environmental issues ahead of us and are a Registered Audubon Cooperative Sanctuary. We try to keep all our chemical uses to the most minimal use as possible.

*Alan Puckett, CGCS  
Lake Region Y. & C.C.  
Winter Haven, Fla.*

## Weed Control with a Real 'Hands On' Approach

At Collier's Reserve, nearly all of our weed control is done by hand and it has been that way since grow-in started. Occasionally, we spray yellow nut sedge that has emerged since grow-in. There are two situations that require manual weed control programs. First is grow-in; manual weed removal gives you control over the weed population from the beginning. The second situation is an established golf course with a substantial weed population.

### Weed Control During Grow-In

Prior to sprigging, at the Reserve, soil samples were taken to help us determine the proper fertility levels needed for grow-in. This was important to us because we needed all the necessary elements in our fertilizer blends to complete a healthy, rapid grow-in. One of the best natural weed control programs is a tight, healthy turf.

We waited three weeks after sprigging to begin our manual weed control program. We would have, as our Golf Course Manager Tim Hiers would call, "tiger hunts." A "tiger hunt" consists of up to four men, starting at the tee and working

toward the green, spread out, with five-gallon buckets and weed forks, and making sure they get the root and the top of the weed plants. Our "tiger hunts" went on throughout grow-in and for the first month of operation. Initially, the "tiger hunts" required at least a two to four man crew to hand pull the weeds.

However, once we established and maintained a schedule, we were able to cut to a two-man crew doing the manual weed control. If we occasionally got behind on a few holes, maintenance crew members who finished daily tasks early would give special attention to the weed areas, or we would spend some time on Saturdays doing manual weed control.

As grow-in ended, we developed guidelines for weed control to assure we would remain weed-free. We began by creating a healthy turf and we keep it that way. We adhere to a strict Integrated Plant Management (IPM) Program that reinforces the healthy turf program. We have frequent soil and turf tissue testing to monitor proper fertility levels.

Our irrigation water is on a scheduled test program to monitor bicarbonate and sodium levels, and those levels are adjusted to evapotranspiration (ET) rates and are monitored by an on-site weather station to assure proper soil moisture level is maintained. Mowing our turf on a proper frequency schedule, at correct height and with sharp, properly adjusted reels helps maintain a tight, healthy turf that means better weed control.

The weed control guidelines also include a program for manual weed control (except yellow nut sedge). We have a daily weed quota system for some of the golf course maintenance crew. The IPM specialist has a quota of 25 weeds per day (if he can find that many), the irrigation specialist has a six per day quota, as well as the set-up person. Each crew member has a specific area to concentrate on.

The set-up person takes care of the greens, tee banks and tee tops; the IPM specialist covers the fairways and roughs; and the irrigation specialist maintains the areas around the irrigation controllers.

Even the equipment manager is asked to pull at least two weeds per day when he

goes into the field

If "hot spots" develop anywhere on the golf course, crew members who finish daily assignments early go work on them.

When the golf course is weed-free, we turn our attention to pulling weeds from the native grass areas such as tee slopes or in the natural area beds.

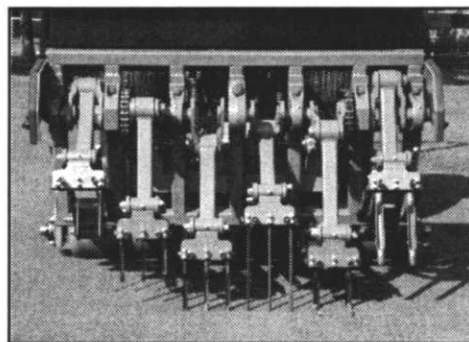
## Weed Control for an Established Golf Course

In the second situation, manual weed control is also required for a golf course that is well established but has a weed population problem. The tactics used to bring it to a weed-free status are not much different than during a grow-in. Using the "tiger hunt" method, sound

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**Manual Weed Control versus Spraying (when appropriate)**

Here are some of the advantages of manual weed control versus spraying: herbicides cost money, you reduce the amount of pesticides used (again saving money), and most of all, it makes good, common sense. For example: figure the time and materials cost for a spray technician to spot spray goosegrass plants; spend that amount for manual removal of them, and it would not take as long, or cost as much, to rid the fairways of the goosegrass. When you spot spray, you can certainly count on several repeat ap-

plications to kill the goosegrass, not to mention possible interference from rain. The seed head remains viable even when the goosegrass is dead.

You also chance severely damaging or, at the least, yellowing the surrounding turf for several days. The advantage to manual removal... the goosegrass is gone... no root, no seed head, no need for repeated herbicide applications... no more goosegrass!

**Summary of Weed Control Practices**

Through good cultural practices, using the components of IPM, and a disciplined approach to limit the amount of herbicides used on the golf course, we have become almost weed free. It may take more time if the weed problem is severe, but it can be accomplished. Irrigation timing and frequency, controlling pests and disease, using proper fertility levels and frequencies, and proper mowing practices, all contribute to a healthy turf, which contributes to good weed

control. As a student, preparing for a career in turf management, I remember an old saying that still holds today: "Weeds are not the cause of unhealthy turf, they are the result of it."

*Matt Taylor*  
Collier's Reserve  
Naples, Fla.

**Split Applications for Sedge**

Our number one weed problem this year has been purple and yellow nutsedge. The reason it was such a problem was that the rainy summer made our control efforts less effective. We also have some crabgrass and goosegrass to contend with on a small scale.

We found that a split application of Image at 3/4 ounce per 1,000 square feet followed up with 1/2 ounce per 1,000 square feet gave us satisfactory control of purple nutsedge when conditions were favorable. The 1.0 ounce rate of Image seemed to shut down our bermuda so we



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use the combination of the lighter rates. We also use Basagran for our yellow nutsedge areas.

For our other grassy weeds we spot spray with MSMA at a rate of 2 pounds of active ingredient per acre. A second application two weeks later is usually necessary, but is also usually effective. We apply MSMA only from June to September to avoid affecting the vitality of the bermudagrass in the spring and fall.

At Isleworth we overseed our fairways so we make a preemergent application of Barricade to our slopes and roughs. This prevents germination of Poa annua and any ryegrass seed that may be scattered by carts or equipment. We make three half-pound per acre applications of Barricade: October, Mid-January, and June or July.

Buck Buckner, CGCS  
Isleworth C.C.  
Winderemere, Fla.

## Planning, Patience, and Prudence

Weed control has been a tough proposition this year because the constant rainfall either prevented initial spraying or necessary scheduled follow up treatments. Sedge, our biggest weed problem, loves moist conditions so it flourished. We have populations of the traditional yellow and purple nutsedge and some kyllinga. A tank mix of Basagran at ( 2 qt/A), with MSMA at ( 1 qt/A), and Horticulture Oil at ( 1 Qt/A ) to be effective when conditions permit us to spray. A new product called "Manage" is due out next month for use in Florida and is reportedly dynamite on sedge!

I like to stop all contact herbicide spraying by October if possible to avoid damage to the bermuda in the cool season since it will not recover rapidly.

However, in the warm season we do battle with crabgrass, paspalum, and doveweed on the driving range. We use MSMA on the crabgrass, DMC on the paspalum., and 2+2 on the doveweed.

In the fall, we apply pendimethalin to our green and tee slopes to control stray overseed material and Poa annua. It is not very mobile so I have been happy

with the results. We use Kerb 50W at the 1 pound per acre rate on about 20-25 acres of fairways that have recurring Poa annua infestations. If we do get Poa germination later in the season, I take it out with Simazine.

If we spot goosegrass emerging, either my assistant or myself will spot spray with Sencor in a one quart spray bottle. We do not apply pre-emergents for crabgrass or goosegrass. If we do find a goosegrass area too large for the spray

bottle, we will spot spray with the boom sprayer and we will use Illoxan.

Stuart Leventhal, CGCS  
Interlachen C.C.  
Winter Park, Fla.

## Responding to Changing Conditions

For eight years our greens did not have Poa annua, now we have seven greens with a noticeable infestation. We are us-

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ing the Rubigan program to prevent germination. On the rest of the course, we make a fall application of Barricade sparged on fertilizer around November 1st. I have eliminated the Spring preemergent application because the turf just didn't seem to be responding as well coming out of winter.

Now, instead of coring the turf stressed by much winter play, we spike two ways with a 6 inch deep spiker and fertilize to promote a healthy turf. The open coring holes in the spring were providing too many opportunities for weed invasion. We have a lot of localized wear areas caused by our walking golfers. We fertilize these areas monthly with high Potassium formulations to keep the turf roots healthy.

Like many of my peers, yellow nutsedge has been my biggest headache. One application of Basagran at 2 Quarts/Acre is usually sufficient unless it is a really thick patch. In that case, we re-treat at the prescribed interval. On some of our heavily infested ditch banks, we use a

tank mix of Image (1 Qt/A) and MSMA (1 Qt/A).

We spot treat goosegrass plants located through the green with Sencor. If we find unacceptable populations of goosegrass on the greens or tees, they are treated with Illoxan.

*Joe Ondo, CGCS  
Winter Pines G.C.  
Winter Park, Fla.*

## Managing Weeds in Different Turf Types, Ornamental Grasses

We have two distinctly different golf courses here at Bonnet Creek which gives us different challenges in weed control. One element they share along with the clubhouse grounds is an extensive use of ornamental grasses like cordgrass and Gulf Muhly. Weed seeds sprout along the bed borders and in the grass clumps themselves. We use a tank mix of Basagran

and Pre-M or Round Up along the bed edges and we spray over the top with light rates of Southern Formula Trimec for broadleaf weeds.

The target golf concept on the Eagle Pines course means that there are large areas of bare ground or pine straw that offer potential breeding ground for weeds. A regular preemergent program is necessary to keep the weed populations down. We use Gallery and Snapshot in these areas as well as the sparse "natural" tee slopes that are planted in Gulf Muhly.

Part of the design concept of Eagle Pines was to use different grasses for textural contrasts. Delmar St. Augustine was used around all the bunker complexes in the fairways and around the greens. The St. Augustine requires different chemicals than the neighboring bermudagrass. Great care must be taken not to overspray one or the other turf types with the other's chemical. This can prove to be labor intensive. When we get bermudagrass invading the St. Augustine, there is not too much available that will take it out safely.



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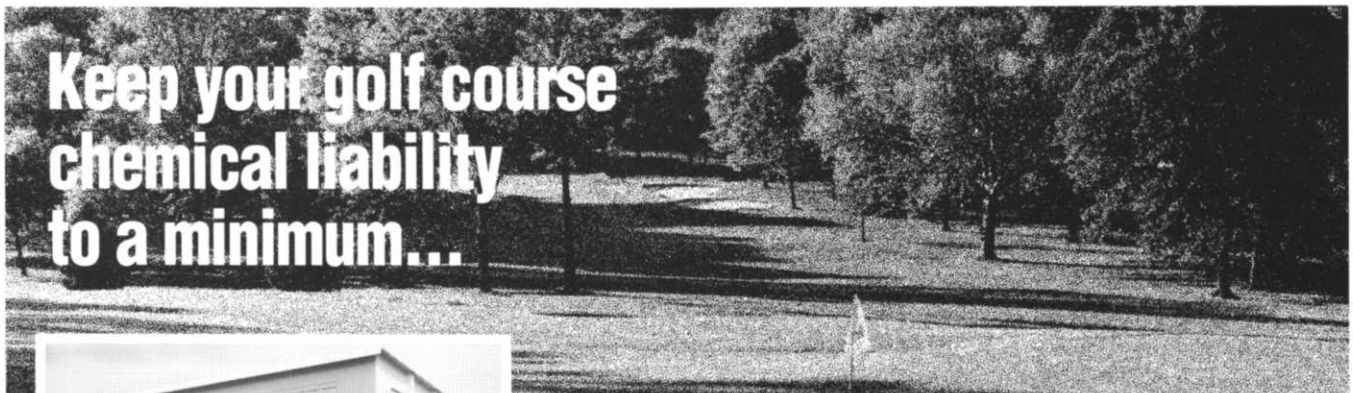
Weed encroachment in native grass plantings can be controlled with over-the-top spraying when necessary.

On the Osprey Ridge course, our biggest problem is crabgrass patches in the roughs, slopes, and bunker faces. The invasion by the weeds seems to follow animal and insect burrowing that creates bare ground situations. We spot treat with Sencor.

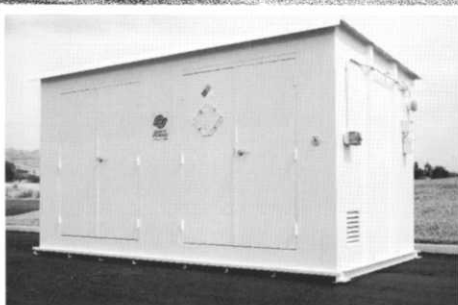
We apply a preemergent to our greens and tees slopes to eliminate germination by scattered overseeding. We have used Barricade in the past. This year we are trying Surflan. We treated all 36 fairways with Surflan because we overseeded our roughs for the first time since we opened. In previous years we Kerbed a few problem fairways that had *Poa annua*.

We have a large Confederate Jasmine bed on a steep slope behind the clubhouse. Weed encroachment was unmanageable until we started spraying over the top with Ornamec at 2.5 ounce per gallon.

Scott Welder  
Bonnet Creek G.C.  
Lake Buena Vista, Fla.



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## We Don't Have a Big Weed Problem!

*Editor's note: When I called Dave Portz to ask him about his weed control programs, he suggested that I might want to talk to someone else, because he didn't feel he really had a severe problem that would lend itself to an article about problem solving. I didn't let Dave off the hook! I asked him what he did that he felt kept his weed problems to a minimum.*

I wasn't boasting when Joel called, but we haven't had a large scale weed infestation of any kind that required a far reaching herbicide program. We do have skirmishes with recurring dollarweed in the St. Augustine turf at the club. We apply light rates of Trimec or Threeway for suppression. We also apply Gallery in the Fall and atrazine in the Spring.

On the course, we do spot spray sedge on the green and tee slopes and some broadleaf weeds in the bare areas on the margins of the roughs. We have not used a preemergent herbicide in five years. We are in environmentally sensitive coastal marsh setting so we try to grow healthy turf to keep weed pressure to a minimum.

In the growing season we verticut greens bi-weekly. The tees are done monthly and the fairways three times each year. We aerify everything twice per year. The GA-60 has done a real good job for us on the fairways.

Our fertilizer program for the bermuda greens is no more than .5 pounds of nitrogen per month. I like to use a 1:2 ratio of nitrogen to potassium with additional straight potassium applications to supplement. Between granular applications, I use light liquid feedings with 12-0-8.

On our overseeding I make one granular nitrogen application of slow release 39-0-0. The rest of the winter I use liquid spray feedings alternating Iron, a root stimulator, and Agriplex without nitrogen every three weeks. I do apply a granular 0-0-28 at .25 - .5 pounds per 1,000 square feet every month.

David Portz, CGCS  
Hammock Dunes Club  
Flagler Beach, Fla.



*Turfgrasses being sold under old established names are beginning to show a wide disparity in reacting to similar modern maintenance programs.*

## Is the daily demand for tournament conditions driving the entire golf industry into the ground?

BY MIKE BAILEY

There is a growing concern and possible controversy over the integrity of the bermudagrasses being used on our golf courses today. Turfgrasses being sold under old established names are beginning to show a wide disparity in reacting to similar modern maintenance programs. One course's healthy, tight, emerald green putting surfaces are another course's weak and struggling greens. All are built on USGA spec greens and all managed by competent professionals. What's going on? Is someone guilty of wrong doing?

Reflect back to the 1960s and analyze where the game of golf was at that time. Golfer demands and media pressure had not evolved into the pressure of today's demands. What type of hybrid bermudagrasses must have been available then?

The truth is there were not any hybrids in use then. The science of bermudagrass turf research was somewhat simple. Someone had this magical little spot of turf somewhere on his golf course. The "greenskeeper" would cultivate this "jewel plot" as being something better than the rest.

Maybe, he thought, this spot could be the grass of the future. That is exactly how modern bermudagrass evolved. Hence the names of these pocketed areas of the then "grass of the future" typically bore

the name of their geographic location. Ormond bermudagrass, as it became internationally known and planted successfully throughout the world, evolved from the lawn surrounding the Ormond Beach Hotel in Ormond Beach, Fla.

Dr. Glenn Burton, the father of bermudagrass research, and his staff collected samples from these "jewel plots" and took them to the Coastal Agricultural Research Station in Tifton, Georgia for testing. They successfully founded bermudagrass technology that stands even today. Tiftway 419 bermuda was virtually created by Dr. Burton through radiation exposure that altered the original parent plant, and created a genetic change that created the hybrid as it is known today. It took many years of research to select from the many samples created to find a grass that would be considered the most acceptable turf for a golf course.

Dr. Burton has stated, "We did not design these grasses to ever consider they would be mowed so low as to what today's standards are." I distinctly remember attending more than one Tifton Turfgrass Conference the week following the Masters in the 1970s, believing we were pushing our grasses near the edge of survivability at mowing heights of 5/32 of an inch.

Now, many do not consider that ac-

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# 'If we just sit here and do nothing...

ceptable. Golfer pressure has demanded heights in the range of 1/8 of an inch, double cutting the greens, and rolling the greens in order to create a stimp meter speed unheard of in the 1970s. We all accepted those few days for that special tournament when you would "shave the greens" down just short of sheer desiccation. However, you usually did not lose your greens or your job because you knew that fine line of flirting with the edge for a short period of time. Now golfers want tournament conditions daily! You can't run the Indy 500 with a Chevy or even a Cadillac. You have to have a custom made race car!

I think the entire golf industry is driving itself into the ground. Some superintendents have planted the first seeds of destruction by actually trying to maintain their greens virtually year round at the edge of disaster. Modern technology allows us to keep the greens artificially alive, but as Dr. Burton, the originator, says, "These grasses just weren't designed to be maintained at these lower heights of cut." That is my first comment to the jury. Maybe you're not guilty of killing the golf course, but you're also not completely innocent. Maybe you're an accomplice!

As leaders of our industry, we must look ahead and say where the bermudagrass industry is going to be in the next five, ten and twenty years. When I got into this profession nearly twenty-five years ago, I never dreamed that our science would be digging our very own graves yet that is how I see the future unless we set up a long range plan now.

In order to effectively move forward, we must review our past. Over twenty years ago, quality bermudagrasses were secured for the golf course, namely Tift-dwarf for the greens and Tifway 419 for the fairways and roughs. If these grasses were acceptable back then, why are they not acceptable now? Quite simply, golfer's expectations have created a demand for a bermudagrass superior to what currently exists. In addition, we are not sure if the grass that we managed yesterday is actually what we're dealing with today. The state of Florida, during the economically stressful 1980s, reduced budgets and totally eliminated the state turfgrass certifi-

cation program.

Because of a cost competitive battle to effectively sell bushels of bermudagrass at the lowest price possible during the Florida building boom, propagators could not effectively certify a grass that the state abandoned. For the past ten years I have sat before more than one board meeting or committee meeting trying to conclude how we, as only superintendents, can convince the government to support us. Fortunately, now that the Florida Golf Economic Impact Survey has been completed, any politician can recognize the impact of golf on the state and the rest of the golfing world.

I see a real need for a council. Not the abandoned and failed Golf Council, but rather a council of superintendents, research specialists and, yes, legislators. People who can support our efforts to create an effective long range research plan to find or create the bermudagrass of the future, along with the economic support to regulate a certification program that will ensure quality for years to come. Idealistically, we are searching for the long range ultimate bermudagrass, or whatever else, that will fulfill the criteria of today's golfer.

With crossbreeding and research that is already completed in other branches of horticulture, we may be looking at the creation of "bentuda." Imagine the fine texture quality of bentgrass being united with the heat hardiness of bermuda. Is it possible? Could it be commercially available by the year 2000?

These type of genetic alterations are not farfetched. We are currently analyzing DNA research identification work for future projects that could prove valuable for long lasting retention of these proposed grasses. DNA identification has hit the fury of the media because of recent trial cases; yet in the world of horticulture, and most specifically, bermudagrass, we are about to explore a whole new world of research. Fingerprinting to identify grasses with unique positive traits will allow researchers to find characteristics that might never have been known about a certain variety.

By DNA identifying the grasses we currently maintain, we could develop an information bank of common denomi-

nators. This information could be pooled for each exact variety. For example, you might have a certain green with isolated mutations that stress out and nearly die during the middle of the summer rainy season. A fellow superintendent, hundreds of miles away or just on the other side of town, has the exact same problem, yet he applies a specific fungicide, making his problem less severe than yours. By sharing this information, you might gain valuable data that will help you endure your situation. As time allows researchers to develop the grass of the future, we could find ourselves going into a dimension that many of us have never dreamed possible.

We have a great deal of opportunity ahead of us. If we just sit here and do nothing, we may all be found guilty of neglect. Whom would you indict? The State for abandoning the certification process? Growers for selling grass that no longer had regulated standards? Clubs and developers buying the cheapest grass they could find? Golfers demanding PGA Tour conditions everyday? Superintendents trying to grow grasses to tolerances never intended? Everyone in the golfing world has a responsibility towards the game's future. The government will not be our financial base for this project. The money must come from the golfer. For too long I've heard there is not enough money available from any of the long list of turfgrass-related associations. I have a problem with this excuse because, ultimately, we work for the golfer. Now, the golfer must come through. There are far too many wealthy golfers out there with the resources immediately available to support the research work required. After all, who gains the most out of this project? The golfer!

Let's start now. Let's organize our current issues. Let's set up a criteria list for this future project and get the scientists working on it now, so we can accomplish our goals. Maybe no one is guilty per se, but we will not be found innocent either if we don't do something soon. Case closed.

*Mike Bailey is the golf course superintendent at Boca Rio GC in Palm Beach County.*

# Truly, a Team Effort!

Dear Joel (Jackson):

I must read 25-30 professional and turf magazines per month and most are the same old huma-huma; except for Golf Course Management which I seem to read cover to cover — sometimes twice. Well, the Fall 1994 issue of The Florida Green may have even beat out GCM. I have not only read it entirely several times, but I found that most of the articles are perfect support documents for several GCSAA seminars I teach.

In particular all of the “heads up” environmental articles were interesting, informative and instructive. Short, well written, and intellectually provoking. A couple of issues of those kinds of articles could be reprinted as a “how to” booklet for Florida and southern tier golf courses. I know I saved them for future reference, as I did the “hands on” series for proper safety, security, and management techniques.

Congratulations to you and all of your contributors, sponsors, and members for doing such a professionally awesome project. A truly spectacular effort.

Sincerely,  
Michael J. Hurdzan

*Michael J. Hurdzan of Columbus, Ohio is a well-known golf course architect and a past president of the American Society Golf Course Architects.*

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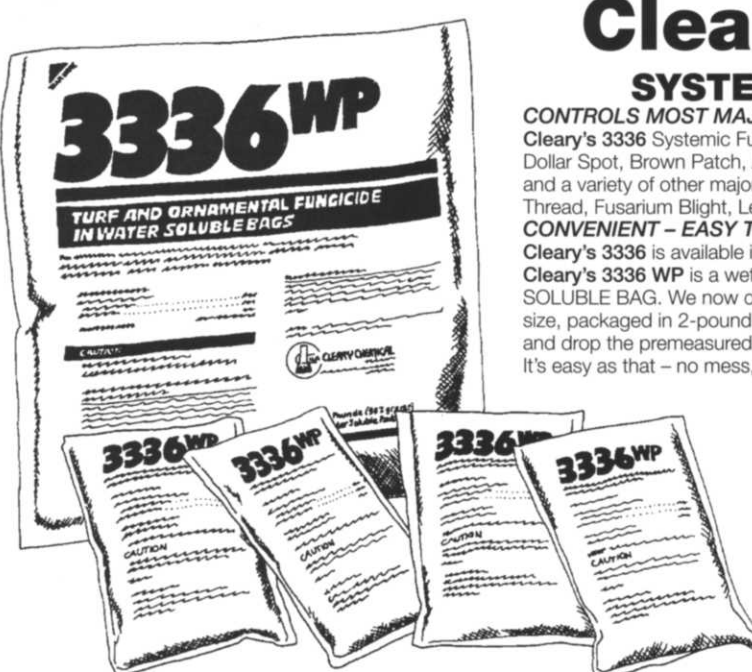
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Anhinga drying her wings.



Trio of White Ibis (immature) at dinner.

...not even one scientific article reporting bird populations in urban areas.

## AmerAquatic Water and Wading Bird Survey

# Bird Populations on Golf Courses

“Most native birds cannot survive in these highly-altered, asphalt and concrete environments.”

“In the less altered and more vegetated suburbs, a number of native species — Northern Mockingbird, Blue Jay, Northern Cardinal, Morning Dove and Common Grackle — do quite well.” — *Florida’s Birds, A Handbook and Reference*<sup>5</sup>

BY C. ELROY TIMMER,  
VICE PRESIDENT, AMERAQUATIC, INC

These quotes in a reference handbook typify the mind-set of many environmental activists. Their characterization of the golf course as a green desert has been accepted by many in government and the media, and in turn by the general public.

But, is it accurate? There’s plenty of evidence that this view is false. *Red-shouldered hawks* scream overhead, a daily sight in Fort Lauderdale. The *least tern* is now nesting on protected rooftops. And it’s not uncommon for me to see a falcon consuming a pigeon or a dove in my back yard.

Last winter I took several friends on a birding trip to the Everglades. We did see birds, but my guests would have tallied more species, in greater numbers, in a golf cart.

The dwindling stock of native birds in natural areas (see story, Page 74 ) has been widely publicized. Have the birds been permanently lost, or have they just relocated? We don’t know, but my personal observations of golf courses suggests that urban areas — homeowner lakes, retention basins, drainage canals — have become an important resource for water and wading birds.

How important? After several days cruising the information superhighway, I found not even one scientific article reporting bird populations in urban areas.

No one seems to have considered the question, which gave birth to the AmerAquatic Bird Survey. Our inaugural effort, in February 1994, targeted water and wading birds on golf courses.

We solicited the help of golf course superintendents, asking them for data on the number and area of their lakes, the degree of lake vegetation and their total land area, and to count birds seen in a one morning observation.

For better data consistency, we sought data on only the 14 species listed in Table 2 — somewhat larger, fairly stationary, easy to find and to identify correctly — and provided identification guidelines.

Forty-eight golf courses (Table 1) returned usable surveys. They contained 585 lakes covering 1,258 acres, an average of 12 lakes (26 acres of water) per course.

Despite being full of human activity, these courses were surprisingly attractive to native birds. Observers counted 6,097 individuals of the designated species, an average of 127 birds per course and 4.8 birds per acre of water. Even considering that a February count includes migratory birds, that’s a lot of birds per acre.

Migratory birds may be preferentially drawn to golf courses, for several reasons:

**1. A generally high nutrient environment.** Although we did not gather data on chlorophyll or phosphorus (measures of trophic status), we generally find golf course lakes rather fertile.

**2. An ample supply of food,** including large numbers of small shad, bream and tilapia, clams and snails (both marisa and apple snails) and some species of non-native fish (particularly tilapia), which have moved into previously unoccupied food niches. And this food is concentrated and more accessible as water levels drop in the wintertime.

**3. Small lakes,** whose higher ratio of shoreline to water area enhances bird access.

**4. Safe roosting sites.** Urbanization may discriminate against many bird predators.

## Utilization Of Golf Courses

Utilization by species is given in Table 2. (All data are presented in terms of birds per water acre. Hoyer and Canfield's observations by species are also presented as a comparison.)

As expected, *great white herons* and *limpkins* were among the least observed species. The *great white heron*, primarily a salt-water bird, was typically reported only on golf courses near salt water. The *limpkin*, commonly associated with marshes, wooded swamps and wet prairies, was also seen in low numbers.

Some counters went beyond the listed survey species and reported sightings of *bitterns*, *eagles*, *ducks*, *geese*, *night herons*, *pileated woodpeckers*, *sandhill cranes*, *northern flickers*, *glossy ibis*, *American kestrel*, *Cooper's hawk*, *red-shouldered hawk*, *parakeets*, *belted kingfishers* and more. In a one-hour survey, William Haunders, Jr., a dedicated observer and board member of the 90-acre Kelly Greens Golf and Country Club, recorded an additional 24 species (277 birds, see Table 3, page 75), for a total (including survey species) of 40 species and 573 birds.

Utilization varied widely between individual courses. However, we found no correlation between bird population and lake size, degree of vegetation or any other factor surveyed. We will look further into this variability on next year's survey.

## Data Validity

Reporting survey results in terms of birds per water acre may not be wholly appropriate. Gulls and Terns, for example, may just be resting on the course and not utilizing the lakes. Similarly, White Ibis may not be drawn to the golf course for the water. Nonetheless, as they utilize the resource for some purpose, they were included, paralleling Hoyer et al who counted all birds seen.

The accuracy of any survey can always be questioned. Participating golf courses varied in size, maturity and vegetative cover. Counting times were not uniform. Counters varied from novices to experts. There is always the concern that amateur surveyors may mis-identify some species or count some individuals twice.

We did a limited amount of work to confirm counting accuracy, and were also reassured by the fact that both Limpkin and Great white heron were least reported, as expected. On the whole, we believe an undercount to be more likely than an overcount. It is easy to overlook such small, dark or secretive birds as the *little blue heron*, *green-backed heron*, *anhinga*, *cormorant*, *tricolored heron* and *common moorhen*, and an expert-only count may have been even higher.

## Conclusions

Bird counts on golf courses cannot be compared acre for acre with those in Everglades National Park or the water conservation areas. There are substantial differences in topography, habitat and counting methodology.

Neither is direct comparison possible with Hoyer et al, which involved larger lakes. Also, they report the average of observations in three seasons spanning two years. Our single wintertime count is inflated, perhaps substantially, by migratory birds.

Nonetheless, 4.8 birds per acre (at any time of the year) is a lot of birds, and it seems safe to conclude that golf courses are substantially more attractive to water and wading birds than is commonly believed. In fact, the golf course may be more oasis than green desert. Birds have no loyalty to place; they go where they can make a living and many of them, like people, choose golf courses.

### How significant are golf courses as a resource?

Extrapolating from a small sample is perilous, but if our respondents are typical, Florida's 1,100 golf courses may support more than 100,000 water and wading birds.

I believe golf courses are not unique in attracting birds; other urban lakes do so as well and their impact could be substantial. If, for example, homeowner and condominium lakes have twice the area of golf course lakes, and urban drainage canals perhaps 3-4 fold more, it would not be surprising to find urban areas providing a livelihood to half a million water and wading birds!

Are birds newly using urban areas, or

## Table 1 Participating Golf Courses

*Amelia Island Plantation*  
*Boca Lago Country Club*  
*Calusa Lakes Golf Club*  
*City of Jacksonville Beach Golf Course*  
*Collier's Reserve Country Club*  
*Colony in the Wood Mobile Home Park*  
*Cypress Knoll Golf Club*  
*Deer Creek Golf Club*  
*Del Vera Country Club*  
*The Dunes Golf & Tennis Club*  
(Sanibel)  
*Ekana Golf Club*  
*The Falls Country Club*  
*Feather Sound Country Club*  
*Hibiscus Golf Club*  
*Hilaman Park Golf Course*  
*Hole-In-The-Wall Golf Club*  
*John's Island Club*  
*Kelly Greens Golf & Country Club*  
*LaGorce Country Club*  
*Lucerne Lakes Golf Club*  
*Meadow Woods Country Club*  
*Metro-Dade County's Greynolds*  
Golf Course  
*Miles Drive Lake (Port Orange)*  
*Naples Beach Hotel & Golf Club*  
*Oak Tree Country Club*  
*The Oaks at Palm Aire*  
*Orangebrook Golf Course*  
*Orchid Island Club*  
*Palm Beach National Golf &*  
Country Club  
*Palma Ceia Golf and Country Club*  
*The Plantation Country Club*  
(Jacksonville)  
*Polo Trace Golf Club*  
*Quail Ridge Country Club*  
*Riomar Country Club*  
*RiverBend Golf Club*  
*Riverwood Golf Course*  
*Royal Poinciana Golf Club*  
*Saddlebrook Resorts*  
*Sailfish Point Golf Club,*  
*Seminole Lake Country Club*  
*Spanish Wells Country Club*  
*Stouffer Vinoy Golf Course*  
*Tampa Palms Golf & Country Club*  
*The Deerwood Club*  
*Villa Del Rey Golf Course*  
*Wilderness Country Club*  
*World Woods Golf Club*  
*The Yacht & Country Club*

have we just begun to notice them? Are birds emigrating from natural areas to find more food and fewer predators? Has the urban landscape matured, and become more attractive for roosting and nesting?

This survey, limited in scope, can only raise such questions, not answer them. However, our results indicate that the role of urban spaces as a wildlife resource should be reconsidered, especially given the well documented decline of birds in natural areas. We encourage wildlife biologists, ornithologists and environmental studies experts to rise to that challenge.

**For 1995**

We received many suggestions to improve the survey in 1995, including: counting fewer species (for greater precision); counting more species (to get a better handle on utilization); counting more times per year; using both experts and amateurs, perhaps for parallel counts; including homeowner lakes and drainage canals; and adding mammals (and perhaps fish!) to the list.

We thank our participants for their pioneering effort, and encourage everyone to join them for the 1995 survey.

*Editor's Note: Participation is a must! It is your duty! This kind of information is exactly the type of unbiased information we need to share with the general public so they can fairly judge the issues! Do it!*

**Birds In Natural Areas**

We constantly hear that the environment (or what's left of it) is degradating. Our time is characterized by "no net loss" of wetlands, mitigation projects and environmental restorations, including such big ticket items as restoring the Kissimmee River flood plan and the Everglades.

Ornithologists are concerned because bird populations (particularly wading birds) are dropping. Wading birds are seen as an indicator of the health of a wetland system. If the food supply drops, the birds simply move.

*Everglades, the Ecosystem and Its Restoration*<sup>1</sup> states "Most conspicuous and alarming among the biological changes have been the plummeting of the Everglades wading bird populations to less than one-fifth of their abundance during the 1930s."

An Audubon Society publication gave the bird population of the water conservation areas, some 878,000 acres of wetlands in south Florida, as 31,814 wading birds in January, 1993 and 15,132 in February, 1993.

**FOOTNOTES**

1. *Everglades, the Ecosystem and Its Restoration* Steven M. Davis and John C. Ogden, Ed. St. Lucie Press, 1994
2. *Wading Bird Population and Distribution in the Water Conservation of the Everglades: the 1993 Season*, G. Thomas Bancroft and Richard J. Sawicki, National Audubon Society.
3. *Palm Beach Post*, June 13, 1994
4. *Bird abundance and species richness on Florida lakes; influence of trophic status, lake morphology and aquatic macrophytes*, Mark V. Hoyer and Daniel E. Canfield, Jr. *Hydrobiologia*, 297/280; 107-119, 1994
5. *Florida's Birds, A Handbook and Reference*, Herbert W. Kale, II and David S. Maehr, Pineapple Press, 1990

**Table 2**  
**Golf Course Utilization By Species**  
**Birds Per Acre of Water**

Species	AmerAquatic	Hoyer & Canfield
White Ibis	0.93	0.035
Gulls & Terns	0.92	0.102
Cormorant	0.69	0.039
Common Moorhen	0.47	0.106
Anhinga	0.47	0.044
Great Egret	0.36	0.024
Wood Stork	0.21	0.007
Snowy Egret	0.19	0.001
Green Heron	0.15	0.017
Blue Heron	0.14	0.010
Tricolored Heron	0.12	0.009
Great Blue Heron	0.10	0.023
Great White Heron	0.05	0.000
Limpkin	0.04	0.003
<b>Total</b>	<b>4.84</b>	<b>0.042</b>

## *Study says lake area and trophic status principal influences on bird populations*

The *Palm Beach Post* recently reported that 5,000 egrets, herons and white ibis nested at the North Palm Beach Solid Waste Authority complex, an urban landfill/resource recovery facility, compared with only 500 in Everglades National Park (1,077,760 acres). It quoted biologist Steve Davis as saying in regards to the Everglades, "Nearly 250,000 birds nested in there in the 1930s. The figure fell to 50,000 by 1976, and its steady drop is continuing. Several species are now considered endangered or threatened."

Recently, Hoyer and Canfield at the University of Florida published a pioneering study of bird populations on 46 Florida lakes totalling 8,408 acres. Bird counts were taken three times (one each in winter, spring and summer) between 1988 and 1990. All bird species (not just water and wading birds) were counted. The average population (for all counting periods) was 0.7 birds per water acre and the highest population was 3.2 birds per acre.

In a statistical analysis, the authors concluded that lake area and trophic status were the principal influences on bird populations. Trophic status (general nutrient level) determined total bird population. Lake size determined species richness (more individual species inhabit larger lakes) but not total population. Lake morphology and aquatic vegetation had no correlation with either species richness or total population even though most birds were observed utilizing near-shore areas where food and cover are most abundant.

**Table 3  
Birds Sighted at  
Kelly Greens Golf Course  
One-Hour Survey**

Boat-tailed Grackle .....	52
Blue-winged Teal .....	42
Coot .....	35
Cattle Egret .....	30
Red-winged Blackbirds .....	23
Fish Crow .....	18
Palm Warbler .....	15
House Sparrow .....	10
Starling .....	10
Morning Dove .....	8
Mottled Ducks .....	6
Spotted Sandpiper .....	3
Red-billed Grebe .....	3
Mallard Duck .....	3
Greater Yellowleg .....	2
Lesser Yellowleg .....	2
Red-bellied Woodpecker .....	2
Glossy Ibis .....	2
Mockingbird .....	2
Yellow-rumped Warbler .....	2
Osprey .....	2
Flicker .....	2
Killdeer .....	1
Belted Kingfisher .....	1
Carolina Wren .....	1



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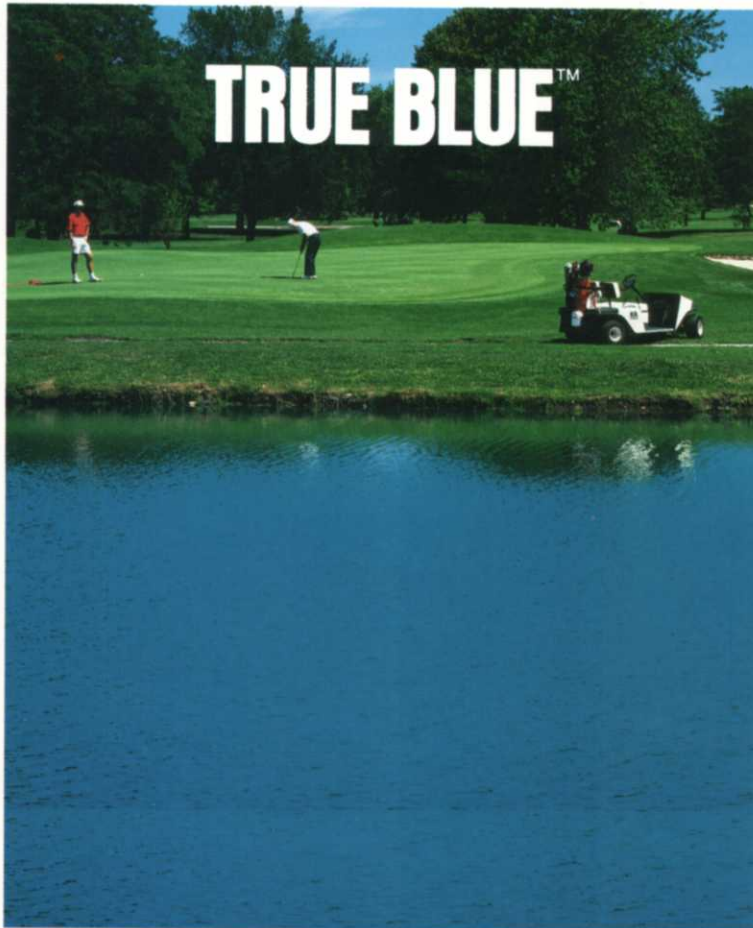
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C. transvaalensis (CTR 1111) plot on April 15, 1994.



Same C. transvaalensis (CTR 1111) plot on Oct. 10, 1994.

## Bermudagrass Selections for South Florida Golf Course Putting Greens

BY DR. MONICA L. ELLIOTT

University of Florida

Fort Lauderdale Research and Education Center

**Wanted:** Bermudagrass that will stay green and healthy all year long when cut at 1/8 inch, even with 300+ rounds of golf per day in January; does not require overseeding; requires minimal fertilizer and water; tolerates minimal sunshine and 30+ inches of rain during the late summer months; cold-tolerance would be a real plus as would the ability to smile on national TV when the cameras zoom in for the last shot! If you have the features and are willing to tolerate the abuse the snowbirds and native golfers slice out each day, please contact us immediately!

It is not possible to have perfect putting greens every day of the year in Florida. However, everyone in the industry strives for this goal, and the tourists and club members expect it! A major component of a good putting green is the bermudagrass cultivar planted on that green. The standard today is the cultivar Tifdwarf, a grass which was first introduced in the mid-1960's by the USDA research center in Tifton, Georgia. According to Dr. Glenn W. Burton, 'Tifdwarf' is believed to have originated as a natural mutant in the vegetative stolons of 'Tifgreen', another cultivar that was introduced in the 1960's. 'Tifgreen' was a  $F_1$  hybrid between *Cynodon dactylon* and *Cynodon transvaalensis* (Burton, 1992).

These grasses were developed almost 30 years ago. While the grasses have not changed, the golf industry and management practices have changed dramatically! We have exasperated that problem in Florida by not maintaining a strong turfgrass certification program, but that is another story. The goal of the current project at the Fort Lauderdale Research and Education Center is to evaluate bermudagrasses for their ability to tolerate currently used management practices and our unique Florida environment. The standard for comparison is 'Tifdwarf'.

The bermudagrass selections that have been planted are listed below. PF11 was planted in May 1994. All other grasses were planted May or June 1993. The Quality Dwarf and Classic Dwarf have been used commercially in Florida for at least five years. However, to my knowledge, they have never been evaluated in replicated trials with the 'Tifdwarf' standard.

**'Tifdwarf':** Foundation material was provided by the Georgia Seed Development Commission in Athens, GA. Again this is the standard for comparing all other selections.

**'Tifgreen':** Foundation material was provided by the Georgia Seed Development Commission in Athens, GA. This was included since many older courses still have this cultivar on their putting greens.

**Quality Dwarf:** A 'Tifdwarf'-type selection made by Dr. G. C. Horn from a putting green in Florida. This material was provided by Quality Grassing and Services, Inc. in Lithia, FL.

**Classic Dwarf:** A 'Tifdwarf'-type selection made by Dr. G. C. Horn from a putting green in Florida. This material was provided by Classic Dwarf, Inc. in Newberry, FL.

**PF11:** A 'Tifdwarf'-type selection made by Mr. Paul Frank and provided by Mr. Frank, Wilderness Country Club, Naples, FL. This grass demonstrated tolerance to sting nematodes in a greenhouse study conducted by Dr. Robin Giblin-Davis.

**TW72:** An induced mutant of 'Tifway' provided by Dr. Wayne Hanna, USDA, Tifton, GA.

**T596:** An induced mutant of 'Tifdwarf' provided by Dr. Wayne Hanna, USDA, Tifton, GA.

**CTR 1111, CTR 2352, CTR 2570, CTR 3048, CTR 2747:** These five grasses are *Cynodon transvaalensis* selections provided by Dr. Charles Taliaferro, Oklahoma State University, Stillwater, OK. *C. transvaalensis* is one of the parents of 'Tifgreen' bermudagrass and likewise 'Tifdwarf'. This diploid grass provides the fine texture, softness, and increased density to the hybrid bermudagrasses (Burton, 1992).

**Materials and Methods:** A 10,000-square-foot putting green was built at the FLREC in October 1992. The FGCSA budget was limited so the green was not built according to USGA specifications. The native topsoil which is a well-drained sand was scraped by the contractor and leveled. A nutrient amended root-zone mix was placed on top of the scraped area. The mix was composed of 85% sand and 15% Canadian sphagnum peat moss. The root-zone mix was then fumigated with methyl bromide. The black plastic remained in place (replaced once in February) until the following summer when the grasses were planted.

Grasses were planted in 8-foot by 10-foot plots with 1-foot borders between each plot. Each grass was replicated four times

**Table: Quality scores of bermudagrass selections on FGCSA Research Green at the Fort Lauderdale Research and Education Center (May through October 1994).**

Selection	May 4 <sup>a</sup>	May 17	June 6	June 20	July 5	July 27	Aug 16	Sept 8	Sept 22	Oct 7	Oct 21
Tifdwarf	6.8 a	6.6 a	6.5 ab	4.4 bcd	6.5 a	6.1 a	6.4 a	7.0 a	6.0 a	5.3 a	7.4 a
<b>Tifgreen</b>	<b>5.9 b</b>	<b>5.5 b</b>	<b>5.4 d</b>	<b>3.4 e</b>	<b>4.8 b</b>	<b>5.0 b</b>	<b>3.5 b</b>	<b>3.5 c</b>	<b>3.1 c</b>	<b>2.8 bc</b>	<b>2.9 ef</b>
Quality	7.0 a	6.8 a	6.6 a	5.3 a	6.8 a	6.4 a	6.3 a	7.0 a	5.5 ab	5.2 a	6.9 a
<b>Classic</b>	<b>6.8 a</b>	<b>6.5 a</b>	<b>6.4 ab</b>	<b>5.0 ab</b>	<b>6.5 a</b>	<b>6.1 a</b>	<b>5.9 a</b>	<b>6.4 a</b>	<b>5.1 b</b>	<b>4.9 a</b>	<b>5.8 c</b>
TW72	6.8 a	6.6 a	6.1 bc	4.4 bcd	6.4 a	6.0 a	6.3 a	6.0 b	5.5 ab	5.0 a	6.6 ab
<b>T596</b>	<b>6.8 a</b>	<b>6.4 a</b>	<b>6.5 ab</b>	<b>4.6 abc</b>	<b>6.3 a</b>	<b>6.0 a</b>	<b>6.0 a</b>	<b>6.5 ab</b>	<b>5.9 a</b>	<b>4.9 a</b>	<b>6.5 bc</b>
CTR 1111	5.1 c	4.8 c	5.8 cd	4.1 cde	4.8 b	4.3 c	3.5 b	3.1 c	2.8 cd	2.5 c	2.8 f
<b>CTR 2352</b>	<b>5.0 cd</b>	<b>4.5 c</b>	<b>5.5 d</b>	<b>3.8 de</b>	<b>4.5 bc</b>	<b>4.0 c</b>	<b>3.8 c</b>	<b>3.4 c</b>	<b>2.6 cd</b>	<b>2.5 c</b>	<b>3.4 ef</b>
CTR 2570	4.5 de	3.9 d	3.4 f	2.5 f	2.9 d	2.8 d	2.6 c	2.4 d	2.3 d	2.6 bc	3.6 e
<b>CTR 3048</b>	<b>4.1 e</b>	<b>4.3 cd</b>	<b>4.9 e</b>	<b>3.6 de</b>	<b>4.0 c</b>	<b>4.0 c</b>	<b>4.0 b</b>	<b>3.3 c</b>	<b>3.3 c</b>	<b>3.1 b</b>	<b>4.5 d</b>
CTR 2747	4.9 cd	4.4 cd	4.8 e	3.5 e	4.4 bc	3.6 c	3.5 b	2.9 cd	2.8 cd	2.6 bc	3.4 ef
<b>Height<sup>b</sup> (in.)</b>	<b>0.188</b>	<b>0.188</b>	<b>0.180</b>	<b>0.180</b>	<b>0.160</b>	<b>0.160</b>	<b>0.160</b>	<b>0.170</b>	<b>0.165</b>	<b>0.165</b>	<b>0.160</b>

<sup>a</sup>Quality scores based on color and density using a scale of 1 (poor quality) to 10 (best quality).

Values presented are means of four replicate plots.

Values in the same column followed by the same letter are not significantly different at P = 0.05 according to Waller Duncan K - ratio t test.

<sup>b</sup>Plots are cut six days per week with a walk-behind greens mower. 0.188 = 3/16 in.; 0.156 = 5/32 in.

in a randomized complete block design. Grass materials were not uniformly propagated since they came from six different sources. In general we were able to plant sixteen 2-inch plugs into each plot using 18 inch centers. If material was not received free of soil or potting mix, plants were washed thoroughly before planting.

After the grasses had covered the plot area, maintenance and fertilization practices have been and will continue to be conducted according to normal practices for putting greens in southern Florida. This includes 18 lbs. N and K<sub>2</sub>O per 1,000 sq. ft. per year (12 lbs. from November through April and 6 lbs from May through October). The mowing height was initially 3/16 inch. It has been gradually lowered to 7/32 inch and will be lowered this winter to 1/8 inch. The plots will not be overseeded for the winter months. Plots are verticut and top dressed on a regular basis - twice each month, alternating procedures each week. Plots are monitored for pests, but pesticides are used only when justified.

Plots are evaluated for quality twice each month or when some event natural or man-made causes a noticeable change in quality. Quality is based on a combination of color, and density. We use a scale of 1 to 10 with 1 equivalent to the lowest quality grass and 10 equivalent to the best grass. Only absolutely perfect grass would receive a rating of 10. Plots are rated by myself and Marcus Prevatte. Our scores are then averaged and the average score used for statistical analysis.

**Results:** The grasses were grown-in very differently from the normal methods used on a golf course. We had to be absolutely certain that no cross contamination occurred. Therefore, we had almost complete coverage of the plots before any physically disruptive maintenance (mowing, verticutting, etc.) was used. No data was collected concerning the grow-in period since the grasses were planted at different time and, more importantly, provided by different sources who used different methods for growing the plugs. During the winter of 1993-94, the height of cut was slowly lowered to 3/16 inch.

The results from the past year illustrate why research takes time (a long time) and why researchers are reluctant to share results before the experiment is completed. The *C. transvaalensis*

selections looked absolutely beautiful last winter and spring. For those who attended the 1994 South Florida Turfgrass Exposition in April, you saw for yourself that all the grasses, including 'Tifgreen', were of equal high quality. Everyone was excited about the *C. transvaalensis* selections because they did indeed have a very fine texture. "Almost like bentgrass" was the common refrain.

However, the grasses had not yet lived through a summer at a typical putting green height. The quality scores collected during the summer and late fall are provided in Table 1. Scores from PF11 are not included as it was planted in May 1994 whereas the others had been planted the year before. As the summer progressed, the 'Tifgreen' hybrid bermudagrass and the *C. transvaalensis* significantly declined in quality. These grasses are starting to recover as the temperatures decrease this fall. We plan to lower the cutting height to 1/8 this winter and will maintain that height for as long as possible. In other words, the grasses will be subjected to the worse possible conditions for growing grass. If none of them survive, we will raise the height of cut. We will keep you informed of the results from this project, but please be patient. This is a long term project! Please feel free to visit the plots at any time or make special plans with a group to come to the Fort Lauderdale Research and Education Center on March 16, 1995 for the annual University of Florida Turfgrass Field Day and South Florida Turfgrass Exposition.

**References Cited:** Burton, G. W. 1992. Breeding improved turfgrasses. Pages 759-776 in: Turfgrasses. D. V. Waddington, R. N. Carrow, and R. C. Shearman, co-eds. American Society of Agronomy, Madison, WI.

**Acknowledgements:** For this particular project, the FGCSA and FLREC have received support from Quality Grassing and Services, Inc. (building of green), Hector Turf (irrigation), Harrell's, Inc. (fertilizer), Golf Agronomics (top dressing), Gooze Trucking (trucking of top dressing), RSI, Inc. (greens mower and Cushman), and Miles, Inc. (insecticide). We also thank those suppliers who participate in the South Florida Turfgrass Exposition as the funds raised from the Exposition are used to pay the salary of Marcus Prevatte who maintains the FGCSA research greens.



In the last issue of *The Florida Green*, Shelly Foy put together a tremendous article about the Audubon Cooperative Sanctuary Program (ACSP) and details for implementation of several wildlife enhancement projects. I'd like to follow up on her excellent work with information

superintendents can use when asked why the ACSP isn't endorsed by the National Audubon Society.

The first fact to be noted is that there are over 500 Audubon Societies in the U.S., separately incorporated, each guided by its own Board of Directors with their own

programs and positions. The Audubon Society of New York State, the sponsoring organization of the ACSP, was the second State Audubon Society to be formed, founded in 1897 by Theodore Roosevelt and others. The National Audubon Society was formed in the 1940's to focus on issues beyond the scope of the state Audubon Societies.

Given this fact, the suggestion by members of the National Audubon that the New York State Audubon was attempting to exploit "the good Audubon name" when it instituted the ACSP, seems arrogant and presumptuous. The Appellate Division of the Supreme Court of New York apparently agrees, since it ruled against National Audubon's lawsuit in 1987 in their attempt "to permanently enjoin the use of the term 'Audubon Society' or any variation thereof by the Audubon Society of New York State".

The fact that some golf course managers were unaware of these organizational differences is irrelevant. The merit of the program is what

attracted their interest, and if anything, finding out the National Audubon not only did not support it, but was harshly critical of it, surprised and disappointed those who chose to participate. There was no intent to mislead, and to my knowledge, no golf course in Florida has pulled out of the program or refused to join when this was explained to them.

The rift between the two organizations is philosophical, and can be best described as a battle between environmental idealism and "wise use" strategies. The National Audubon has taken the idealistic position while New York State Audubon represents a practical "wise use" philosophy.

What this means is that the National Audubon looks at all golf courses as pieces of ground which would better have served the needs of birds and other wildlife if left in the original undeveloped state. They are opposed, and always be opposed, to golf courses on this basic philosophical point.

The National Audubon refuses to acknowledge the positive environmental contributions of golf courses, but instead, focuses on the perceived negatives, such as pesticide and water use. Theirs seems to be a simplistic and unrealistic view that if the golf course wasn't there, the land used to build it would be left in its natural state as a pristine wilderness.

The New York State Audubon, on the other hand, takes the practical approach that any piece of property, including golf courses, can have a positive or a negative impact on the environment, depending on how the land is managed. They recognize the reality of private property rights and that people can and do use their land for various activities, and they realize the futility of simply preserving pristine land and creating new regulations to solve environmental problems. They believe that all land is important and that everyone can and must become actively involved in the stewardship of their land.

Thus was created the Audubon Cooperative Sanctuary Program, a proactive partnership of education and

## The rift between two Audubon Societies

### Mark My Words



*Mark Jarrell*

Mark Jarrell, CGCS  
Assistant Editor

guidance for landowners to manage their land in a more environmentally friendly manner. The goals are to get people to use fewer pesticides, less water, more native plants, use energy more efficiently, recycle, and create wildlife habitat. On golf courses, this usually translates to building bird feeding stations, nestboxes, native grass restoration projects, aquatic environment enhancement, and other activities to increase space, food, water, and cover for wildlife.

The National Audubon's mindset that the best use of the land is to leave it alone blinds them to recent indications of properly managed lands creating greater biodiversity than wilderness areas, especially places like South Florida where many undeveloped tracts have been overtaken by exotics.

This "black-or white" mentality gives no credit to golf courses built on landfills or other marginally useful properties, or to the many ponds created for water hazards which serve to support many forms of wildlife. Sometimes golf courses are the only green spaces to be found in an urban area, and may often be the only safe haven for neotropical migrants looking for rest stops on their journeys between the Americas.

To most people, the word Audubon is synonymous with "birds", but it makes you wonder if those affiliated with the National Audubon have ever set foot on a golf course. At Palm Beach National, the course I manage, our mammal population is pretty much limited to raccoons, squirrels, opossums, armadillos, and an occasional fox, but our bird

population is large and diverse. On any given day you can see various species of ducks, herons, ibis, anhingas, egrets, cormorants, doves, crows, coots, owls, and many varieties of songbirds. Hawks and osprey hunt the property on a regular basis. At golf courses in less urban surroundings, even greater numbers and diversity of both mammals and birds can be found.

The Audubon controversy is a perfect example of environmental idealism versus "wise use" and good stewardship.

All Americans should carefully evaluate the positions and philosophies of the environmental organizations they choose to support, and the impact this has on personal freedoms, property rights, and economic security.



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To anyone who cared to listen, I have characterized the summer of '94 as being no fun trying to grow grass under water and in the dark! It was a great time to float a loan, but a lousy summer for selling

sunscreen. At one stretch it got so bad they were filming Sea Quest on my 8th fairway, and I kept seeing Lloyd Bridges and Flipper in the parking lot. Golfers, when they could play, had to read a tide chart as well as the sand bars to sink a putt. We were issuing life jackets and paddles with each golf cart. We

used airboats for beverage carts and the rangers had canoes.

I don't know about you, but my growing season started falling apart on May 28th. It is now November the 18th. In these past 171 days, we have had 114 days of recorded rainfall. As bad as that sounds, there were parts of the state that were hit even harder than that. Actually, October and November have been liveable except for tropical storm Gordon's contribution to the misery this week. I was beginning to regret that I had sent \$14.95 to Popular Mechanics for those ark building plans. We had begun to get 4 to 5 day stretches with no rain. And most importantly, we were getting sunny days.

It may be rather academic to report that the average rainfall for the Orlando area is 48 inches per year, and we have recorded 75.96 inches so far at our course. The point is that it obviously hasn't been a normal growing season this year. Besides the record rainfall, it was mostly cloudy and overcast every day. Do you remember junior high biology?

How about the part where plant cells take water and sugar in the presence of sunlight and produce chlorophyll? It is called photosynthesis. Read my lips! Photo equals sunshine. No sunshine . . . no synthesis. No synthesis . . . no healthy green grass. Normally, you'd have hot sunny days with clouds and showers in the late afternoon that would move through quickly. Not this past summer!

This year with saturated root zones and reduced sunlight we were being set up for weak turf conditions. Clubs that tried to maintain aggressive management programs probably ended up with thin areas. I know that was the case for me as we tried to prepare our 1 year old greens for their second PGA event since they were planted. At least in our case, my management was here all summer and they knew the rotten conditions that had existed all season. They were just happy that we caught a break in the weather and could get the tournament completed.

But some courses and superintendents were being put on the rack for poor course conditions as members who spent the summer up north came back to find playing surfaces less than ideal. I just hope enough of them were back for Gordon's little soggy post script on that miserable season. Gordon was a condensed version of our whole summer.

Unfortunately, conditions have not improved dramatically. We can expect to have a tough winter and spring with the usual increased traffic on the already weak turf. If the weather improves, we may be able to grow a good stand of winter grass to hide the weak bermudagrass, but we will have to eventually deal with the thin turf in the spring. Let's hope that next year's summer is a little more normal.

There are a lot of unsolved mysteries in the world. Why you cannot grow turfgrass under water and in the dark is not one of them!

## The Summer of My Discontent

### Green Side Up



*Joel D. Jackson*

Joel D. Jackson, CGCS  
Editor

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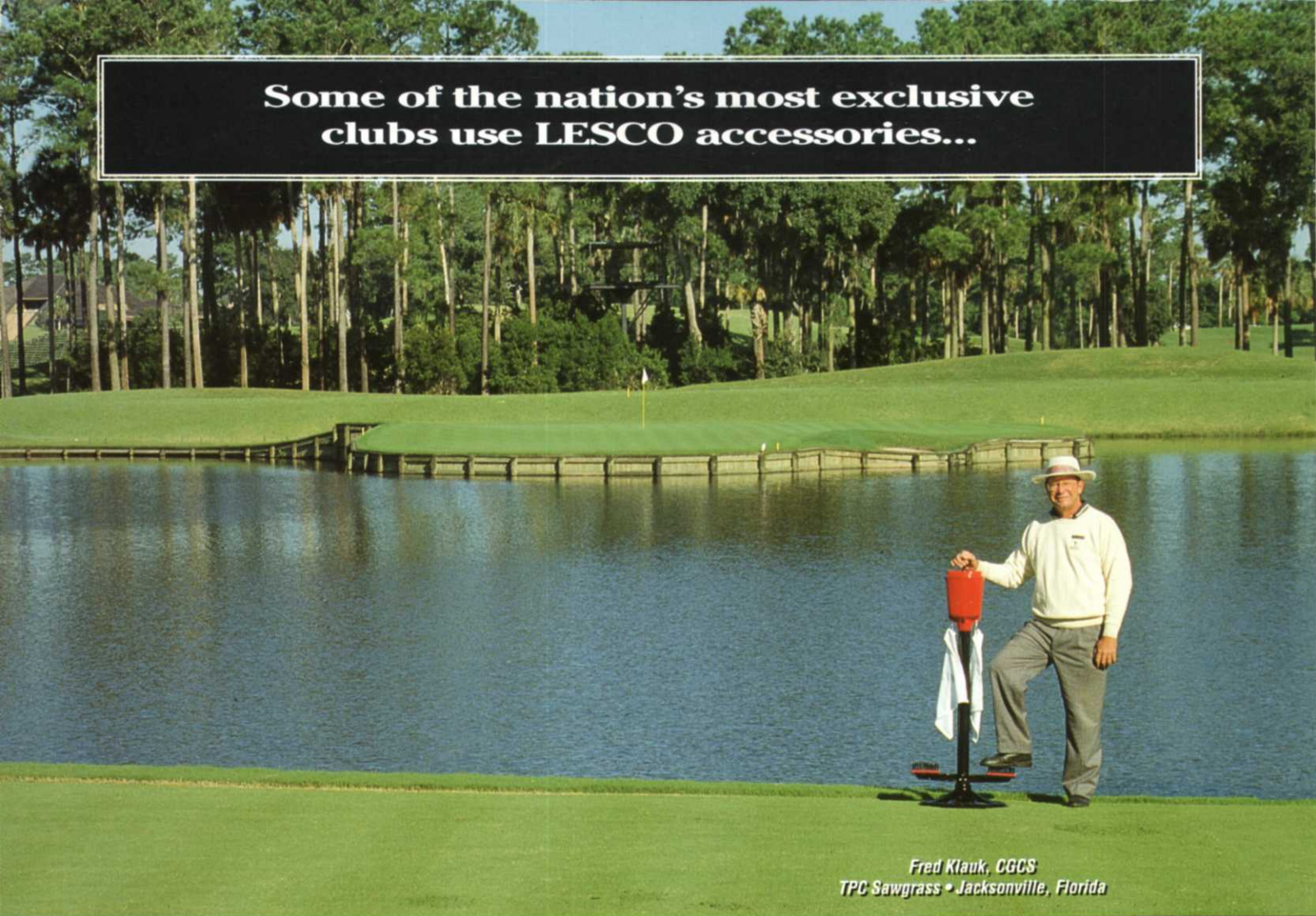
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