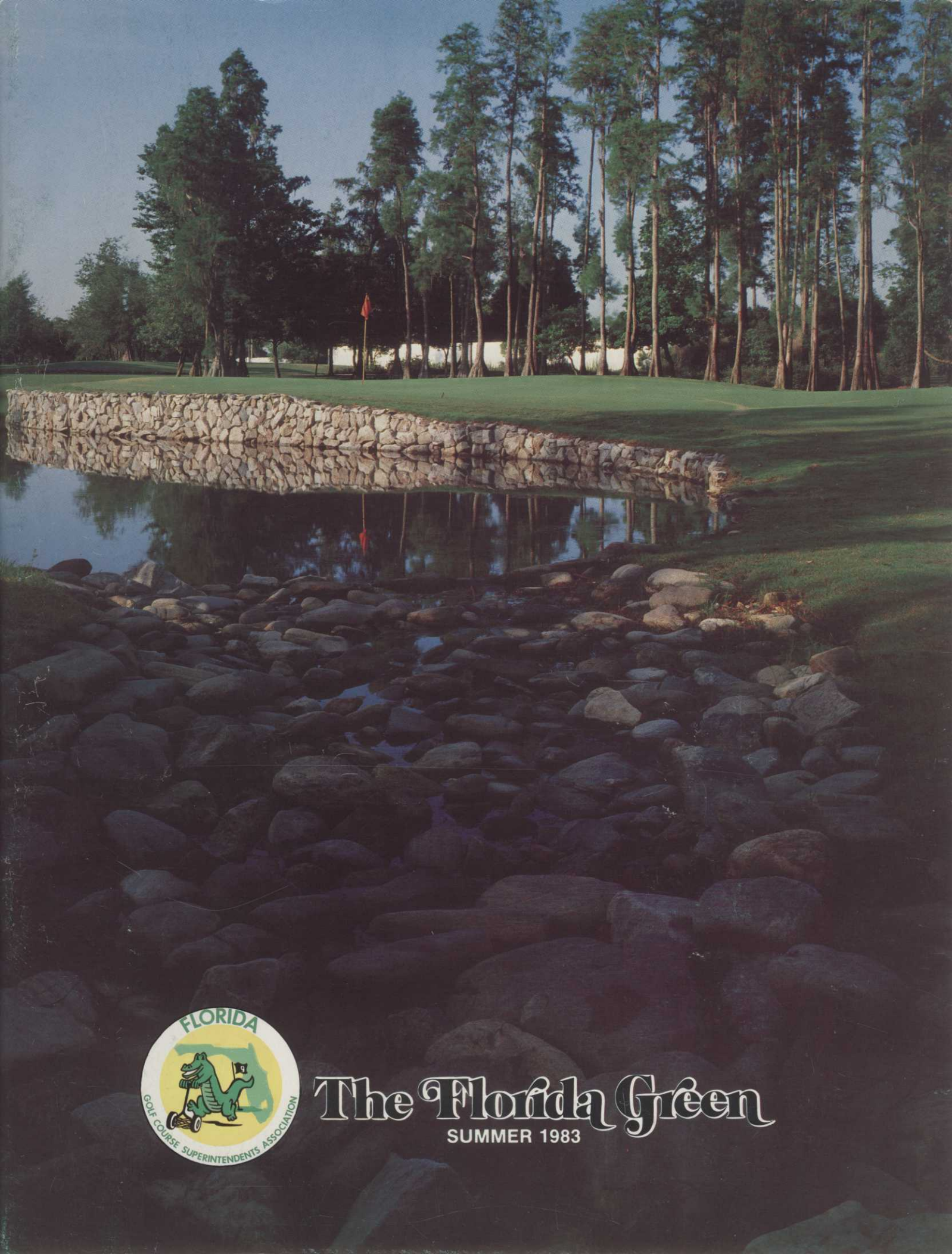

FLORIDA GOLF COURSE SUPERINTENDENTS ASSOCIATION

The Florida Green

SUMMER 1983

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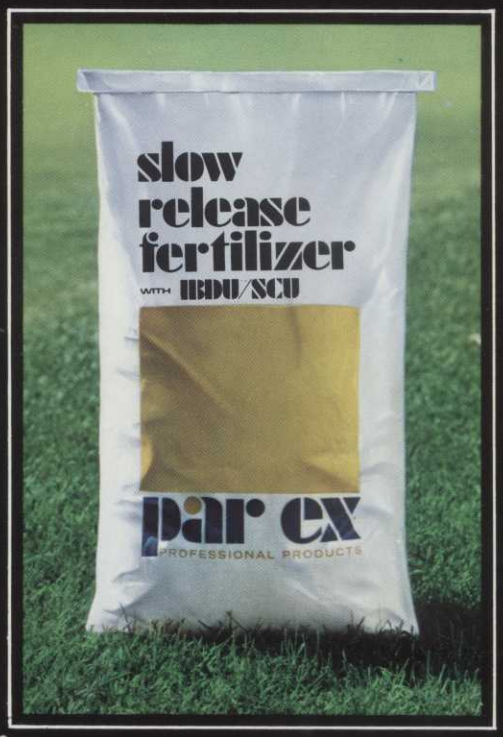

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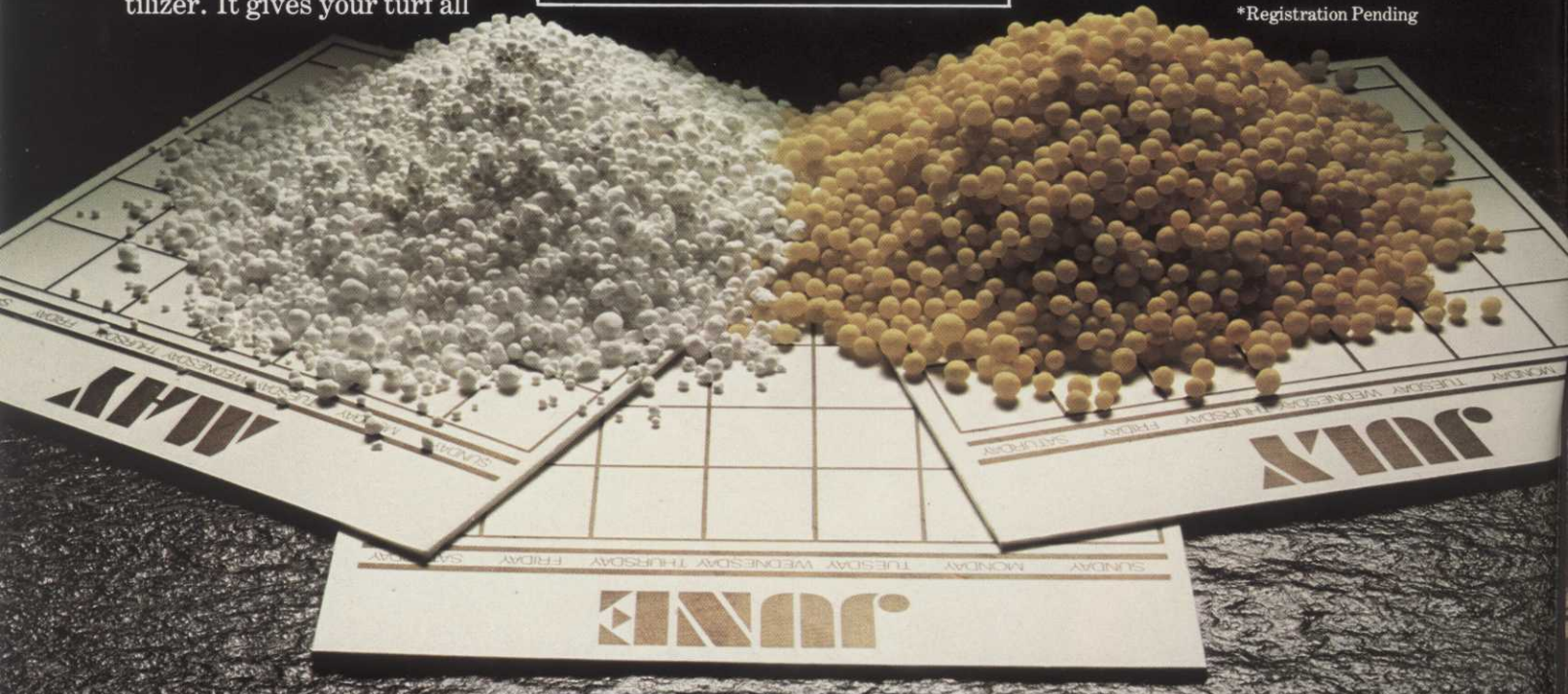

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Golf Correcting Water Usage Image

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President's Message

The Florida G.C.S.A. is pleased to announce that six thousand dollars has been donated to the Bermudagrass Decline Project that is being implemented by the F.T.G.A. in conjunction with the University of Florida IFAS. Dr. T.E. Freeman and Dr. Bruce Augustin will be heading a team of experts that will be involved with identifying the problem and determining different types of control. The total cost of the program is twenty thousand dollars with an estimated duration time of two years. Hopefully the research team will come up with some answers in a shorter time period with the assistance of golf course superintendents who will become involved in field trials and observations.

Since the Scholarship and Research Committee of the F.T.G.A. is organized to oversee various research programs, we feel confident that these people can effectively represent the interests of the Florida golf course superintendents. An additional five thousand dollars was earmarked for the general S&R Fund to be used at the discretion of the committee knowing full well the Florida G.C.S.A. will continue to be actively involved in selecting various projects that will warrant research funds. Many thanks to the local chapters and Nematode Controllers Inc. for the collection of these funds.

Since our association's rebirth in 1977 we have gotten involved with a lot more projects than we ever anticipated. It always seems that each new problem is just as important as the last endeavor and they all seem to be critical to the improvement of our profession. Our executive board feels that it is now time to sit back and evaluate our goals and objectives and formulate a realistic and practical set of long range plans. Our direct working relationship with F.T.G.A. must be determined so that the two organizations don't conflict and end up counter-productive. Various ideas have been discussed to get the association more involved with improved public relations throughout the golfing community, creation of more services available to the members, expanded fund raising efforts for research programs plus striving to present educational topics that superintendents truly want to participate in. At our summer board meeting we will be discussing the formation of these plans and a committee to compile them. PLEASE LET YOUR FEELINGS BE KNOWN by contacting your External Vice-President. ■

Kevin Downing

INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
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GOLF TURF NEWS

BRUCE J. AUGUSTIN
Extension Turf & Water Specialist
AREC Ft. Lauderdale

CHARLES H. PEACOCK
Extension Turf Specialist
Gainesville

THE IMPORTANCE OF TURF AERIFICATION

A number of mechanical, cultural practices are commonly used in turfgrass management to help develop and sustain quality turf. These practices physically alter the plant's environment by removing and/or relocating soil and organic materials. Coring, slicing, spiking, and vertical mowing are different methods that are used and they vary in the degree of cultivation.

Coring or aerifying is the most intensive form of cultivation. Coring uses hollow tines that remove turf, thatch, and soil in cores of 0.25 to 0.75 inches in diameter and up to 3 inches long. There are a number of commercially available coring machines.

The main function of aerifying is to open up the soil and thatch layers and allow oxygen in and carbon dioxide out of the root zone. Roots and soil micro-organisms use oxygen for respiration and other metabolic processes, and release carbon dioxide. Water and nutrient uptake depend on the soil haivng adequate amounts of oxygen so that roots can function properly. If the oxygen is used up in the soil, absorption by roots ceases.

Aerification provides many benefits to turf: root and shoot growth are stimulated around the holes, and poor root systems can be quicky improved if diseases and nematodes are not a problem. Dense roots are often observed in aerifier holes.

Cultivation by coring helps alleviate many physical problems that cause poor aeration, such as soil compaction, layering, and thatch. Wetting of dry soils can also be improved by coring.

Aerifying can be accomplished at any time the grass is actively growing. This is normally April through September in Florida. A time should be chosen when the grass is not under stresses from the environment or pests. If a nematode infestation exists, it should be corrected before aerifying. This will help promote rapid and extensive root growth after coring.

Frequency for aerification depends on the quality and use of turf. Normally coring is done in spring and fall in Florida, but if problems such as compaction, layering, excesive dry spots exist, coring may be done once per month during the growing season. No one has ever had problems with over-aerification, except budgetary.

Size of the tines used depends on the reason for aerifying, the area being aerified, and the piece of equipment being used. Large tractor drawn units which take large cores (0.75 inches in diameter) are used on tees and fairways. On greens, several sizes of cores can be taken. Small (0.25 inch diameter) tines are used for routine aerification. Large).625 inch diameter) tines are used to correct major compaction and layering problems.

The cores should be removed from greens if there is any contamination problem. However, cores can be matted back into the green if no problems exist. This will provide a light top-dressing. Cores are best disposed by matting on fairways and other playing surfaces.

The importance of aerification in Florida is often underestimated because people think our sandy soils are sufficiently porous, but many cultural problems occur that stem from the lack of oxygen in the root zone. Thatch and heavy rainfall can seal the soil and prevent oxygen movement into it. Root degeneration usually then will occur in water-logged soils making it difficult to get fungicides into the root zone to prevent this from happening.

Aerification is an important turf management tool that can help correct existing problems and prevent other problems from occurring. High quality turf often depends on aerification.

South Florida Sunshine

By BRAD G. KOCHER
Inverrary Country Club

"A SUPERIOR PUTTING SURFACE"

The one area of the course where over 50% of the game of golf is played is the green or putting surface. By "scorecard design", 50% of the strokes of a par round are supposed to be putts. Further, taking into consideration approach shots and chip and run shots, one can see that the putting surface is where a majority of golf is played.

A good putting surface is one that permits the ball to roll true. A good green will also "hold" a well hit shot. If I possessed a perfect putting stroke, I would not expect the putting surface to adversely affect the roll of the ball.

A perfect surface for putting might be a 5,000 square foot pool table. I could accurately predict that the ball would roll exactly where I hit it. It might be a little on the fast side, but it would be a true test of putting skill.

A turfgrass putting surface could not be nearly as perfect as a pool table because of some of the inherent consistencies of a growing plant. But a putting surface as near to those standards would exhibit perfection.

There are many superior putting surfaces in existence and there are certain agronomic and mechanical practices that contribute to a high quality putting green.

The variables that will be discussed are mowing, verticutting, topdressing and fertilization. There are certainly a multitude of other variables such as irrigation, aerification, pesticide programs, cup changing and a host of others. I do not wish to downplay these areas. These areas are very important, however, the items we will discuss make the major difference between a good and a superior putting surface.

A superior surface is generally one that is fast. All slow surfaces are not bad nor are all fast surfaces good, but as a general rule the truest putting surfaces are the faster ones.

Fast greens are a by-product of a correct balance of mowing, verticutting, topdressing and fertilization. If any area gets out of balance, quality suffers.

Mowing at low heights is essential — on healthy turf. I do emphasize healthy because I would not want someone other than a golf course superintendent to mandate low mowing on turf that is not healthy and not in a growing condition conducive to low mowing. Mowing heights from 3/16″ to as low as 1/8″ on a daily basis are not uncommon. "Tournament" courses sometimes mow as low as 5/64″ for short periods of time.

Low mowing heights reduce the amount of friction the grass plant has on the golf ball, and allows the ball to roll faster and thereby truer. There must be enough leafblade density to keep the ball on course, but we will touch on that effect when we discuss verticutting.

Mowing direction should be changed daily to prevent the leafblades from laying in one direction and cause more upright growth.

Mowers should be sharp, and lapped at least weekly. The height of cut, and reel to bedknife settings, should be checked daily. Dull, improperly set mowers can cause extensive leafblade damage that is both unsightly and unhealthy.

The use of grooved rollers is also encouraged. To quote the U.S.G.A. Green Section; "Grooved rollers encourage more upright growth habit of grass. The surface area of the grooved roller is tremendously reduced, thus they do not lay the grass down as much in front of the bedknife."

Some of the finest Bentgrass and Tifdwarf Bermuda Greens I have played have been maintained most of the season at 1/8″. Tifgreen surfaces were maintained at slightly higher heights — 5/32″ through most of the growing season.

Vertical mowing or verticutting is also a beneficial mechanical process that removes and helps to control undesirable thatch in greens. A small amount of thatch is desirable between the grass plant and soil surface, however, excessive amounts provide for a spongy and undesirable putting surface. On a good green, infrequent "maintenance levels" of verticutting keep out excessive thatch buildup.

Thatch is generally caused by one or all of the following practices; overwatering, overfertilizing, infrequent mowing or by mowing at excessively high mowing heights. Putting green quality grasses are designed to withstand low mowing heights and will tend to build up thatch levels if not maintained at these levels.

If these conditions exist, verticutting will be a necessity. Ideally, the fewer number of verticuttings we must do, the better. Fred Klauk, in several talks he has given on putting surfaces, stresses the importance of leafblade den-

(continued on page 9)

(continued from page 8)
sity. Excessive verticutting decreases leafblade density and adversely affects the roll of the ball. We desire dense leafblade coverage. It helps the golf ball roll true.

Another aid that helps to smooth a putting surface is topdressing. Light frequent topdressings do more to improve a putting surface than any one single maintenance practice. Topdressing also aids in thatch decomposition and can thus help to reduce verticuttings.

There are courses with superior putting surfaces that topdress lightly and as frequently as every two to four weeks. Light topdressing after it is worked into the turf is hardly noticeable, other than a smoother, faster putting surface. With the newer topdressers on the market eighteen greens can be topdressed in a matter of hours.

On slow play days, we will close the back nine in the morning, topdress, drag and mow before the golfers can turn from the front to the back. We then do the other nine ahead of afternoon play. Thanks to technology, topdressing is not the tedious task it used to be several years ago.

Fertilization is the management practice that varies so drastically from course to course. I believe that proper fertilization techniques can reduce the need for excessive verticutting because of thatch buildup. So many times we used to fertilize at 3/4 to one pound of nitrogen the beginning of the month, get a tremendous flush of growth that tapered off at the end of the month.

We were a victim of peaks and valleys of growth and thereby putting surface inconsistency. If we were to determine the nutritional needs of the grass plant and divide that equally by 30 days in a month, ideally we would be applying on an as needed basis. The grass would grow at consistent, manageable rates. We would not have to use corrective measures for under or overfertilization.

What is really desirable is *just enough* growth to provide dense, uniform, healthy turfgrass.

Monitoring clipping removal on a daily basis is an excellent method of determining growth. Excess growth, and we may be dumping our grass baskets every green, too little growth and we may be dumping after several greens.

One method of more closely attaining light, frequent applications of fertilizer is the use of liquid fertilizer. Many courses including Inverrary have used this method successfully for years.

If we determine through observation of the turf that 3/4 pound of nitrogen, coupled of course with the other essential elements for growth, can provide adequate nutritional needs for the plant, we will apply it in weekly doses.

We use a 100 gallon sprayer with a field jet nozzle calibrated at 100 gallons/acre. Greens are sprayed as needed, or for practical purposes let's say once a week at 3/16 pound of nitrogen. If our needs were 1/2 pound N per month then we would apply 1/8 pound N per week. The combinations are infinite.

Using a 8-0-8 formulation, we can spray 1 to 10 gallons per acre and attain from .018 pound N/1000 square feet to .18 pound N/1000 square feet. (The formulation weighs 10 lbs. per gallon). The frequency could be once a week to several times a week. The application is quick, ties up only one man to fertilize, and only requires a light syringe to wash the fertilizer into the soil.

The affect is predictable, manageable growth. We eliminate periods of large flushes of growth that build thatch. We find our flexibility is greatly increased using this method of supplying plant nutrition. It is certainly not the only method, but it assists us in fine tuning growth and thereby provide a more consistent, uniform putting surface.

It is challenging to try to attain a superior putting surface and fortunately with the increasing technology in turfgrass research, chemical research and product and equipment advances, we are able to better produce quality greens. By simply comparing notes with fellow superintendents, we can mold our own programs using the best ideas.

It all amounts to better putting surfaces for our golfers. I hope that management organizations, greens committees and other interested parties can financially support the programs that ultimately help produce the better greens and golf courses that we desire. I believe we all strive for perfection and a better golf course. Superior greens are a by product of routine maintenance, technology, communication and the continued efforts of research organizations that need our support. ■

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GOLF TURF NEWS

BRUCE J. AUGUSTIN
Extension Turf & Water Specialist
AREC Ft. Lauderdale

CHARLES H. PEACOCK
Extension Turf Specialist
Gainesville

WINTER TURF PROBLEMS

Florida's subtropical climate should provide ideal conditions for plant growth. This past winter has proved that growing grass under wet, warm conditions can be a challenge and problem.

Overseeding is never easy since competition between grasses is keen. Bermudagrass is tough and aggressive. Successful overseeding depends on timing the seeding of ryegrass at a period when temperatures favor germination and growth. Normally this is mid-November to December. This year overseedings did not establish early because soil temperatures during November and December *never* fell below 50°F, the cut off point for Bermudagrass growth. Temperatures were still in the mid 60° range at the end of December. Bermudagrass out-competed the ryegrass and management could not correct this. Cool days and nights in January and February allowed overseeding to become strong. While there were warmer temperatures in November and December than usual (averaging 5° higher) January, February and March were cooler (averaging 2-6° lower). This has favored the ryegrass later into spring and delayed active growth of Bermudagrass. Night temperatures at Gainesville were still in the low 40° range in early April.

At this time of year ryegrass is in good condition at the time overseeding grass should be going out to effect a smooth transition back to Bermudagrass. The transition period is thus more critical and detailed management for transition should be practiced.

Temperature problems were not the only climatic influences on turf growth this winter. Decreased sunshine (down 12% in November, 16% in December, and 15% in January from 1981) affected turf growth and pest problems. Bermudagrass does not grow well under cloudy weather and an early cool snap set the Tifdwarf into semi-dormant state from which it has not recovered. Many greens which were not overseeded were severely damaged by wear since Bermudagrass requires sunshine for optimum growth.

Through December, 1982 there was 25 more inches of rain than in 1981 and 6 inches above the 70 year average. This has been more severe in south Florida, with averages in certain areas considerably more than 60 inches of rainfall for the past 12 months. Decreased sunshine, warm temperatures, and high humidity increased the incidence of *Rhizoctonia* brown patch, *Holminthosporium* leaf spot, and *Pythium* through last December.

Wetter weather also may have increased nematode populations. Several people noted nematode problems during January. Wet conditions favor sedge growth, therefore selective control for sedges might be considered in certain areas.

Rain reduces irrigation requirements, but excessive rainfall leaches nutrients from sandy soils. Fertilizer applications often were delayed where fertigation was utilized, thus soil nutrient levels of certain elements may be low.

Summary and Prognostication

Climatic factors have favored a strong overseeding into April, meaning a slower transition. This means more detail to transition management must be practiced. Soil testing for fertility and possible nematode problems should be done as early as possible so cultural practices can include corrective measures. No one controls the weather, and even the best superintendents can have unpredicable problems which relate directly to climate. As temperatures warm and turf growth is fully active, take a long hard look at problems this unusual weather has created. Plan to adjust management where necessary to bring the turf into a healthy, vigorous condition. ■

Watching Your Tees & Q's

by Steve Batten and Bud White
United States Golf Association—Green Section
Southeastern Region

DO GROWTH REGULATORS HAVE A POTENTIAL?

Controlling different aspects of plant growth and development has interested plant scientists for over 50 years. Early growth regulators were often used for broadleaf weed control. Through the years, interest in shoot growth retardants has drawn considerable attention to industrial turfgrass management, such as roadside turf and drainageways. Only recently has interest been promoted to fine bladed golf course turf.

The main reason is that the commercially available growth regulators have been more successful in suppressing the cool season turfgrasses than the warm season turfgrasses. Warm season turfgrasses were found to be easily discolored, thus their use was limited in the Southern United States on fine bladed turfgrass.

The most commonly used growth regulators used on bermudagrass are maleic hydrazide (Slo-Gro) and mefluidide (Embark). These are often referred to as "growth inhibitors" because of suppression. Their mechanics of action is the suppression of turfgrass shoots by inhibiting cell elongation. Both are primarily absorbed by the leaves, so inhibition is best when as much leaf area as possible is present at the time of application. Scheduling of mowing prior to application can therefore be important in achieving good results. Some manufacturers suggest mowing 7 to 10 days after application to allow for translocation and to remove any flush of growth during the first week.

Suppression periods vary from 5 weeks for mefluidide on bermudagrass to 7 weeks for maleic hydrazide. Discoloration is possible with both growth regulators, however, bermudagrass is more sensitive to maleic hydrazide than to mefluidide. Further, the fine-bladed bermudagrasses are more sensitive to growth regulators than the coarser common types.

The most common use of growth regulators in industry at present is the reduction of mowing time on hazardous slopes. A significant reduction in time is possible over a 5-8 week period. Broadcast application to slopes is a limited use for golf courses, because of the possibility of discoloration.

One use which should be given consideration is the use of growth inhibitors for chemical edging. This would include edging around trees, bunkers, and miles of golf car paths. Experimentally mefluidide has shown promise for this type of use. The cost per linear foot would have to be compared to manual hand labor for a practical evaluation of growth regulators for edging.

Selective use of growth regulators among species is a use of growth regulators for reduction of unwanted species. Kikuyagrass as an example, is presently being suppressed in common bermudgrass in Southern California. Specie tolerance could also be important for mixed species such as reduction of cool season turfgrass in bermudagrass.

One of the most important characteristics of maleic hydrazide and mefluidide is the ability to impair seedhead production. This has been observed on both warm and cool season turfgrasses. The most optimal timing for application of growth regulators on bermudagrass would be the Spring, when they are flowering. In cool season turfgrasses, seedhead suppression has been used as a form of weed control and annual bluegrass on Kentucky bluegrass.

Two new experimental growth regulators are presently being evaluated in both warm and cool season turfgrasses. These are EL 500 (flurprimidol) or Cutless™ and PP333 (paclobutrazol). They are a new group of growth regulators that can reduce plant growth by inhibiting gibberellic acid. Application of gibberellic acid can also be used to reverse the shoot suppression effect of these compounds. This means that actual plant suppression can be manipulated and controlled or even reversed. These new compounds are also presently being evaluated at several state universities for the retardation of water use in turfgrass. To date, the gibberellic acid inhibiting growth regulators are looking promising for water use reduction. This new concept could dictate new dimensions for the use of growth regulators on turfgrass in the 1980's. ■

AQUATURF LAUNCHES TURF IRRIGATION NEWSLETTER

JACKSONVILLE, FL: April 22, 1983—AquaTalk, a professional turf irrigation newsletter, is being published by AquaTurf, the Jacksonville-based manufacturer of prefabricated pumping stations and turf irrigation systems.

The quarterly four-page newsletter will feature articles and photographs about turf and irrigation as well as other items of interest to turf managers and supervisors, architects and designers. The first issue, for example, will carry stories about the first successful attempt to seed clouds, and the three requirements rainfall must have in order to maintain healthy turf.

The newsletter will be mailed free to those involved in turf irrigation and related industries, by writing AquaTalk, 11363 San Jose Boulevard, Jacksonville, Florida 32217. ■

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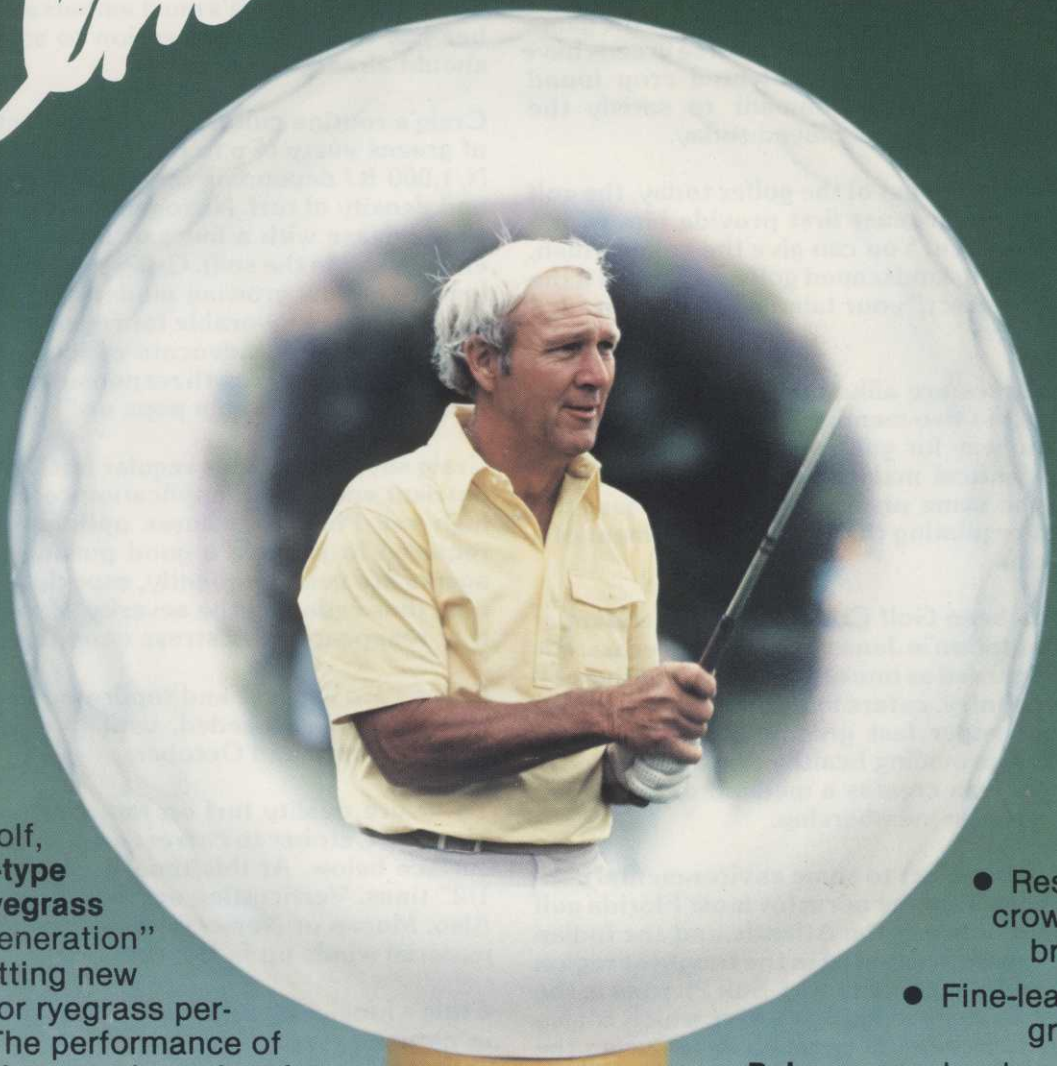

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Treasure Coast "Tide"ings

By JAMES P. CALLAGHAN
Rio Mar Country Club

PUTTING SURFACE MANAGEMENT AT INDIAN RIVER PLANTATION

Putting surfaces may only account for 2%-3% of the total acreage on a typical golf course but 50% of the game is played on that small portion. Golf course greens have become the most intensively cultivated crop found anywhere in a natural environment to satisfy the demands of the game as it is played today.

In order to gain the respect of the golfer today, the golf course superintendent must first provide him with a quality putting surface. You can give the golfer a lush, green and beautifully landscaped golf course, but if the greens are not "perfect," your talents are downgraded in the golfer's eye.

No two golf courses are alike and to compound that basic difference, no two memberships or clientele are alike. There's no way for golf course superintendents to carry out identical maintenance procedures and wind up with the same product — there are just too many variables regulating the micro-environment of a golf course green.

Craig Baker has been Golf Course Superintendent at Indian River Plantation in Jensen Beach for 5 years. His club, which is regarded as one of the best executive golf courses in the country, caters to an older clientele that doesn't demand super fast greens. Graig maintains them to a degree, providing healthy turf and a smooth surface which in turn creates a medium to fast green that is pleasing to the membership.

Craig's greens are subject to some environmental conditions that are far from the norm for most Florida golf courses. Nestled between the Atlantic and the Indian River, his golf course is situated in the toughest region of the state to maintain quality turf. Soil Ph runs in the 7.5 to 8.5 range as does irrigation water which is also high in chlorides. Rainfall is normally less during the summer months due to the afternoon seabreeze that keeps thunderstorms from approaching that build up over the mainland. Craig noted that last summer, Crane Creek located 5 miles to the west, received some 30 inches of rain more than he recorded at his golf course. Environment can be extremely different at two points separated by only a few miles! And the golfers can't understand why the conditions of two golf courses the same distance apart aren't identical.

The daily maintenance program on the Tifgreen 328 greens at Indian River Plantation, which average 5,550 ft.^{2}, includes mowing at 5/32" to 3/16" with triplex greensmowers using grooved rollers year-round. Greens are mowed in different directions daily, changing direction on the cleanup pass to discourage grain. During the peak season when play approaches 300 rounds/day, cups are changed daily. Inspection of each and every green first thing in the morning is insurance on spotting unexpected surprises such as vandalism, disease or insects. It's most embarrassing when a member has to call your attention to something that you should already be aware of.

Craig's routine cultural practices include fertilization of greens every two to three weeks with .75 to 1.5 lbs. N/1,000 ft.^{2} depending on weather, growth rate, color and density of turf. Nitrogen sources used are usually slow release with a low salt index (Craig already has enough salt in the soil). Craig stated; "I believe in keeping the greens growing moderately at all times when conditions are favorable for regeneration of the grass-plant. I'm not an advocate of lush greens — but I do strive for a good growth response that will protect me if something undesirable pops up."

Craig supplements his regular fertilization with micronutrient sprays and applications of sulphur to reduce high soil Ph. This insures optimum nutrient uptake required to provide a good putting surface. Wetting agents are used frequently, especially during dry periods, thus reducing the severity of localized dry spots that reappear under stress conditions.

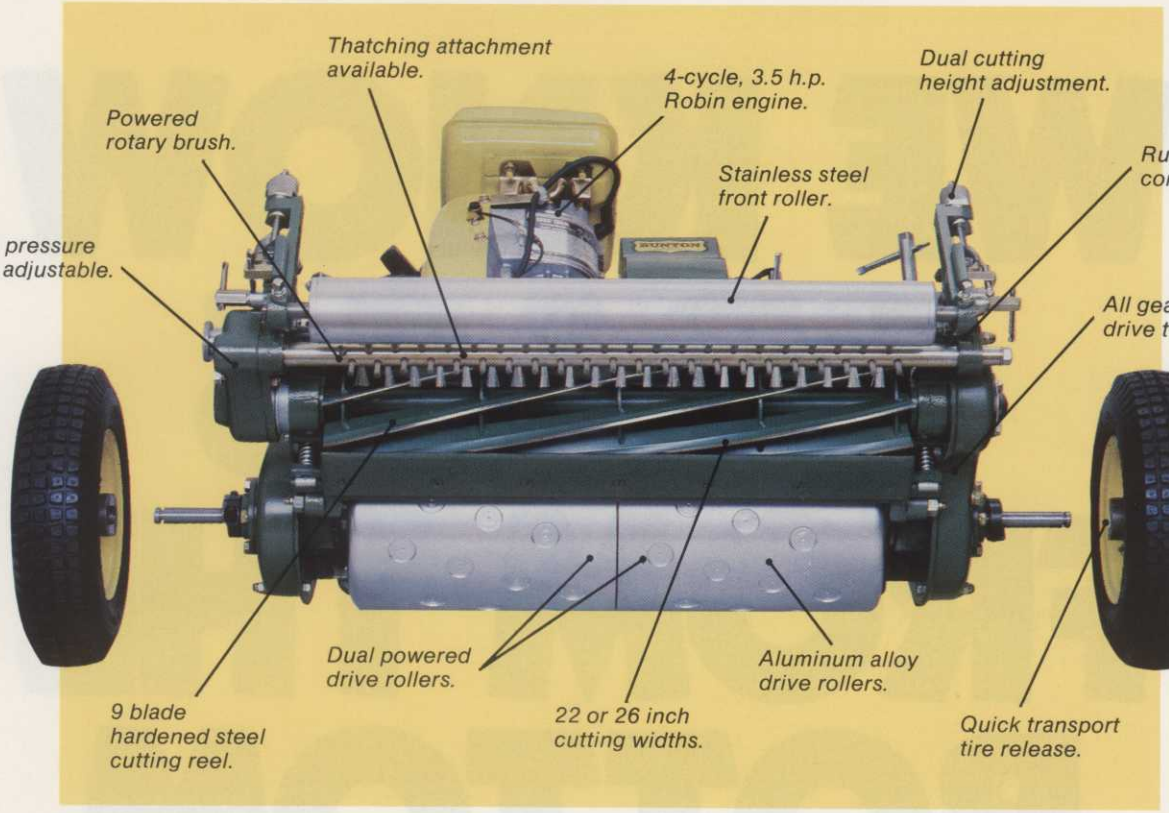
Greens are verticut and topdressed lightly with an 80-20 materials as needed, usually every 4 to 6 weeks between April and October.

To insure quality turf on top, measures are taken in May and October to correct any damage to the putting surface below. At this time, greens are aerified using 1/2" tines. Verticutting and heavy topdressing follow. Also, Mocap or Nemecur is applied to insure that the material winds up in the root zone where it's needed.

Craig's fungicide and insecticide programs are curative in nature except when conditions are favorable for a given problem — then prevention takes hold. His intensive program has kept weeds on the greens to a bare minimum and they are spot treated as needed.

Craig pointed out, "In greens management, one must realize that individual greens on the golf course have their own environment and what works on one may not give the same results on another. One must make necessary adjustments between greens to provide uniformity as required."

By playing his course regularly and lending an ear to the membership, Craig is always on top when it comes to the condition of the greens at Indian River Plantation. If adjustments are in order, they are carried out immediately.



A VIEW FROM THE BOTTOM SHOWS WHY THE BUNTON GREENSMOWER IS ON TOP.

Look at the Bunton greensmower from any angle and you'll suspect it's the best available. When you look at it from the perspective of your greens, you'll understand why.

Let's start with the powered rotary brush. Mounted between the front roller and the reel, the brush rotates in the opposite direction to lift the grass before it is clipped.

The brush is easily adjusted to coincide with the pitch of the bed knife, and can be easily raised to reduce the pressure on the grass, or disengaged for mowing without the brush. And, it can be replaced with an optional verticut attachment for thatching.

To insure the straightest possible cut, equal power is supplied to both sides of the heavy gauge aluminum alloy drive roller. The nine-blade, well-balanced cutting reel is highly resilient and resistant to wear due to its high-frequency hardened steel construction.

And, that's not all. Bunton has built in features that make life easier on the owner. There's the traditional rugged Bunton construction, a standard hand brake to aid in transportation, quick release pneumatic transport tires, an all gear drive train and a dependable 4-cycle Robin engine.

Other features include a choice of metal or plastic catcher and 22 or 26 inch cutting widths.

Now that you suspect the Bunton greensmower is different than all the rest, give us a call for a demonstration. Then you'll *see* why it's the best.

ALL THE FEATURES YOU NEVER EXPECTED IN A GREENSMOWER.

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NORTH FLORIDA

DIVOTS

by:
Eddie Snipes

WHEN IS A GREEN A "10"

Hey! Would you look at that! What color, so smooth, so firm, now that my friends is a true "10". To my knowledge, golf course greens have never been subjected to a scale of 1 to 10 like other subjects or phenomena. Probably, one reason for a nonexistant scale is the subjectivity that is involved in determining what makes a good putting surface.

Putting surfaces are a hot item for discussion in all forms of golf literature. Color, speed and architectural design are a few of the many hotly contested issues at present. A golf course superintendent has a wealth of biological research to substantiate various cultural turf practices that produce good putting surfaces. Turfgrass terminology also enables one to find a "10" by giving one direction in striving for a good putting surface.

Uniformity, smoothness, firmness, resiliency, verdure land color are just a few of the characteristics one may look for in a good putting surface.

Turf cultural practice such as balanced fertilization, irrigation and greens maintenance techniques gives one the means to achieve the characteristics desired in a good putting surface. Even the greens maintenance techniques are subjective in nature. How often does one verti-cut, top dress, airify, mow and at what height of cut does one mow; what degree does one allow chemicals (herbicides, fungicides, inserticides) to pay in striving for a good putting green surface?

Superintendents throughout the state of Florida have their own ideals and mode of operation in making a good putting surface. Depending on what school of thought they belong to, cultural practices and green characteristics will vary.

How does one know when they have arrived at a "10"? In the final analysis, whether a superintendent be at a public resort or private membership club, the feedback received from your golfers can be the scale of your greens. Putting green characteristics and cultural turf practices can be used to promote the type of surface that is economical and desired by the golfers on ones course. Different clubs will desire different putting green standards. The superintendents must listen to the subjective overtones of his membership and adjust his putting green surfaces accordingly. Clear cut guidelines for what makes a good putting green surface can best be determined by those that play your course. ■

BRUCE OLIVER NAMED PRESIDENT OF ZAUN

News Release

Bruce Oliver was elected president and general manager of Zaun Equipment, Inc., at the recent annual stockholder and board meeting of the Jacksonville-based outdoor equipment distribution firm.

Ben Reemelin, Zaun's president for the past 29 years, will remain active in the firm as Chairman of the board and the executive committee.

Oliver, who joined Zaun in 1954, has served in various capacities and was most recently responsible for all purchasing and sales promotion of the multi-state distributor.

Zaun is one of the nation's largest volume distributors of the Toro Company's golf course equipment lines and its residential irrigation products. It employs 60 people in its Jacksonville and Orlando offices and annual sales are approximately $13.5 million. In addition to Toro, the firm distributes from its Jacksonville and Orlando warehouses products of leading outdoor and power equipment manufacturers including McCulloch chain saws, Kero-Sun heaters, Charmglow outdoor cookers, Mitsubishi and Roper Tractors. ■

THE AGONY OF ANGER

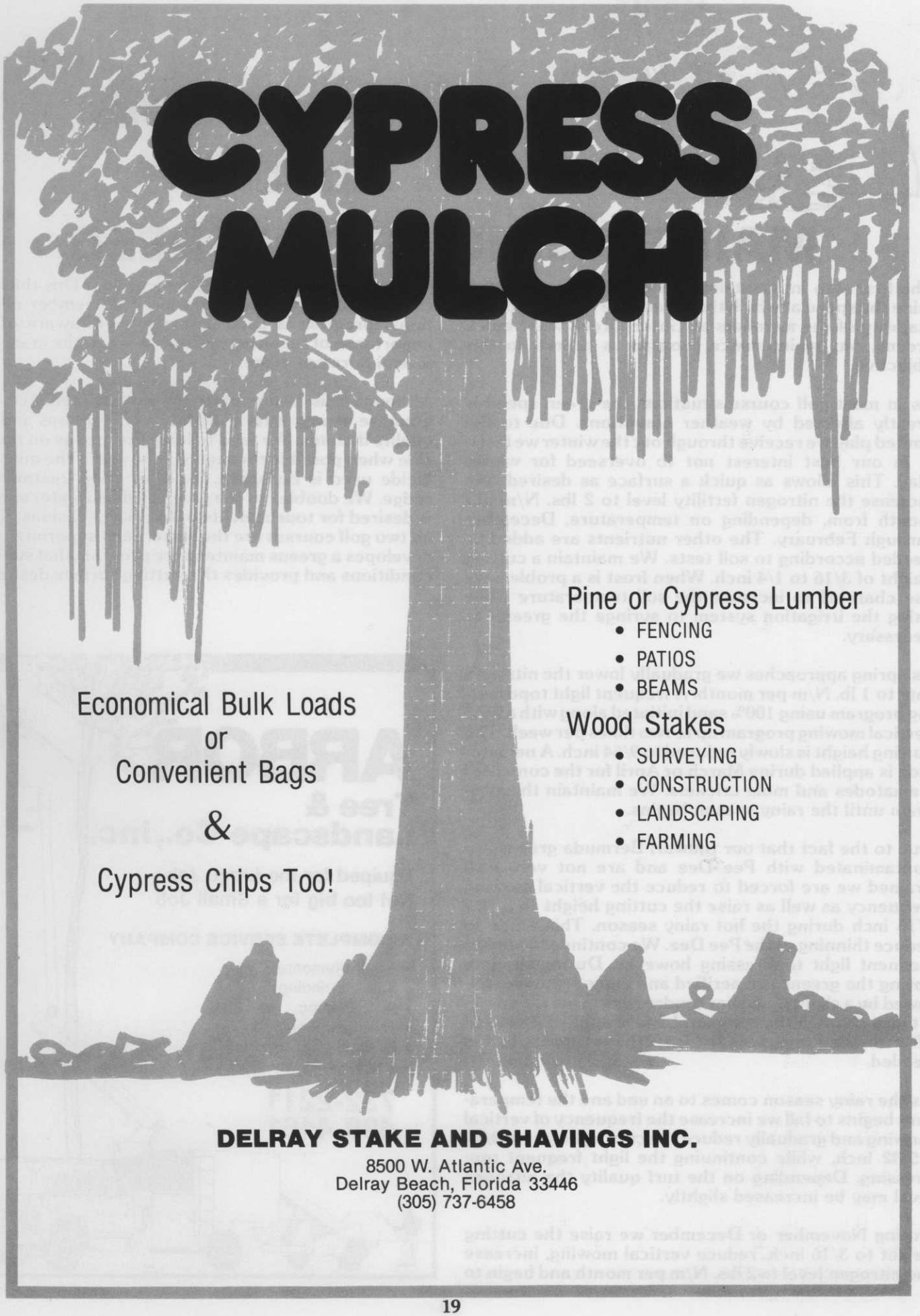
Psychologists tell us that bottled-up anger can cause severe tensions that do actual physical harm — ranging from peptic ulcers to hypertension. And, while exploding may be more healthy than holding anger in, expressing anger through temper tantrums . . . or insults can have serious career consequences. That's why you should learn how to let off steam safely when a problem arises. Here are some suggestions on how to use this sometimes destructive force constructively:

When you feel the need to strike out — first put some space between yourself and the cause of your anger. Any change of scene or routine, no matter how brief, can help by giving you a fresh perspective on your own feelings and the problem.

Work off your tensions. Take a brisk walk . . . Put the palms of your hands together; squeeze. Repeat as needed. You'll feel better and less angry, too.

Keep your anger in perspective. Express your feelings to the proper person with a cool statement like "This action upsets me." As a way of introduction, it will enable you to discuss the problem calmly. ■

Office Guide 1-15-82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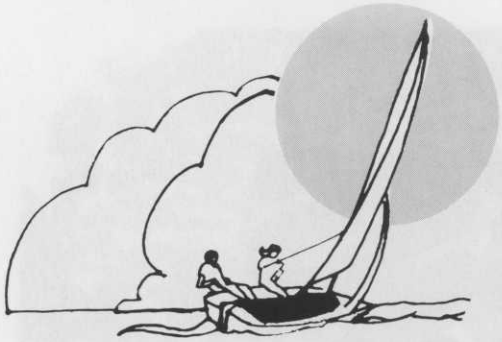


Suncoast Sails

By LARRY LIVINGSTON
Gator Creek Golf Club

MAINTAINING GREEN SPEED

The first step in maintaining green speed is to determine the speed at which the greens are to be. Since the majority of the members at Gator Creek want quick greens, our maintenance program is geared to this objective.

As in most golf course situations the green speed is greatly affected by weather conditions. Due to the limited play we receive through out the winter we feel it is in our best interest not to overseed for winter play. This allows as quick a surface as desired. We increase the nitrogen fertility level to 2 lbs. N/m per month from, depending on temperature, December through February. The other nutrients are added as needed according to soil tests. We maintain a cutting height of 3/16 to 1/4 inch. When frost is a problem we use charcoal to increase the soil temperature while using the irrigation system to syringe the greens as necessary.

As spring approaches we gradually lower the nitrogen rate to 1 lb. N/m per month. A frequent light topdressing program using 100% sand initiated along with a light vertical mowing program up to two times per week. The cutting height is slowly reduced to 9/64 inch. A nematocide is applied during March or April for the control of Nematodes and mole crickets. We maintain this program until the rainy season begins.

Due to the fact that our tifdwarf Bermuda greens are contaminated with Pee Dee and are not very well drained we are forced to reduce the vertical mowing frequency as well as raise the cutting height to 5/32 - 3/16 inch during the hot rainy season. This tends to reduce thinning of the Pee Dee. We continue to apply a frequent light topdressing however. During the late spring the greens are aerified and plugs removed, followed by a slightly heavier topdressing. This is done 3 - 4 times through the summer. Lime is applied if needed after coring. Fungicides and insecticides are applied as needed.

As the rainy season comes to an end and the temperature begins to fall we increase the frequency of vertical mowing and gradually reduce the cutting height to 9/64 - 5/32 inch, while continuing the light frequent topdressing. Depending on the turf quality the nitrogen level may be increased slightly.

During November or December we raise the cutting height to 3/16 inch, reduce vertical mowing, increase the nitrogen level to 2 lbs. N/m per month and begin to phase out the topdressing applications. This thickens the turf in preparation for winter. A member educational program is used to make them aware of the importance of repairing ball marks when the grass is in a semi-dormant stage.

Although this is our basic greens maintenance program we usually alter it slightly as conditions and turf quality dictates. We tend to keep the greens on the dry side when possible throughout the year. The only herbicide used is Basagran, used for spot treatment of sedge. We double cut the greens when a faster surface is desired for tournaments or special occasions. Since no two golf courses are the same, each superintendent developes a greens maintenance program that suits his conditions and provides the putting surface desired. ■

Palm Beach Trade Winds

by: Michael J. Bailey
Boca Greens Country Club

A surface that is a surface, is a surface... Right? In sports, whether the surface is asphalt, clay, wood, astroturf, or turf... a surface is a surface. Right? Wrong! In basically all sports a surface is a surface, except in the game of golf, where there are no two surfaces alike. Not even within the front to the back of the very same green.

Considering the game of golf possesses so many variables, what is the one common element that all golfers can relate to when comparing golf courses throughout the world? The answer: Putting green speed quality. All golfers have a sense for putting green speed, whether the golfer feels the green to be like concrete or a shag carpet. A somewhat desired putting green speed quality can be achieved, whatever our handicap, as we all can appreciate an excellent putting surface.

Within the topic of good putting green speed quality, the variables start to surface. Factors such as turfgrass species, variety, geographic location, weather, time of day, soil and moisture content, fertility, topdressing, etc. ...etc...., can determine putting green speed quality. What is the most evident of all factors? Answer: Height of cut and means of cutting. Researchers have many conclusion for achieving that ultimate speed quality; however, of all the comparisons and analogies, what is perhaps the key element toward high quality? Answer: Type of machine employed for mowing. It is at this point, the chairs start to squirm, as we all have strong feelings on the pros and cons of walk and triplex greens mowers.

I believe we will all basically agree that a walk mower will ultimately achieve a better putting green surface in comparison to a triplex mower because of the very simple agronomic fact that an excellent, high quality "fast" putting green surface will obviously be mowed at tournament specifications, with stimp meter readings averaging 10 feet. This fact alone creates excessive stress to the turfgrass plant, by which only the delicacy of a walk mower will thereby "aid" in achieving and maintaining, for an extended period of time, a better putting surface. I am not saying I favor one versus the other, nor is the intent of this article to be controversial; however, it is not the golf course superintendents who must be aware of the derivities of the two different machines, but rather the rest of the entire golfing population be aware of the pros and cons of such a cultural practice.

All too often a golfer will make a comparison about the condition of greens of two different clubs, without even being aware of what type of machine performs the mowing. The comparable variables of type of club, extent of play, budget, type of cultivar, cultural practices and ultimate speed desired will determine just what type of machine meets the club's requirements. If all of these variables could ever be found equal between two different clubs, then we could compare apples to apples.

We, as the golf course superintendent, are given the responsibility to advise a club toward that certain direction of maintaining an excellent putting green surface. All too often a club will impulsively be led to believe that walk mowers can be their key to success. The club, with their golf course superintendent, should objectively evaluate the desired product, evaluate total cost, and the answer will glaringly hit you in the face... you will not even have to contemplate the situation, as the answer should already be revealed.

Such is the case for George Cavanagh, Certified Golf Course Superintendent at the President Country Club, in West Palm Beach. Upon the building of an additional 36 holes, management has confronted Mr. Cavanagh to objectively evaluate walk mowers versus triplex for greens mowing. Mr. Cavanagh recently made a personal survey within Palm Beach County regarding this situation, by contacting many clubs of diversification, to objectively evaluate such usage. The golf course superintendent was asked the following questions, with a general conclusion as follows:

1. *Do you use hand mowers, if so, why?* Replies were rather equally balanced as many courses use walk mowers in the winter, while triplexes are dominant during the summer, and those who use walks in the winter, generally switch during the summer. Reasons for using walks were reinforced by quality of cut and less wear stress during the crucial winter months. Those who employ walks find maintenance expenses higher by comparison, but are willing to pay the cost.

2. *How many greens do you have?* A distinct pattern showing the larger complex, and the development courses prefer triplexes, in comparison to the smaller exclusive private country clubs preferring the walks even though additional costs are incurred.

3. *Do you overseed?* Those overseeding found the walks more beneficial toward a better stand of turf, while some prefer walks for just the period of seed establishment, while those who do not find the need to overseed, generally find the demand for cut can be fulfilled by the triplex.

4. *What is the average size of your greens?* Greens sizes were averaging 6000 square feet. There was a correlation

(continued on page 23)

(continued from page 22)

with the smaller the green size and the heavier the amount of play, the need for walk mowers, while the larger the size, obvious wear tolerance can be reduced; thereby, allowing triplexes. Some courses find a need for both types, as walks are used on greens that are not agronomically sound, or greens with severe shade; whereby, walks will aid with such a delicate situation. Some even prefer walks for the perimeter cut, while the triplex mows the remainder of the green.

5. *Do you find you can cut greens lower with walks?* Surprisingly, the walks are not employed for the reason of lower cut, but again for reasons of truer cut and less wear. A lower height was not considered the objective, as cultural practices were satisfactory no matter which type of machine performed the cutting.

6. *Do you use walk mowers 7 days or skip?* Cost evaluations can best be given as the answer. The totally exclusive, private club, where cost is generally not a factor, prefer walks 7 days a week. Some chose to skip walks on weekends primarily for east of labor while some chose walks for only special occasions.

7. *Procedure for winter/summer?* Those who chose walks, prefer usage primarily for the winter, while seldom were the walks used year round. Considering we must contend with a 12 month growing season with the need of such extensive summer renovation, the labor force can not afford to be used for such tasks as simply mowing greens, when so many other projects must be resolved.

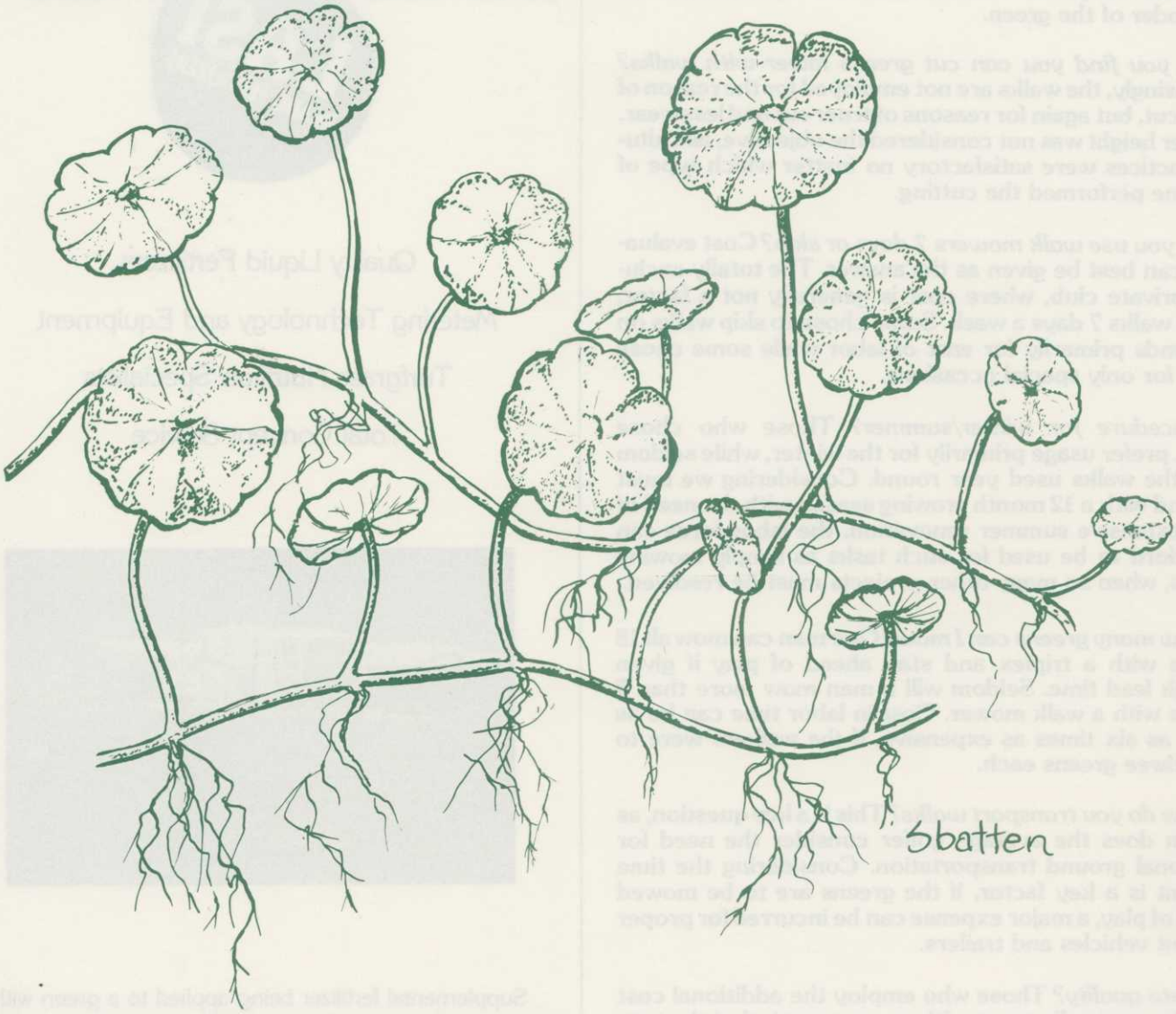
8. *How many greens can I mow?* One man can mow all 18 greens with a triplex and stay ahead of play if given enough lead time. Seldom will a man mow more than 5 greens with a walk mower. Cost in labor time can be as much as six times as expensive, if the walkers were to mow three greens each.

9. *How do you transport walks?* This is a key question, as seldom does the average golfer consider the need for additional ground transportation. Considering the time element is a key factor, if the greens are to be mowed ahead of play, a major expense can be incurred for proper efficient vehicles and trailers.

10. *Rate quality?* Those who employ the additional cost of walks, generally agree with management, that the type of cut is beneficially worth while; however, one must certainly be willing to pay the bill for additional mower purchases, because one will still usually employ triplexes during the summer.

An overall summary can best be stated as; yes, walk mowers will aid in producing a better high quality putting green surface; however, ther are many other factors to consider and the cost incurred will most certainly be far greater than triplexes.

First, one must consider, does your club really require the need for such high quality putting surfaces? If the answer is yes, then one must critically examine the exhorbitant additional cost of machines, parts, labor and total time involved. If the answer is again yes, then you have already reached a conclusion; however, if you answered no to just one part of this discussion, then proceed no further. ■



PENNYWORT (Hydrocotyl spp.)

By Steve Batten

Pennywort (Dollarweed) can be found in low wet areas along the Southern Coastal States of the United States and Tropical America. Several species have also been found in South Africa. It can be easily recognized by its peltate flat leaf with the stem connected to the middle.

It is a member of the carrot family which also includes Marsh Parsley, Water-Hemlock, and Bishop's Weed. There are three species common to Florida, according to Dr. David Hall, University of Florida. These include Hydrcotyle unbelletus (Water Pennywort), H. bonariensis (Coastal Plain Pennywort), and H. verticillata (Whirled Pennywort). All three species are so similar in appearance that without the flower spike most people cannot tell the difference.

Besides air born seeds, Pennywort can spread by means of rhyzones or creeping stems and reproduce from stems and pieces. It's creeping habit enables it to withstand low mowing heights common to golf course greens. Therefore it can be difficutl to control. Most herbicide recommendations include combinations of 2,4-D + Dicamba. Multiple applications are usually necessary for control at bi-weekly intervals. ■

Hector

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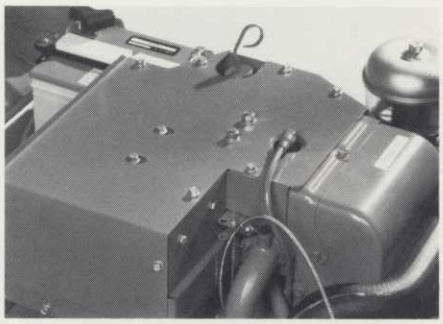
These durable midsize 52″ and 62″ rotaries mow like garden tractors, trim close like walk mowers, and let one man do both faster. That's the productivity of professionals.

Toro engineering makes our Groundsmaster 52 and Groundsmaster 62 deliver superior performance. And Toro durability keeps them that way longer.

DURABILITY FEATURES:

POWER TO SPARE FROM ENGINES PAINSTAKINGLY TESTED AND SELECTED BY TORO ENGINEERS to fit the machine and its applications:



a. Groundsmaster 52 has a 16 hp, 32.4 cu. in., cast-iron, air cooled Briggs & Stratton engine.

b. Groundsmaster 62 is powered by a 20 hp, 47.7 cu. in., twin cylinder, air cooled Onan engine for strong, quiet performance.

HEAVY DUTY DONALDSON AIR CLEANER is industrial type. Keeps your engine running longer by filtering out dirt and other contaminants before they can cause excessive wear. Allows dirt to be removed easily at the end of each day.

HYDROSTATIC DRIVE provides single pedal operation for forward/reverse speeds. Easy, smooth maneuverability with no clutch to wear out. Also, your operator gets superb speed control for all conditions. Infinitely variable speed up to 8.5 mph.

RUGGED ROTARY BLADE SPINDLE to stand up to bombardment of rocks and other debris. Toro uses a cone rather than a cylinder housing, and splines rather than keys, to better absorb shock loads. Timken "SS" bearings also used. All for greater durability.

PERFORMANCE FEATURES:

P.T.O. DRIVE SHAFT with mechanical engagement for decks or accessories. Avoids belt misalignments and makes changing from one accessory to another a breeze.

OFFSET DECK OUT FRONT AND REAR WHEEL STEERING for superior maneuverability. And the 52" and 62" decks are just right in size. Big enough to get the job done quickly and small enough to get into those tight spots. Both decks are offset 10¼ inches to give you one pass trimming around trees and obstacles. It's also ideal along curbs and beneath overhanging shrubs.

EXCELLENT STABILITY comes from 4 wide stance wheels plus low center of gravity. Front drive wheels and rear wheels are equipped with 4 ply rated tires. Both drive wheels have drum brakes controlled by individual pedals.

CUTTING HEIGHT ADJUSTS EASILY from 1 to 4 inches without tools. Simply pull four pins.

FLOATING DECK means more consistent cut, even over irregular terrain, because the cutting unit floats free of the prime mover. And, the entire deck raises hydraulically for fast, easy transport over obstructions like curbing.

OPERATOR STATION features adjustable, molded cushion seat, or deluxe suspension seat for a smooth ride all day long. 15 inch steering wheel, hour meter and ammeter, all located for maximum comfort, convenience and efficiency. Safety interlock stops engine when operator leaves seat with PTO or traction pedal engaged.

Team your Groundsmaster 52 or Groundsmaster 62 with any of these deck combinations.

GROUNDSMASTER 52 PRIME MOVER.

Shown with floating 52″ deck. Driven by a 16 HP, 32.4 cu. in., cast iron, air cooled Briggs and Stratton engine. Designed for mowing up to 2.8 acres/hour. Ideal for mowing small areas, or as a trim mower when maneuverability is most important. Offers variable ground speed up to 8.5 m.p.h. Hydrostatic drive for single pedal operation of forward and reverse. Excellent stability from 4 wide stance wheels plus low center of gravity. Front drive wheels and rear wheels are equipped with 4 ply rated tires. Both drive wheels have drum brakes with individual pedals for greater trimability that reduces an uncut circle to 0″. Operator station has adjustable, molded cushion seat or a deluxe suspension seat for smooth ride all day long. PTO drive shaft makes accessory changes a snap.

GROUNDSMASTER 52 FLOATING DECK.

This three bladed, front mounted rotary unit offers full flotation in all directions, with rollers in front and back for reduced scalping. Ideally suited to cutting situations that involve hilly, uneven terrain. The Groundsmaster 52 with floating deck is capable of mowing up to 2.8 acres an hour at 5.5 m.p.h. Deck offset 10¼″ to the left for greater trimability. Capable of a 0″ uncut circle with brake assist. Has a 51¾″ width of cut. Can cut from a height of 1″ to 4″ in ½″ increments and has simple adjustment without tools. 5″ deep 12 gauge stamped steel Wind Tunnel® housing for easier cutting and clippings discharge even on wet grass.

GROUNDSMASTER 52 STANDARD DECK.

The Groundsmaster 52 with standard deck is capable of mowing up to 2.8 acres an hour at 5.5 m.p.h. Unit has 51¾″ width of cut with the three blade front mounted rotary deck. Deck offset 10¼″ to the left. Can cut a 0″ uncut circle with brake assist. Can be adjusted easily for a height of cut, from ¾″ to 4″ in ¼″ increments, without tools. Has 5″ deep, 12 gauge stamped steel Wind Tunnel® housing for easy cutting even on wet grass.

GROUNDSMASTER 52 FLOATING REAR DISCHARGE DECK.

Designed for controlled discharge of clippings to the rear center between wheels. Has full flotation design with front rollers to reduce scalping. Constructed from 12 gauge steel and is 3″ deep. The 51¾″ deck can mow up to 2.3 acres/hour at 4.5 m.p.h. Three bladed front mounted rotary is offset 10¼″ to left for close trimming around obstacles and under overhangs. Adjusts from 1″ to 4″ in ½″ increments without tools. Lifts hydraulically for transport.

GROUNDSMASTER 52	52″ floating cutting deck 52″ standard cutting deck 52″ floating rear discharge cutting deck
GROUNDSMASTER 62	62″ floating cutting deck 52″ floating cutting back 52″ standard cutting deck 52″ floating rear discharge cutting deck

GROUNDSMASTER 62 PRIME MOVER.

Shown with floating 62″ deck. Driven by a rugged 20 HP, 47.7 cu. in., twin cylinder, air cooled Onan engine. Designed for mowing up to 3.4 acres/hour. Ideal for mowing small to medium sized open areas, and for trimming in medium to large areas. Variable ground speed up to 8.5 m.p.h. Hydrostatic drive for single pedal forward/reverse. Four wide stance wheels with 4 ply rated tubeless tires. Front wheel traction drive. Rear wheel steering for greater maneuverability. Individual drum brakes for left and right traction wheels to allow for brake assist steering that makes possible trimming up to a 0″ uncut circle. Operator controls designed for easy access and operation. Molded foam seat or deluxe suspension seat offer operator comfort even on the toughest terrain. Donaldson air cleaner standard. Tough commercial strength construction. PTO drive shaft for easy interchangeability of decks and accessories.

GROUNDSMASTER 62 FLOATING 62″ DECK.

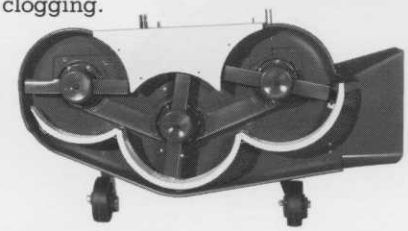
Capable of mowing up to 3.4 acres an hour at 5.5 m.p.h. Front mounted, three bladed, rotary deck has 61⅝″ width of cut. Deck is offset 10¼″ to the left for greatly increased trimability. Capable of 0″ uncut circle with brake assist. Deck easily adjusts without tools for a height of cut from 1″ to 4″ in ½″ increments. Rugged 5″ deep 12 gauge steel welded construction for greater durability even in tough mowing conditions.

GROUNDSMASTER GRASS COLLECTING SYSTEM.

Designed to fit the Groundsmaster 52 floating deck, the Grass Collecting System allows on-the-unit bagging of grass clippings. Utilizes a separate 16″ diameter blower attached to the deck's discharge port that virtually eliminates clogging. A durable one-piece, high-density polypropylene chute directs the grass clippings back through a hinged hood mounted to the bag support system. A rear-mounted polyester bag for clippings is positioned inside the path of the cutter deck for easy maneuverability. Hinged hood on top of bag support opens easily for quick removal of grass bag. The grass collecting system comes standard with a polyester bag capable of holding 7 bushels of grass clippings. An optional dry condition polyester bag that will hold up to 10 bushels of clippings is also available.

These accessories make our Groundsmaster 52 and Groundsmaster 62 professionals for all seasons.

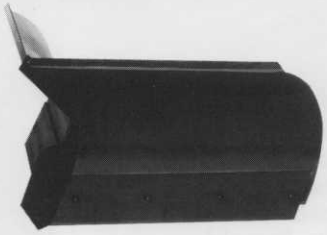
SNOWTHROWER. Big 48" two stage snowthrower with adjustable side skids and discharge chute. Electric chute rotator comes standard. Driftbreaker auger and oversized second stage clears snow in a hurry and prevents clogging.



LEAF MULCHER. Made of heavy gauge steel, the leaf mulcher mounts under side discharge decks allowing blades to vacuum and pulverize fallen leaves.

ROLL OVER PROTECTION SYSTEM. Certified roll over protection system (ROPS) for greater operator safety conforms to OSHA regulations, includes seat belt for greater safety.

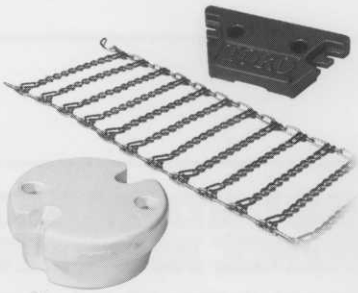
CAB WITH ROPS. Completely enclosed vinyl cab turns your Groundsmaster into an all-weather vehicle. Includes ROPS. Heater and light kit available.



V-PLOW. Rugged, 48" V-plow for snow has front skid and reversible/replaceable scraper blades for low cost snow removal. Requires special mounting kit which includes tire chains.

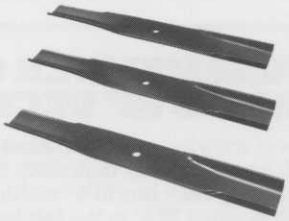
ROTARY BROOM. Tough 48 inch rotary broom sweeps parking areas, paths and walkways, saves hand labor.

SEAT OPTIONS. Choose from adjustable, molded foam seat or deluxe suspension seat for operator comfort on your unit.



WHEEL WEIGHTS/REAR WEIGHTS/TIRE CHAINS. Toro offers wheel weights and tire chains for better traction when using accessories. Rear weights will help counterbalance front mounted accessories for better operation.

SPARK ARRESTOR MUFFLER. Minimizes spark emissions.



HIGH LIFT BLADES. Provides additional lift for improved appearance in wet or heavy grass.

PLUS, OUR MOST IMPORTANT ACCESSORY OF ALL. YOUR FULL SERVICE TORO DISTRIBUTOR.

When you need reliable maintenance and repair service, turn to your full service Toro distributor. He has highly trained people ready to serve you fast. A complete inventory of replacement parts. Plus other valuable services, like technical training for your operators. Whatever your needs in professional turf equipment, call your full service Toro distributor.

GROUNDSMASTER® 52 PRIME MOVER (MODEL NO. 30775)

ENGINE	Briggs & Stratton, 1 cylinder, 4 cycle, air-cooled 16 HP @ 3600 RPM, electric start. 32.4 cu. in. displacement. Splash oil system. 2 qt. oil capacity, I-beam alloy aluminum connecting rod, cast iron cylinder block, mechanical flyweight governor limits speed to 3200 RPM, vacuum fuel pump. Heavy duty remote mounted Donaldson Cyclopac air cleaner. Extra large muffler for reduced noise level. Optional spark arrestor muffler available from Briggs & Stratton.
ELECTRICAL FEATURES	12 volt, 66 plate, 57 amp-hour capacity battery. Dash-mounted ignition switch. 3.2 amp., 12 volt dual circuit alternator with 60-100 watt A.C. lighting circuit. Seat switch, PTO and traction interlock switches.
WEIGHT	770 lbs. prime mover with seat.
CERTIFICATION	Certified to meet ANSI specifications B71.1b. — 1977, and applicable Federal and State OSHA regulations based thereon.

GROUNDSMASTER® 62 PRIME MOVER (MODEL NO. 30790)

ENGINE	Onan twin opposed cylinder, 4 cycle, air cooled, 20 HP @ 3600 RPM, electric start. 47.7 cu. in displacement. Gear driven oil pump for full pressure lubrication, remote mounted replaceable oil filter, and remote mounted engine oil cooler. 2 qt. oil capacity. System also incorporates low oil pressure shut-off switch and high cylinder head temperature shut-off switch. Alloy aluminum connecting rods. Pearlitic iron cylinder liners cast into block. Mechanical flyball governor limits speed to 3200 RPM. Vacuum fuel pump. Heavy duty, remote mounted Donaldson Cyclopac air cleaner. Extra large muffler for reduced noise level. Optional spark arrestor muffler Part No. 46-2390.
ELECTRICAL FEATURES	12 volt, 42 plate, cold cranking 300 amperes at 0°F, 50 minute reserve capacity at 80°F, maintenance free battery. 15 amp. alternator with regulator. Seat switch, PTO and traction interlock switches.
WEIGHT	810 lbs. prime mover with seat.
CERTIFICATION	Certified to meet ANSI specifications B71.4-1980 with 62" deck, ANSI B71.1b. — 1977 for all 52" decks, and applicable Federal and State OSHA regulations based thereon.

SPECIFICATIONS COMMON TO GROUNDSMASTER 52 AND 62

FUEL CAPACITY	6.0 gallons gasoline.
TRACTION DRIVE	Variable hydrostatic transmission mounted on Dana GT20 axle — 20.9:1 ratio. Single foot pedal control of forward/reverse ground speed. 25 micron replaceable filter. 5 qt. oil capacity.
GROUND SPEED/CLEARANCE	0-8.5 MPH, infinitely variable. Ground clearance 6"
TIRES/WHEELS/PRESSURES	Two rear steering tires 15 x 6.00 — 6, tubeless 4 ply rating. Two front traction drive tires 20 x 8.00 — 10, tubeless 4 ply rating. Demountable rims. Recommended tire pressure 10-15 P.S.I. depending on mowing conditions.
MAIN FRAME	All welded formed steel reinforced with square tubing.
BRAKES	Individual 7" x 1¾" drum type wheel brakes and parking brakes on front traction wheels. Dynamic braking through traction drive.
STEERING	Automotive steering gear assembly. 15" steering wheel.
CONTROLS	Hand operated throttle, choke, PTO, and hydraulic implement lift.
GAUGES	Hour meter and ammeter.
SEAT	Optional: Molded foam seat with leaf-spring suspension, Model No. 30765. Deluxe suspension seat, Model No. 30766. Both adjustable 4½" fore and aft.
IMPLEMENT DRIVE	1" diameter splined PTO shaft clutched by two "HA" torque team section tight-slack V-belt.

52" STANDARD CUTTING UNIT (MODEL NO. 30545)

TYPE	51¾" width-of-cut, three blade, front mounted rotary.
MOWING RATE	Mows up to 2.8 acres/hour at 5.5 MPH depending on conditions.
TRIMMING ABILITY	Deck offset 10¼" to the left from center line; deck offset 10¾" to the left from outside of tire to trim side; 26" uncut circle left; 0" uncut circle with use of individual wheel brakes.
HEIGHT OF CUT	¾"-4", adjustable in ¼" increments in front and 1" increments in rear.
CONSTRUCTION	12 gauge stamped steel, 5" deep, Wind-Tunnel® housing.
CUTTER DRIVE	PTO driven spiral bevel gear box. "AA" section belt drive to all spindles. ¾" regreasable spindles with two ball bearings.
BLADES	Three 18" long, 3/16" thick, heat treated steel blades.
SUSPENSION	Two 8" front wheels. Suspended off the prime mover at rear.
LIFT	Two hydraulic cylinders.
WEIGHT	190 lbs.
CERTIFICATION	Certified to meet ANSI B71.1b — 1977, and applicable Federal and State OSHA regulations based thereon.

52" FLOATING CUTTING UNIT (MODEL NO. 30555)

TYPE	51¾" width-of-cut, three blade, front mounted rotary.
MOWING RATE	Mows up to 2.8 acres/hour at 5.5 MPH depending on conditions.
TRIMMING ABILITY	Deck offset 10¼" to the left from center line; deck offset 10¾" to the left from outside of tire to trim side; 26" uncut circle left; 0" uncut circle with use of individual wheel brakes.
HEIGHT OF CUT	1"-4" adjustable in ½" increments by relocating four pins at each corner of cutting unit.
CONSTRUCTION	12 gauge stamped steel, 5" deep Wind-Tunnel® housing.
CUTTER DRIVE	PTO driven spiral bevel gear box. "AA" section belt drive to all spindles. 1" regreasable spindles with two tapered roller bearings.
BLADES	Three 18" long, 3/16" thick, 2.5" wide, heat treated steel blades.
CARRIER FRAME SUSPENSION	Two 8" phenolic resin front wheels with regreasable roller bearings. Suspended off the prime mover at rear. Front and rear deck rollers. Deck counterbalanced by spring between cutting unit and prime mover.
LIFT	Two hydraulic cylinders.
WEIGHT	220 lbs.
CERTIFICATION	Certified to meet ANSI B71.1b — 1977, and applicable Federal and State OSHA regulations based thereon.

52" FLOATING REAR DISCHARGE CUTTING UNIT (MODEL NO. 30560)

TYPE	51¾" width-of-cut, three blade, front mounted rotary.
MOWING RATE	Mows up to 2.3 acres/hour at 4.5 MPH depending on conditions.
TRIMMING ABILITY	Deck offset 10¼" to the left from center line; deck offset 10¾" to the left from outside of tire to trim side; trims on both sides; 26" uncut circle left. 0" uncut circle to left with use of individual wheel brakes.
HEIGHT OF CUT	1"-4" adjustable in ½" increments by relocating four pins, one at each corner of the cutting unit.
CONSTRUCTION	12 gauge welded construction, 3" deep.
CUTTER DRIVE	PTO driven spiral bevel gear box. "AA" section belt drive to all spindles. 1" regreasable spindles with two tapered roller bearings.
BLADES	Three 18" long, 3/16" thick, 2.5" wide, heat-treated steel blades.
CARRIER FRAME SUSPENSION	Two 8" phenolic resin front wheels with regreasable roller bearings. Suspended off prime mover at rear. Front deck rollers. Deck counter-balanced by spring between cutting unit and prime mover.
LIFT	Two hydraulic cylinders.
WEIGHT	230 lbs.
CERTIFICATION	Certified to meet ANSI B71.1b — 1977 Safety Specifications, and applicable Federal and State OSHA regulations based thereon.

62" FLOATING CUTTING UNIT (MODEL NO. 30562)

TYPE	61⅝" width-of-cut, three blade, front mounted rotary.
MOWING RATE	Mows up to 3.4 acres/hour at 5.5 MPH depending on conditions.
TRIMMING ABILITY	Deck offset 10¼" to the left from center line; deck offset 16" from outside of tire to trim side; 18" uncut circle left; 0" uncut circle with use of individual wheel brakes.
HEIGHT OF CUT	1"-4" adjustable front and rear in ½" increments by relocating four pins at each corner of cutting unit.
CONSTRUCTION	12 gauge steel, 5" deep Wind-Tunnel® housing, welded construction.
CUTTER DRIVE	PTO driven spiral bevel gear box. "AA" section belt drive to all spindles. 1" regreasable spindles with two tapered roller bearings.
BLADES	Three 21.5" long, 2.5" wide, 3/16" thick, heat-treated steel blades.
CARRIER FRAME SUSPENSION	Two 8" phenolic resin front wheels with regreasable roller bearings. Suspended off prime mover at rear. Front and rear deck rollers. Deck counterbalanced by spring between cutting unit and prime mover. Deck includes one 35 lb. rear weight.
LIFT	Two hydraulic cylinders.
WEIGHT	335 lbs.
CERTIFICATION	Certified to meet ANSI B71.4 — 1980, and applicable Federal and State OSHA regulations based thereon.

IMPLEMENT AND ACCESSORY COMBINATIONS

	30545 CUTTER	30555 CUTTER	30560 CUTTER	30562 CUTTER	30570 SNOWTHROWER	30750 V-PLOW	ROTARY BROOM	CAB W/ROPS	ROPS	30765 STANDARD SEAT	30766 DELUXE SEAT	SPARK ARRESTOR MUFFLER
PRIME MOVER MODEL NO. 30775	Opt.	Opt.	Opt.	—	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
PRIME MOVER MODEL NO. 30790	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
GRASS COLLECTING SYSTEM MODEL NO. 30557	—	Opt.	—	—	—	—	—	—	—	—	—	—
LEAF MULCHER MODEL NO. 30700	Opt.	Opt.	—	—	—	—	—	—	—	—	—	—
LEAF MULCHER MODEL NO. 30792	—	—	—	Opt.	—	—	—	—	—	—	—	
V-PLOW MOUNTING KIT MODEL NO. 30755	—	—	—	—	—	Req.	—	—	—	—	—	
SNOWTHROWER ADAPTER KIT MODEL NO. 30572	—	—	—	—	Req.	—	—	—	—	—	—	—
TIRE CHAINS PART NO. 28-5470	—	—	—	—	Opt.	Incl.	Opt.	—	—	—	—	—
WHEEL WEIGHTS PART NO. 28-1270	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	—	—	—	—	—
REAR WEIGHT KIT PART NO. 24-5780	Opt.	Opt.	Opt.	Opt.	Req.	Opt.	Opt.	—	—	—	—	—
HIGH LIFT BLADE PART NO. 44-5480	—	Opt.	—	—	—	—	—	—	—	—	—	

LEAF MULCHER

Optional attachment of 12 gauge steel with ½" diameter staggered holes. Mounts under side discharge deck. Model No. 30700 fits cutting units #30545, 30555; Model No. 30792 fits cutting unit #30562.

GRASS COLLECTING SYSTEM (MODEL NO. 30557) FOR 52" FLOATING CUTTING UNIT

CONSTRUCTION

Blower assembly housing is 16" diameter; three piece welded construction. The blower assembly attaches to the discharge port of Model #30555 cutting unit. Impeller speed is 1650 RPM max. @ 3200 RPM engine speed.

Chute is one piece, made of black, high density polypropylene material used to direct debris into bag.

Hinged hood, Mounted to bag support assembly, is made of black high density polypropylene. Air exhausted through riveted metal screen in hood.

Rectangular bag support is welded to frame of steel tubing. Bottom pan is black high density polypropylene riveted to a welded tubular steel frame. The bag support assembly mounts to the right side of traction unit and supports a polyester grass bag.

Bumper of steel tubing is bolted to deck suspension frame to protect blower housing.

Includes deck baffling and mounting bracket.

CAPACITY	Polyester bag 20" dia. x 46" high — approximately 7 bushels. Optional dry condition polyester bag 24" dia. x 46" high — approximately 10 bushels. Part No. 43-0980.
OPTIONAL ACCESSORIES	18" high lift blades for improved wet grass bagging, Part No. 44-5480. Elastic retaining cord allows use of 30+ gallon plastic trash bags, Part No. 36-7770.
DIMENSIONS	57" high, 120" long, 68" wide, installed.
WEIGHT	123 lbs. — grass collecting system only.
CERTIFICATION	Certified to meet ANSI B71.1b. — 1977 and applicable Federal and State OSHA Regulations based thereon.

V PLOW (MODEL NO. 30750)

CONSTRUCTION	48" heavy gauge steel construction with front skid and reversible/replaceable scraper blades.
WEIGHT	210 lbs.

V PLOW MOUNTING KIT (MODEL NO. 30755)

CONSTRUCTION	Consists of push arm attaching brackets. Required for mounting V Plow.
WEIGHT	50 lbs.
ACCESSORIES	Tire chains included (Part No. 28-5470).

SNOWTHROWER (MODEL NO. 30570; 30572 ADAPTER KIT)

TYPE	48" two stage with adjustable side skids and discharge chute.
WEIGHT	340 lbs.
ACCESSORIES	Two optional rear weight kits required (Part No. 24-5780).

ROTARY BROOM

TYPE	48" wide. Consult with your Toro distributor for manufacturer's specifications.

CAB WITH ROPS

CONSTRUCTION	4 post ROPS all steel tubular frame construction with contrasting steel canopy. Includes seat belt, seat retention kit and perforated foam headliner. **OPTIONAL** Vinyl enclosure kit consists of reinforced heavy duty vinyl fabric with left side heavy gauge wire frame door. Enclosure kit includes tinted safety glass windshield, velcroe fastening kit, latching door handle, and floor mat.
CERTIFICATION	Certified to meet OSHA standard 1928.51(b)(1).
ELECTRICAL FEATURES	**OPTIONAL** Light kit includes front headlight rear work light, and roof-mounted flashing amber beacon. **OPTIONAL** Single speed windshield wiper and defroster fan for cab installation.
WEIGHT	4-Post ROPS with canopy-110 lbs.; enclosure kit — 60 lbs.

OVERALL DIMENSIONS AND WEIGHTS (APPROX.)

	LENGTH	WIDTH	HEIGHT	WEIGHT
TRACTION UNIT #30775	74"	42"	48"	770 lbs.
W/30545 CUTTING UNIT	95"	65"	48"	960 lbs.
W/30555 CUTTING UNIT	97.5"	65"	48"	990 lbs.
W/30560 CUTTING UNIT	97.5"	53.5"	48"	1,000 lbs.
W/GRASS COLLECTING SYSTEM	97.5"	68"	57"	
W/SNOWTHROWER	102"	51"	48"	
W/V-PLOW	99"	48"	48"	
W/BROOM	119.5"	53"	48"	
W/ROPS	N/A	42"	74.5"	
W/CAB	N/A	42"	74.5"	
TRACTION UNIT #30790	78"	42"	48"	810 lbs.
W/30562 CUTTING UNIT	106"	74"	48"	1,145 lbs.
W/30545 CUTTING UNIT	99"	65"	48"	1,000 lbs.
W/30555 CUTTING UNIT	101.5"	65"	48"	1,030 lbs.
W/30560 CUTTING UNIT	101.5"	53.5"	48"	1,040 lbs.
W/GRASS COLLECTING SYSTEM	101.5"	68"	57"	
W/SNOWTHROWER	106"	51"	48"	
W/V-PLOW	103"	48"	48"	
W/BROOM	123.5	53"	48"	
W/ROPS	N/A	42"	74.5"	
W/CAB	N/A	42"	74.5"	

ACCESSORIES

DESCRIPTION	MODEL/ PART NO.	DESCRIPTION	MODEL/ PART NO.
TIRE CHAINS — 20 LBS.	28-5470	STANDARD SEAT	30765
WHEEL WEIGHTS — 100 LBS.	28-1270	DELUXE SUSPENSION SEAT	30766
REAR WEIGHT KIT — 70 LBS.	24-5780	SPARK ARRESTOR MUFFLER — MODEL NO. 30775	See Briggs & Stratton 46-2390
HIGH LIFT BLADE (ONE BLADE)	44-5480	MODEL NO. 30790	

*Specifications and design subject to change without notice.

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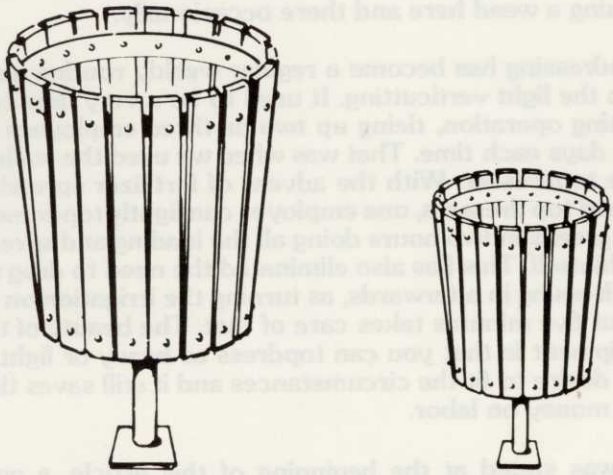
Form No. 82-25-T. Printed in U.S.A.

UNPREDICTABLE DAMAGE

Can you identify the cause of this damage at the Sunny Breeze Palms Golf Course, Arcadia, Florida?

Wild hogs, a family of fifteen to twenty of them have been going "hog wild" all around the back nine at Sunny Breeze Palms. Superintendent David Fry reports that the animals first rooted up his course in September 1982; since then the hogs have been back twice. Damage shown in the picture was done overnight, right after new sod had been laid down. ■



Lakeshore Equipment & Supply Co. is now marketing small and large litter baskets for use in recreational and golf course facilities.

The weather-resistant cypress baskets have vat dipped frames. Baskets are available with pedestals, spikes, brackets or on posts to be set in concrete.

The large size LESCO Litter Basket is 20″ x 18″ x 21″ deep and fits a standard 22-gallon trash can (not included). The small basket is 12½″ x 11″ x 16″ deep and comes with one liner. Additional liners are available for the small baskets.

For more information on the LESCO Spreaders or on any item in the complete line of turfgrass and horticultural supplies, call LESCO toll-free at (800) 321-5325 (Nationwide) or (800) 362-7413 (In Ohio). ■

The University of Florida Agricultural Research and Education Center in Fort Lauderdale has received a Jacobsen Turfcat Mower from DeBra Turf and Industrial Equipment Company. This mower is being loaned to the University of Florida Turf Program as part of a cooperative undertaking between the University and DeBra. Pictured with the mower is William Ennis, Center Director (left); Bruce Augustin, Extension Turf Specialist (center); and David DeBra (right).

West Coast Buccaneers

By REED LeFEBVRE
Pines & Palms Management Corp.

What is a good putting surface? Fast greens or slow, full greens or thin? The answer lies with each particular club and its particular type of membership.

The average golfer at our club is a higher handicap player who prefers a green with medium speed. All golfers demand as smooth a putting surface as you can give them and also want their shots to hold.

To maintain a good putting surface for our golfers, we have set up a general schedule of mowing, verticutting, aerating and top dressing, which will keep the putting surface as consistant as possible.

Mowing practices play a very important part for the putting surface. Changing the direction of cut each day insures a smooth surface plus it helps to reduce grain in the green. We use "Wiehle rollers", which we feel give us a true height of cut while reducing grain. We use these type of rollers on both front and rear of our greensmower reels. Height of cut contributes a great deal to the putting surface, and we have found that cutting at 3/16" during the most of the year seems to satisfy most golfers. The only change would be during the coldest months, we raise the cut to 1/4" then to protect the overseeding.

Verticutting is another must practice for a good putting surface plus healthy grass. Initially we tried a severe verticutting in the spring and again in the fall and a few light ones in between, however time has shown us that we get just as good results verticutting lightly each week with the exception of December, January and February. Usually we only verticut one way each time, however, if we see thatch building up we'll go two ways.

Aerating is what I consider a sometimes necessary evil. We aerate only when it's necessary (the greens are compacted). We have in the past gone as much as a year between aerating. We are fortunate that our greens are made up of phosphate overlay, which is a very coarse sandy substance. They drain very quickly and are excellent for holding a shot. Their only drawback is the high phosphate content and high PH. With as much rain and traffic as we had this past winter season, we will have to aerate this spring. That's the one combination that will pack our soil. I called it a necessary evil because there are drawbacks to the operation. Each time you bring up soil from below the surface you also bring up some weed seeds, although this is more noticable when fairways are aerated, it does happen sometimes on the greens. Although there are many good chemicals on the market to control weeds etc, irregardless of what the labels say, there is always an effect on the grass itself, whether it shows up now as a slight tip burn or shows up later in a poor root system, we try to use as little chemical control on the greens as we possibly can. Even if it comes to hand picking a weed here and there occasionally.

Topdressing has become a regular weekly routine along with the light verticutting. It used to be a very time consuming operation, tieing up two or three employees for two days each time. That was when we used the walking type topdresser. With the advent of fertilizer spreaders turned top dressers, one employee can lightly topdress all our greens in two hours doing all the loading and spreading himself. This has also eliminated the need to drag the topdressing in afterwards, as turning the irrigation on for about five minutes takes care of that. The beauty of this equipment is that you can topdress as heavy or light as you desire to fit the circumstances and it still saves time and money on labor.

As was stated at the beginning of this article, a good putting surface depends on what individual clubs want. ■

TIFGREEN II BURMUDAGRASS RELEASED

CHARLES H. PEACOCK
Associate Professor
Extension Turf Specialist

Tifgreen II is an improved mutant of Tifton (Tifton 328) turf bermudagrass developed cooperatively by the U.S. Department of Agriculture, ARS, the Georgia Coastal Plain Station, the U.S. Golf Association Green Section, the Golf Course Superintendents Association of America and the Department of Energy. It was created by exposing dormant sprigs of Tifgreen to 7000 rads of gamma irradiation, growing spaced plants from the treated sprigs, and selecting plants or sectors of plants that appeared to be different. Produced in 1971, it has been subjected along with other promising mutants and Tifgreen to numerous tests to date. These tests show that Tifgreen II has many of the desirable characteristics of Tifgreen but has a lighter green color and usually develops less of the undesirable purple color when temperatures are low. When compared with Tifgreen under a minimal management program, Tifgreen II is more vigorous; makes a denser turf with fewer weeds; is much more resistant to root knot, stubby and sting nematodes; and exhibits much better spring recovery. In mid-April, 1982, after 3 years with minimal management (no nematicides, fungicides, insecticides, or summer herbicides), Tifgreen II made excellent recovery with no stand loss whereas the Tifgreen control plots had lost an estimated 40% of their stand. At the Agricultural Research Center, Ft. Lauderdale, Florida, Tifgreen II suffered significantly less mole cricket damage than Tifgreen.

Tifgreen II, like Tifgreen, is a sterile triploid that must be propagated vegetatively. It will be suited for golf greens, fairways, tees and lawns throughout the South and the subtropics of the world where Tifgreen is presently grown.

Tifgreen II will be released only to people who qualify as certified growers. To qualify, they must have their land inspected and approved by their state Crop Improvement Association.

Editor's Note:
After writing about his desire to become a Golf Course Superintendent Pat Fatica, age 10, handed this article to his father. Pat's father is Ed Fatica, Superintendent at The Plantation Golf & Country Club, Venice, Florida. Ed sent it to us and we proudly want to share it with our readers.

FUTURE JOB

I would like to be a golf course superintendent. I would like to because my dad is and I've lived at a golf course all my life except for once. Also I like to golf and I know a lot about it anyway. My dad wants me to work for him right now, (he wants me to rake traps) he thinks he won't have to pay me but he's wrong. He will have to pay me because raking traps isn't what I had in my mind anyway and that's my future job.

Pat Fatica
Age: 10
School: Garden Elementary

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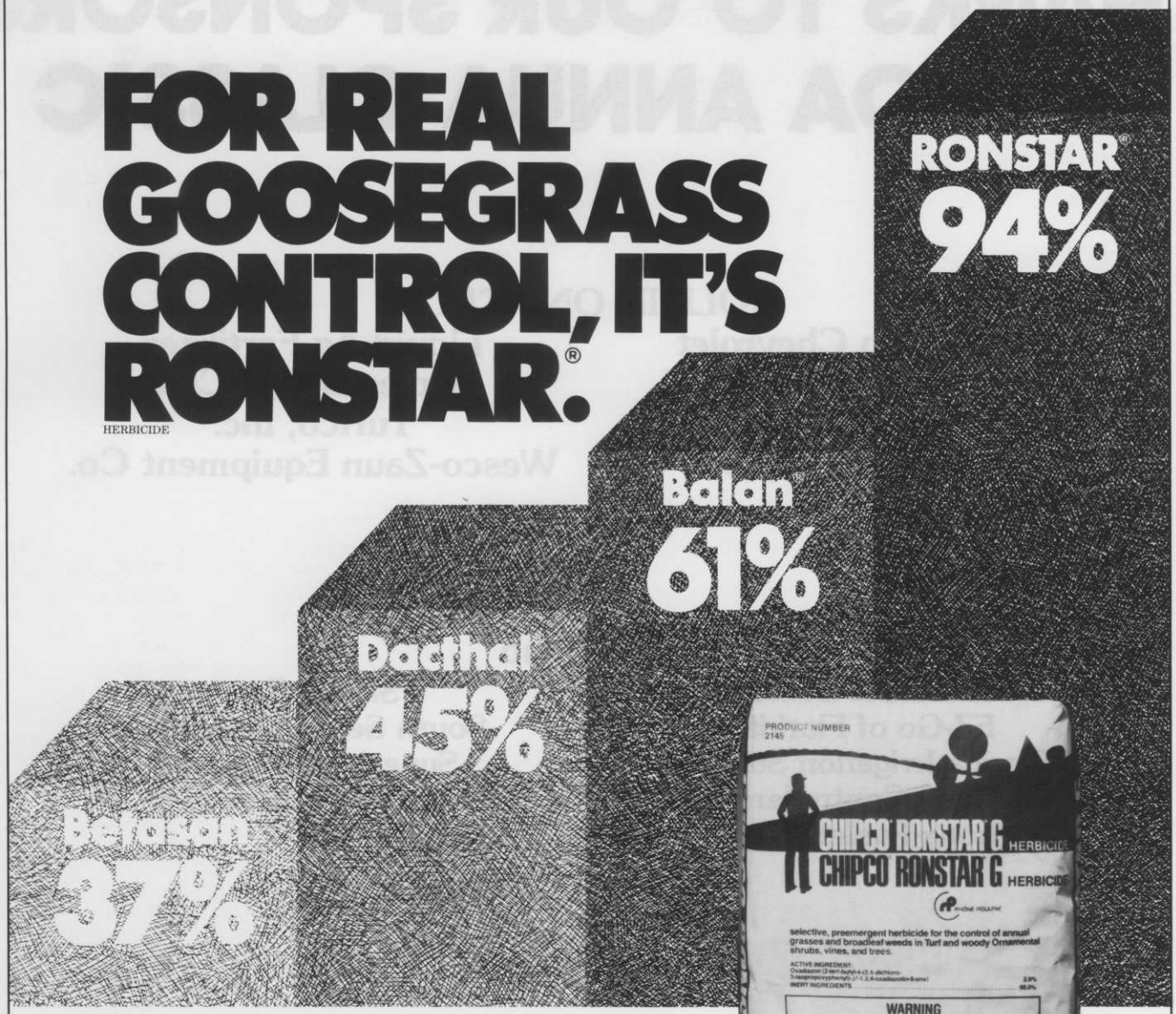

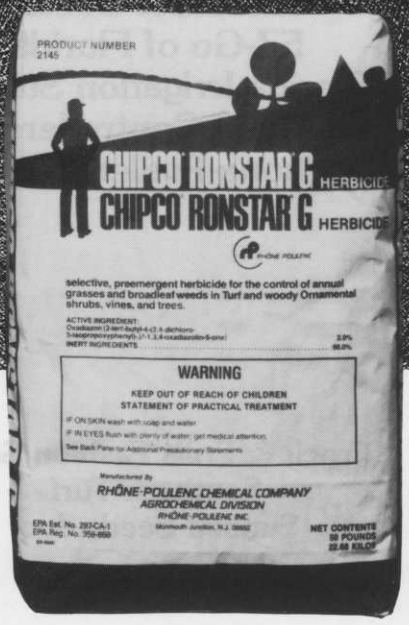

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Summary of 9 years of testing conducted by University Experiment Station and Rhône-Poulenc personnel.

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What's more, RONSTAR doesn't break down, so you get long-lasting residual control of goosegrass season to season. And it's safe on perennial bluegrass, perennial ryegrass, bermudagrass and the broadest range of ornamentals.

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Rhone-Poulenc Inc., Agrochemical Division, Monmouth Junction, NJ 08852.

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Give thought this season to making your course a complete Pro-Line layout. Study the entire Pro-Line program. It's a program that offers you help in securing donors for much of your equipment. It's a program that provides you with repair and service options that few, if any, other companies can match.

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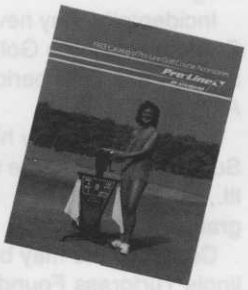

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RAY GERBER 1899 — 1983

Raymond Gerber, acknowledged "Dean" of midwestern golf course superintendents, died July 6th at Elmhurst hospital after a brief illness.

Ray's fifty-five active years in golf course management began at the Woodhill Country Club in Wayzata, Minnesota. After nine years at Woodhill, he moved to the Pine Valley Golf Club in Clementon, New Jersey where he was sent by the Toro Corporation to oversee the use of their mowing equipment. While at Pine Valley, Ray married his wife Julia, also from Wayzata, Minnesota.

Ray returned to the midwest again to help in the construction of the Medinah Country Club in Chicago, Ill. In 1936, Ray took over the position of Golf Course Superintendent at the Glen Oak Country Club in Glen Ellyn, Ill. and held that post until 1970 when he retired to the status of Superintendent Emeritus. For the past 11 years Ray has kept active in Golf as the Editor of the Midwest Superintendents Association monthly bulletin, **The Bull Sheet**. As Editor, Ray received national recognition awards from the National Golf Foundation and from the International Golf Course Superintendents Association.

Ray served his profession well and became president of both the local Midwest Association in 1946 and the International Golf Course Superintendents Association of America in 1950. In 1975, Ray received the highly coveted Distinguished Service Award from the Golf Course Superintendents Association, their highest award.

Typifying Ray's devotion to family and profession is the following quotation from his remarks upon receiving the Distinguished Service Award at the 1975 national meeting in New Orleans. "A golf course superintendent should be many things, — To his family, a loving husband and father. To his club, a willing and tireless worker. He should be a loyal man who likes his job as well as being able to get along with everybody. He must have a smile ready even when the going gets rough."

Incidentally, Ray never missed an annual Turfgrass Conference of the Golf Course Superintendents over a forty-three year period ending this past February in Atlanta, Georgia.

Ray is survived by his wife Julia, two sons, Donald, Superintendent at the Chicago Golf Club in Wheaton, Ill., and Dr. Gerald of Duke University, and five grandchildren.

Contributions may be made in Ray's memory to: Illinois Turfgrass Foundation, University of Illinois, Urbana, IL 61801, c/o David J. Wehner, Ph.D.

The deepest sympathy of the members of the Midwest Association of Golf Course Superintendents is extended to the Gerber family due to the death of Ray. Ray Gerber has been an inspiration to our association and has made The Bull Sheet one of the premier newsletters of golf course superintendents in the country.

A TRUE FRIEND

One of the hardest things a person has to do is to say "Good-bye" to a friend he knows he will never see again. At least, this is the way it is for me. That friend is Ray Gerber. I had the very good fortune to count Ray as my friend and advisor. I really got to know Ray Gerber when I started to work here at Glen Oak C.C. That, in itself, is a story worth repeating.

Ray saw me at one of the Midwest meetings and bought me a drink. During the conservation, he said I ought to stop by and visit with him at Glen Oak in the next week or so. Well, I did, and at the time, he mentioned that he was thinking of retiring and wondered if I might be interested in the job. I started at Glen Oak C.C. on May 1st, 1970, and have been here ever since.

But that first summer was very interesting. I presumed that I would be taking over in a couple of weeks or so, however thru May, June, July, and into August, Ray was on the job every day. He would assign all of the jobs first thing in the morning to get the crew started and assign some afternoon jobs. It was awkward for me to step in and give any jobs to the crew. Many times the men would come in from mowing or raking traps, and they didn't know what next to do, for Ray hadn't told them. I then would assign a job, but always with the stipulation that if Ray asked them to do something else, they were to go do it.

After the first month, Ray suggested that it was senseless for both of us to come in on Sundays, so from then on I had every other Sunday off. That was great; a superintendent getting a Sunday off during the season was sensational.

Our big event around Glen Oak is our "Round-Up", which is held usually around the middle of August every year. Well, our "Round-Up" is two days, and the day after the event when Ray was leaving to go home, he turned to me and said "Catch" as he tossed me his keys. That's all ... "Catch", and with that he got into his car and drove home. He never once after that came back to give me any directions on how to run the course unless he was first asked.

Ray was made an Honorary Member of the club, thus I saw him every day for lunch at the clubhouse. He had many opportunities to ask why this or that is or wasn't being done, etc., but he **never did**. What willpower he had to have to keep quiet. To think that he spent his life here on the course, turned it over to someone else, and then sat back, watched things being done somewhat differently than in the past, without questioning that person - that is a friend.

Good-bye dear friend, I know the Lord will have the grass greener and your editorials will be easier from now on.

Fred D. Opperman, CGCS
Glen Oak Country Club

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The Gator Growls

By DAN L. HALL JR.
Imperial Golf Club

THE GATOR GROWLS ABOUT THE POA ANNUA CLASSIC

The Ninth Annual Poa Annua Classic was again held at the Naples Beach Club and Hotel May 23, 1983. Superintendents from all Chapters except the Panhandle participated and enjoyed the facilities of our hosts; Henry Watkins, President, and Stan Norton, Superintendent, of the Beach Club.

The kick-off event was the board meeting of the Florida G.C.S.A., held at 2:00 P.M. Saturday, the 21st at the Beach Club was led by President Kevin Downing, Vice President Dan Delaney and Secretary-Treasurer Bob Sanderson. All Chapters were represented and the four hour meeting was all inclusive with our G.C.S.A.A. Board Member, John Hayden bringing us up on the National affairs.

Past President F.G.C.S.A. Bill Wagner opened the Sunday A.M. Seminar "STRESS in MANAGEMENT and HOW TO COPE", introducing Mr. James Arch of Orlando Florida. There were 26 members and one guest that participated in this very useful Seminar. This 1 credit C.E.U. course is recognized as a part of the G.C.S.A.A. continuing education program and credit towards G.C.S.A.A. Certification is recognized. There were attendees from all State Chapters with host Chapter, Everglades being the leader with 12 superintendents or assistants in attendance.

From the very favorable comments of this course, especially concerning instructor Arch, the F.G.C.S.A. officers are seriously considering at the least, one and possibly two such meetings each year with Seminars at the POA & CROWFOOT GOLF CLASSICS and possibly at the F.T.G.A. if it can be arranged. F.G.C.S.A. is to be fully complimented on being the instrument of such outstanding educational benefits being made available for its members. When the next seminar is held, let's all support these events and use the efforts of our F.G.C.S.A. education committee Chairman Tom Burrows.

Poa Annua Classic Chairman Hank Maus, and E.G.C.S.A. President Mark Selby and the committee began the official opening of this years Classic by hosting a 7:00 P.M. cocktail party and social hour Sunday evening on the Beach Club's Gulfside lawn. The world famous Beach Club's Hawaiian Luau dinner followed at 8:00 with dining and dancing until midnight.

The highlights of the evening began with Chairman Maus and President Selby of the Everglades presenting plaques of appreciation to Hotel owner Henry Watkins, Jr. and Superintendent Stanley Norton for hosting the Everglades Chapter's Poa Classic the past two years. They also presented Downing with a check for $1,000.00 from the Poa Classic to be used at the State Chapter's discretion. President Downing stated that half the gift would be assigned to turf research and half to the state chapters treasury. Last but not least, the three day all expenses Naples Beach Club weekend for two was won by Chainman Maus and the winners were newly-weds Jim and Sharon Young. *(continued on page 36)*

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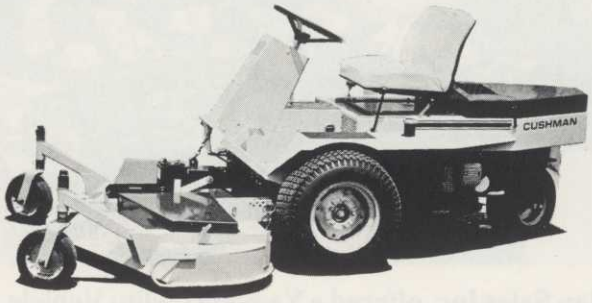

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(continued from page 34)

Boylan Sales Inc. offered a Yamaha Utility Vehicle and EZ Go of Fla. and DeBRA Turf each put up an EZ Go G-7 utility vehicle as hole-in-one prizes. Unfortunately, no one was lucky enough to be a winner but Rocky Bryan came close on the 180 yard 16th with a shot of 3 ft. 6 1/2 in. For his prize of a $50.00 gift certificate from pro Jim Duffy's shop, Rocky was still a winner.

Tournament Day - 7:30 A.M. the host Everglades presented a continental breakfast while events chairman Randy Vaughn's committee of ladies registered and presented the days packets to the 140 contestants. Chairman Maus had prizes galore, especially for anyone lucky enough to have an ace. The main hole in one prize was a Chevrolet being offered by Bill Branch Chevrolet of Ft. Myers and the Everglades prize to any acer of a spot in the $100,000 National Hole-In-One Contest in Houston Texas, expenses paid except to and from travel.

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Ken Anderson won a like certificate for a 320 yard poke into the gulf wind on #9. Winners of low gross and low net respectably by chapters were;

North Florida	- John Hayden	- John Perham
Everglades	- Dick Bessire	- Jack Faulk
West Coast	- Dennis Kustes	- Dan Morgan
South Florida	- Joe Panteleo	- Robert Gerhart
Treasure Coast	- Tex Ardoyno	- Kevin Downing
Palm Beach	- Fred Klauk	- Mike Terrill
Central Florida	- Jim Ellison	- Whit Derrick
Suppliers	- Bernie Smith	- Bill Lloyd

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(continued from page 37)

Overall low gross ended in a tie with Fred Klauk and Joe Ondo both recording fine 71's on the excellently conditioned course. Joe eliminated Fred on the first play off hole one-up in head to head competition. Joe represented the Central Florida Chapter and is Superintendent at Winter Pine C.C. in Winter Park, Florida. As part of his prize in addition to his $100.00 gift certificate, Joe was also the winner of the Mariner's Corp. all expense three days for two at the South Seas Plantation on Captiva Island. Our congratulations to Joe and Fred for a fine round of golf and we are very sorry there could only be one winner. Joe also qualified on the F.G.C.S.A. team at this years event at Litchfield Park's Wigwam course in Arizona at the G.C.S.A.A. tourney in 1984. Other berths are available for the winners of the Crowfoot and the F.T.G.A. events and for the golfer having the lowest score at all three state tourneys; so sharpen up your game fellows if you want a spot on the feared F.G.C.S.A. golf team.

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Everglades Chapter was fortunate to take the other two top prizes when David Fry of Arcadia's Sunny Breeze Palms won overall low net and the Chapter team brought the overall team trophy back to its rightful home by defeating 1983 team champion South Florida 281-283. Great job men!!

While the men were out testing the golf course, the ladies of the Everglades sponsored a luncheon and fashion show. Chairwoman Dodie Hall lined up one of Naples leading salon's of fashion, Frock and Frills, to display attire for the relaxed casual South Florida style of living as modeled by our Everglades ladies. It is our hope to make this a regular part of the Poa Annua Classic and our thanks to the ladies who supported this initial event.

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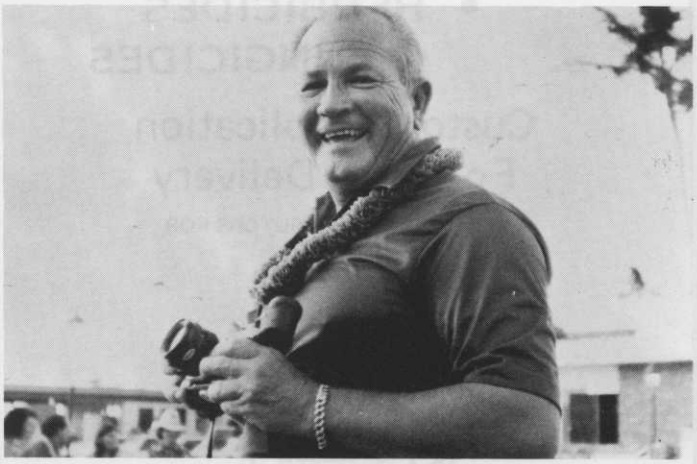
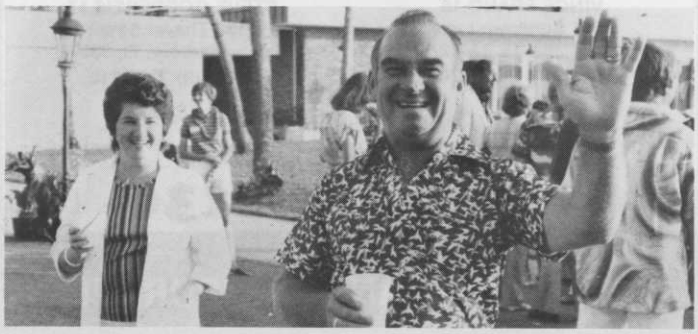
We would be remiss if we didn't again thank Chairman Maus and his committee as well as the staff of Naples Beach Club for this year's successful event. The committee members were;



Chairman, Everglades V.P. Hank Maus
Assistant Chairman and Host, Everglades Pres. Mark Selby and committee:
Registration and Scoreboard; Randy Vaughn chrmn.; Clint Smallridge, Bob Snaderson, Muriel Moote, Barb Stewart, Nancy and Wendy Maus, Marlene Spainhour, and Dodie Hall.
Golf Course and Sponsor Board; Stanley Norton, Chrmn.; Jim Doty and Dan Hall.
Fashion Show; Dodie Hall, chrwmn.; Nancy Maus, Muriel Moote, Hazel McKenzie, Pam Norton, Barb Stewart, Marlene Spainhour, and Marion Sloan.
Entertainment; Hank and Nancy Maus.



And people too numerous to mention, the entire staff of the Naples Beach Club & Hotel for a wonderful POA ANNUA CLASSIC. ■

Nematology Plant Protection Pointer

Florida's important tourist and real estate industries demand particularly high standard of quality for turfgrass. Therefore, a substantial turf care industry has become established here. Nematode damage to turf is probably more important here than in most parts of the country. Our mostly sandy soils and long growing season favor development of very high populations of nematodes, and also create conditions in which grasses are often more susceptible or sensitive to moderate stress. This report discusses the kinds of nematodes that can injure turf in Florida, how to diagnose nematode injury to turf, and nematode control measures available to professional turf workers. Nematology Plant Protection Pointer #16, "Nematodes in Home Lawns in Florida," provides information for homeowners who are concerned about turf nematode problems.

TURFGRASS NEMATODES

Nematodes which are important turf pests in Florida are briefly described below. Table 1 presents the numbers of each kind of nematode expected to cause approximately comparable damage.

Sting nematode *(Belonolaimus longicaudatus)* - damages all grasses commonly grown in Florida; generally found only in very sandy soils.

Lance nematodes *(Hoplolaimus galeatus* and other species) - widely distributed, attacking all grasses commonly grown in Florida, but especially damaging to and most frequently associated with St. Augustinegrass.

Ring nematodes *Criconemoides* species) - widely distributed, they can live on most turfgrasses but are presently considered to be a major pest only to centipedegrass.

Root-knot nematodes *(Meloidogyne* species) - widely distributed, found most frequently in St. Augustinegrass, zoysiagrass, and bermudagrass; assumed to be injurious at high population densities, but the effects of root-knot nematodes on turf grasses are poorly known.

Stubby-root nematodes (species of *Trichodorous* and related genera) - occur in most soil types throughout the state and cause damage similar to that of sting nematodes.

Spiral nematodes *(Helicotylenchus* species) - frequently found on all grasses, but apparently do not cause serious damage in most circumstances.

Awl nematode *(Dolichodorus heterocephalus)* - very damaging to turfgrass in wet locations such as low land near lakes, ponds and canals. *(continued on page 42)*

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St. Augustinegrass cyst nematode *(Heterodera leucei-lyma)* - normally attacks only St. Augustinegrass; most commonly found on the lower east coast and central Florida, but has spread with sod to locations throughout the state; may be severely damaging to St. Augustinegrass when present in high numbers. Cyst nematodes are especially difficult to control with nematicides.

Many other kinds of nematodes may cause damage to turf when present in high numbers or when turf is stressed by other pests, pathogens, or environmental conditions. Among the genera which may be occasional turf pests are lesion *(Pratylenchus* species), sheath *(Hemicycliophora* species), stunt (Tylenchorhynchus species), sheathoid *(Hemicriconemoides* species), and dagger *(Xiphinema* species) nematodes.

DIAGNOSIS OF NEMATODE DAMAGE TO TURF

Above-ground symptoms commonly associated with nematode injury to turf inlcude wilting under moderate moisture stress, slow recovery of wilted areas after rain or irrigation, and "melting out" or gradual decline. Grassy and broad-leaved weeds commonly become more predominant in nematode-affected turf than in relatively healthy turf nearby; among weeds that occur frequently in nematode — damaged turf are spotted spurge and Florida pusley. There are no above-ground symptoms which are directly diagnostic for nematode injury; most symptoms commonly associated with nematodes are the same as might be caused by other kinds of root stress, such as lfungal pathogens, some insects, chemical spills, compaction of soil, lack of adequate water supply, and flooding or saturation of the soil for extended periods of time.

Roots injured by nematodes are usually dark and short, with few latral or "feeder" roots. Root tips may be swollen, and there is often excessive root rot. The most common symptom is a very short root system which does not hold soil together as well as does a healthy root system when a core or plug is lifted from the sod.

The previous history of an area should be of considerable help in determining the likelihood that nematodes are causing a current problem. If diagnostic samples were taken or specific pest problems identified earlier, those records may suggest the pests most likely to be present in the area on this occasion. Especially helpful are records of previous diagnoses from nematode assay, plant disease, and insect identificaiton laboratories.

Soil samples can be key diagnostic aids. In Florida, Nematode Sample Kits which contain instructions and packaging materials for taking and submitting samples to the Florida Nematode Assay Laboratory can be obtained at county Extension offices; this laboratory charges $5.00 per sample for processing. Other laboratories also provide nematode assay service in some areas of Florida. Consult with their representatives for prices and services offered. Since most nematode control treatments are expensive, adequate nematode samples should be processed to establish the need for treatment before it is initiated. (continued on page 43)

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CONTROL

At present, the most practical way to reduce unacceptably high nematode populations in turf is to apply an appropriate nematicide. Crop rotation, varietal resistance, biological controls, and other means that are used against other pests or nematodes in other crops are rarely practical for turf nematode control. Turf professionals should study the turf nematicides available (Table 1) so that the most appropriate material can be chosen for each situation without expecting unrealistic control from it. There are both fumigant and non-fumigant "contact" chemicals registered as turf nematicides in Florida. The nematicide chosen for a specific problem must be *legally registered* for the situation, *effective* against the pest problems and the most *economical* of the acceptble products.

Soil fumigants are chemicals which are applied as gasses or volatile liquids which vaporize and spread through the soil pores as gasses. Physical conditions in the soil determine how well a fumigant can spread. A loose, open-pored soil permits more rapid and uniform diffusion of fumigant vapors than a compacted or cloddy soil. Soil with a moderate moisture level is best; vapor diffusion is inhibited by water-filled pores, while fumes may escape too rapidly and nematodes may be less susceptible to nematicides in very dry soils. Soil temperature must be within the range specified on the label of the product (usually 50°-80°F). Fumigants may vaporize poorly and will move more slowly in cold soils, and evaporate from hot soils too quickly to get adequate control.

Several non-fumigant "contact" nematicides may be applied to turf in certain situations. These products are all organophosphate insecticide-nematicides which are usually applied to the soil surface in granular formulations. The active ingredients are dissolved from the granules and carried into the soil profile by irrigation or rain water: Too little will fail to get the nematicide into the root zone, but too much may leach it too deep to be useful before control is achieved.

Before planting new turf or during renovation, treatment of soil with a multi-purpose fumigant is often desirable to promote rapid and uniform establishment of new turf. Many products are registered for this use; only a few examples are discussed here. They should reduce nematodes and some insects, soil-borne fungi, and weeds.

Several liquid soil fumigants which contain significant levels of chloropicrin or other tear gases can be injected into the soil with tractor-mounted equipment. For maximum effectiveness, soil treated with these products should be covered with a plastic tarp for one to several days. Terr-O-Cide 54-45®, Vorlex®, and Telone C-17® are among these multi-purpose liquid fumigants. Vapam® is a liquid product that can be applied either as a drench in water or injected by chisels; the area treated with this product should also be covered after treatment for maximum benefit from its use.

Methyl bromide/chloropicrin mixtures such as Dowfume MC-33® and Terr-O-Gas 67® must be injected by chisels and the soil covered immediately with a plastic

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tarp. These products must be handled as gasses with special metering devices, and are usually custom-applied. This is the most expensive but perhaps one of the most effective treatments available to reduce many kinds of soil-borne pests before turf is planted.

Several methyl bromide products, such as Dowfume MC-2® and Brom-O-Gas®, are available in small cans (1 lb. or 1½ lb. per can) for application to small areas. At the rate of 1 lb./50 sq. ft., excellent control of most soil-borne pests may be obtained with these products. Areas treated with these products must be covered with a plastic tarp for the chemical to stay in the ground long enough to be effective.

Nematicides for established commerical turf. There are both fumigants and organophosphate "granular" nematicides registered for use on established commercial turf, such as golf courses, sod farms, and cemeteries, in Florida. Physical treatments which will improve penetration of water into the soil, such as aeration, close mowing, vertical mowing, or mechanical thatch removal should be done before application of these products; soil should be moist but not saturated at the time of application. Follow application with ¼ to ½ inch of water as directed by the label of the product being used.

Nemacur®, Dasanit®, Mocap®, and Scotts Pro-Turf Nematicide/Insecticide® are organophosphate pesticides registered for application to commerical turf as granular formulations. These products are generally applied by the turf manager or his crew. Gravity or "drop-type" granule spreaders are preferred over centrifugal types for accurate application and safety to non-target plants and animals. Centrifugal spreaders are more hazardous because they increase exposure of the applicator and bystanders to easily inhaled "fines" (dust) of the pesticide. These products vary in their efficacy against different kinds of nematodes (Table 1) and most are quite expensive.

Liquid (EC) formulations of Dasanit and Mocap may also be applied to commerical turf. However, Mocap EC may seriously burn foliage, so test the application on a limited basis before treating the entire area. These liquid formulations are restricted pesticides because they contain high concentrations of active ingredients.

Soilbrom 90®, a soil fumigant whose active ingredient is ethylene dibromide, may be injected into established commerical bermudagrass through chisels no more than 12 inches apart, 3 to 5 inches deep. This treatment is usually done by custom applicators. The low label rate (3.5 gal/acre) of Soilbrom 90 usually provides excellent nematode control with a minimum risk of phytotoxicity (chemical injury to turf). There is some risk of phytotoxicity if the high label rate (4.5 gal/acre) is applied to wet, cold, or compacted soils.

Soilbrom 90 EC® is an emulsifiable formulation of Soilbrom which can form a stable uniform mixture with water. It may be appied to established bermudagrass by chisel injection or by hydro-injection. It may also be applied to residential and ornamentl turf of bahia, bermuda, centipede, St. Augustine and zoysia grasses, by hydro-injection. Application to residential turf is limited to licensed professional applicators.

Hydro-injection consists of shooting a water/nematicide emulsion of the product through needle-jet orifices directly into the turf at sufficient pressure to force it several inches deep into the soil. Although placement of fumigant may not be as deep or uniform as by chisel injection, hydro-injection is much less likely to damage underground roots, pipes, wires, etc. which are common in lawns. Application of Soilbrom 90 EC by hydro-injection should be followed immediately by 0.5-1.0 inch of water (irrigation or rain).

For hydro-injection, the label specifies mixing 0.75-1.0 gallons of Soilbrom 90 EC in 300 gallons of water to treat 10,000 sq ft of turf. This corresponds to applying 3.3-4.4 gallons of product per acre. In most instances, the lowest rate will be satisfactory. Among the turf species for which this treatment is registered, zoysiagrass was the only one on which visible injury was seen during preliminary testing. To minimize chance of phytotoxicity, use the lowest concentration of Soilbrom and carefully avoid spilling the mixture or allowing the application equipment to drain on desirable turf.

Soilbrom and Soilbrom 90 EC are relatively inexpensive nematicides with good activity against most turf nematodes. However, stubby-root nematodes often recover from treatment with these fumigants more rapidly than do other kinds of nematodes, so that repeated use of the fumigants may permit stubby-root nematodes to become predominant at a site where they

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were barely detectable at first. If this situation develops, alternate treatment with an organophosphate product may correct the balance of nematode species.

Residential turf. Three products, Sarolex®, Mocap 10 G, and Soilbrom 90 EC, may be legally applied to established residential lawns and turf around condominiums or other areas exposes to the general public in Florida.

The use of Soilbrom 90 EC for residential turf has been discussed above.

Sarolex is a special formulation of lthe insecticide, diazinon, normally applied as a drench. The product itself is relatively expensive, but is the only one which gives the homowner the option to buy and apply it with readily available equipment. However, it has limited efficacy: it is most active against sting nematodes, but is only slightly effective against ring nematodes and probably provides little or no control of most other kinds of nematodes.

Mocap 10G may be applied to home lawns in Florida only by certified commerical applicators. It is most effective against sting nematodes, and moderately (perhaps slowly) effective for control of ring, stubby-root, and several other ecto-parasitic nematodes. Poor control of endo-parasites such as lance and root-knot nematodes should be expected. Apply carefully *only to turf:* Mocap may be phytotoxic to some ornamental plants under some conditions. The label requires that only drop-type or gravity spreaders be used to avoid getting Mocap on non-target areas. Chinese elms are among the ornamentals most likely to be injured by Mocap if it is applied too close to the base of the tree, or if the tree is under stress at the time of application. Do not apply Mocap within the "dripline" or area covered by the branches, to avoid excessive root injury. Immediately following application of Mocap 10G to turf, apploy ½ inch of water to wash the active ingredient into the soil where it can be effective, to reduce the noticeable garlic-like odor, and to avoid hazard to people, pets and wildlife. *Note that only Mocap 10% Granular Nematicide-Insecticide is registered* for use on home lawns. Mocap EC and other manufacturers' products which contain ethoprop are not registered for use on residential turf.

TABLE 1. Approximate levels of common turf nematodes that may justify nematicide application to turfgrasses in Florida, and expected relative effectiveness of registered nematicides for their control.

Kind of Nematode	Nematodes 100 cc soil	Comparative effectiveness of nematicides: Nemacur	Dasanit	Mocap	Sarolex	Soilbrom 90, Soilbrom 90 EC
Sting	10	G*	G	G	M	G
Stubby-Root	40	G	M	M	P	M
Awl	10	G	G	G	P	G
Spiral	300	G	G	G	P	G
Ring	150**	G	M	M	P	G
Sheath	80?	G	?	M	P	G
Lance	40	G	P	P	P	G?
Root-knot	80	M	P	P	P	M

* G = Good M = Moderate P = Poor

**Threshold for centipedegrass is about 150 ring nematodes/100cc soil; other turfgrasses can apparently tolerate much higher without serious injury.

GUEST EDITORIAL

By Brad Kocher

I see, what I consider to be, a very unfortunate series of events in the turf industry — the "GimmicKing" of chemical product sales. Over the course of the past few months I have witnessed several chemical manufacturers getting into the "points for products" and "sweepstakes" programs to enhance chemical product sales.

The whole idea may have started innocently with points for research and/or product rebate, but has mushroomed into catalog items from smoke alarms, tools and even computers.

The part of the program that offends and insults me, is that as a golf course superintendent I feel that I deal legitimately for both service and price with my purveyors, which I feel is part of my job responsibility for the company that employs me. If I desire to buy a product, I find reputable companies to supply the product, and make a purchasing decision based on a price/service factor. Now, if I wish to buy XYZ fungicide, am I now supposed to figure who kicks back the best prize? That's supermarket sales.

The sad part is, that even if I do not participate, and I will not participate in the program, my price of chemicals will be affected. Companies do not give away prizes free gratis. Sweepstakes and prize programs must be funded, advertised, points accumulated and prizes awarded. It all costs dollars.

I do not need prizes. If I need two-way radios and have the money, I'll buy them. If my company needs a microwave, or desk furniture, or a computer, they'll buy it. Don't ask superintendents or for that matter anyone who works for a company to make purchasing decisions based on prizes or awards.

I believe if a product sales organization wishes to show its customers they are concerned for their industry, there are other alternatives. A simple donation to turf research from a conscientious company, based on their sales, say in the State of Florida in 1983 for turf products, would be very receptive. It would not compel people to buy products to get a specific prize, but it would steer business to a chemical company that is concerned for the future of the turf industry and those who work in that industry.

Points for sales should not even be a determinate. Simply keep track of how many gallons or pounds of X herbicide are sold and donate a dollar percentage to the research industry. A lot of work has been done lately to encourage turf research in Florida and contributions in that area are welcome.

Another incentive would be monetary rebates to companies, as some chemical companies have already done, and I emphasize *company* rebates. If I buy 1500 pounds of a certain chemical, and a chemical company rebates 3 cents a pound, the check should only go to my company — not an individual. Programs such as this would encourage sales and discourage dishonesty.

I can understand how some programs get started in industries where people are self-employed. If I own a business and wish to participate in programs that offer me gifts or free travel, then it is my perogative whether I deal with a specific company. The prices I pay to a supplier and the ensuing benefits are totally my choice and I would reap the benefits, and accordingly, pay the price.

However, most golf course superintendents are employed by companies or greens committees. We do not pay the bills, we only authorize payment. It is not in my best interest to reap the benefits of giveaway programs, and I would hate to think that my company would frown on, or be suspicious of, my dealings with companies that offer kickbacks — even as reputable as those companies may be. I want to buy products that are high quality, at a good price, from a dependable supplier.

I do not believe sales organizations should leave to chance questions concerning the integrity or motives among people with whom they deal. Individuals who work for corporations are compensated. If purchasing is part of their job description, it should be done with price and service as the primary consideration. If my company wishes to reward me for conscientious buying, let *them* do it.

I am not seeking to place blame, however, a win-win situation can, and should be created by the marketing organizations. Nobody should be a loser. ■

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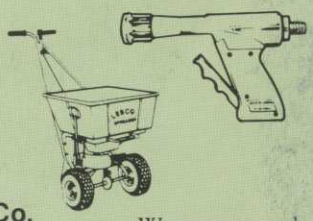

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