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ALL ABOUT OUR COVER

Seventh Hole At The Picturesque Palm Beach Par 3 Golf Course. (see page 20).



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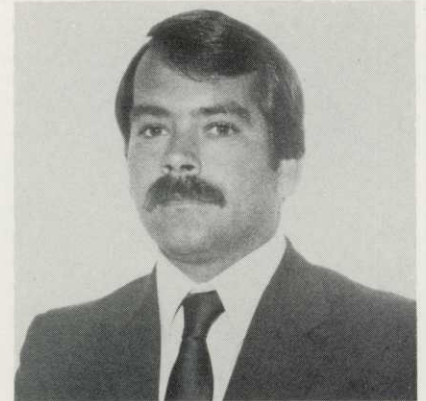
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President's Message

The GCSAA Executive Committee recently approved the new certification long-range plan. The plan is an extensive document which required a tremendous amount of time to prepare. The certification program of GCSAA in the past has been a very controversial topic. The main comments have been that the examination process (open book) was too easy and the value once obtained meant nothing.

The success of any professional educational program rests on the attitude of those in that profession. It is obvious the attitude in the past was negative.

The new program adopted will mean something. Although some of the programs and requirements seem almost unreachable presently, I think they are necessary for us to progress in the future. The program is not cast in concrete in its present form. There will be changes for sure; but it is a start. The program needs our acceptance in form and attitude to be different.

The 1984 FT - GA Conference and show will be held in Tampa on September 30 thru October 3. The Golf Turf Educational Program should be the best yet. One of the highlights of the conference will be up to date reports on the progress of I.F.A.S. turfgrass research.

Congratulations to the newly elected officers of our nine chapters. Please continue to communicate any assistance your chapter needs to your Florida Golf Course Superintendent Representative.■

Don DeLaney

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Not Too Much Pepper, Thank You

By Keith Barrons

For dinner last evening my wife and I had sauteed shrimp with mushrooms. In addition to the arsenic that came with the shellfish, the mushrooms provided us with hydrazine, the baked potato with solanine and the celery with furocoumarin. All three compounds are carcinogenic.

The carrots in our mixed vegetables contained carotene, which converts to Vitamin A in the body. This vitamin, essential in the amounts we ordinarily ingest, is a teratogen and harmful to the liver at highly excessive levels. The alfalfa-sprout topping on our salad contained canavanine, which is associated with defects in the immune system. The black pepper carried the mutagen safrole. Chocolate cake provided theobromine, which can activate various carcinogens, and in addition to caffeine, the coffee contained about 250 milligrams per cup of the mutagen chlorogenic acid.

The world around us abounds in nature's toxic substances, and our food is no exception. The scientific literature lists many natural components of food that are known to be harmful to laboratory animals, but only at dietary levels considerably in excess of likely human intake.

Nonetheless, many Americans have succumbed to a new fear — and one that could in the long run lead to an ever-lowering quality of life. I refer to the current epidemic of 'microchemophobia,' or the fear of minute traces of chemicals. *Grains and Nuts*: In defining a poison, my old biochemistry teacher told his classes, "a poison is too much." Yet my wife and I have not consumed too much of nature's chemical oddities. How, pray tell, have we each passed three score and ten while indigesting a myriad of natural toxins, including a aflatoxin, an exceedingly potent carcinogen sometimes found in grains and nuts as well as nitrosamines formed in the curing of meats? The answer: our natural defense mechanisms. Were it not for these remarkable biochemical systems we would long since have succumbed.

In tests with laboratory animals some of nature's toxic substances have proven more poisonous than any man-made chemicals, and their concentrations in food are generally much greater than the synthetic impurities that have generated so much fear. In a notable paper in *Science*, Dr. Bruce N. Ames, Chairman, Biochemistry Department, University of California, Berkeley, concludes that our intake of natural toxins is "...probably at least 10,000 times higher than the dietary intake of man-made pesticides."

If our built-in defense mechanisms can handle relatively large amounts of toxic chemicals that happen to be synthesized by the most accomplished chemist of all, a living plant, there is every reason to believe we can cope with

the far lesser amounts of man-made compounds, traces of which occasionally find their way into our food. Our fears should be quelled by the fact of our ever-increasing longevity — now more than 74 years compared with 50 years or less before chemicals were used to help assure an abundance of food.

Microchemophobia has multiple origins. There is the anti-chemicals "lobby" that nurtures and magnifies each report of a real or speculative risk. Parts per billion are often equated with an imminent hazard regardless of the magnitude required to harm laboratory animals. There is never a reminder of the minuscule nature of one part per billion.

A recent example of an overblown pesticide episode contributing to microchemophobia was the flap over EDB residues in grain. Today's knowledge of the carcinogenicity of this compound may well support the cessation of its use as an insecticide. Some food samples analyzed exceeded current safety guidelines, but the destruction of foodstuffs because they contained lesser amounts was uncalled for. With few exceptions, the contaminated samples had less than one thousandth the level of EDB that was found to cause cancer in rats. Add to this margin of safety the fact that grain-derived foods are only a portion of the human diet, and further, that much of any EDB present would be reduced on cooking for baking, and the risk fades into insignificance.

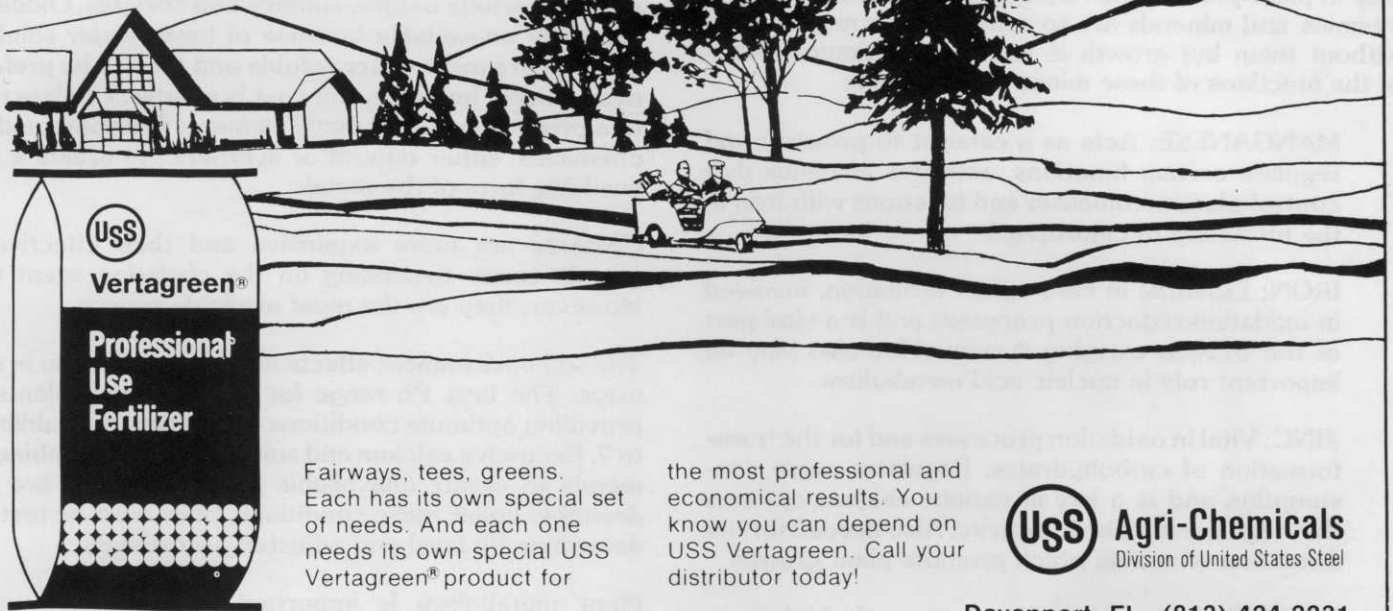
Also contributing to the fear of minute traces of chemicals is an overly cautious interpretation of the so-called Delaney Clause in the law dealing with safety of foods. It states that no substance will be permitted in food. "...If it is found after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animals..." Note the word *appropriate*. Is it not appropriate to consider safety margins or the spread between likely human exposure and the amount required to induce cancer in the laboratory when analysts interpret toxicological data?

Potato Blight: if we are to avoid pest-induced food shortages and vector-transmitted diseases, mankind must defend itself by one means or another. In spite of much progress with nonchemical controls, pesticides are still vital to most integrated pest-management programs and, indeed, are often our first line of defense. For example: we can control potato late-blight, the same disease that caused the great Irish potato famine of the 1840's.

We will continue to ingest nature's toxins, including, no doubt, many yet to be discovered in our everyday foods. But if we are to continue to have the abundance we have

(Continued on page 12)

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Micronutrients In Pot Culture

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"A little neglect may breed mischief; for want of a nail the shoe is lost, for want of a shoe the horse is lost, for want of a horse the rider is lost." This quote from Poor Richard's Almanac best sums up the role micronutrients play in plant production. Micronutrients are to plants as vitamins and minerals are to animals. One may survive without them but growth is less than optimum. Some of the functions of these minor elements are:

MANGANESE: Acts as a catalyst to promote and regulate certain functions, activates enzymes that control plant metabolism and functions with iron in the formation of chlorophyll.

IRON: Essential in chlorophyll formation, involved in oxidation-reduction processes and is a vital part of the oxygen carrying system. May also play an important role in nucleic acid metabolism.

ZINC: Vital in oxidation processes and for the transformation of carbohydrates. Regulates sugar consumption and is a key in various enzyme systems that regulate metabolic activity. Also needed for the formation of auxins which promote plant growth.

COPPER: Activates enzymes, some of which function in respiration. Important in protein utilization and indirectly effects chlorophyll production.

BORON: Important in plant growth associated with cellular activity that promotes maturity, flower set, fruit yield and quantity. Some foliage plants are quite sensitive to boron and toxicity can occur where levels are excessive.

MOLYBDENUM: Required for the assimilation of nitrogen in plants. Plant requirement is very low.

The activity of micronutrients in plant growth has been identified to some degree but much remains to be known. We know plants respond to applications of minor elements and are essential for growing quality plants. Compared to nitrogen, phosphorous and potassium, micronutrients are required in relatively small amounts.

Plant requirements vary for each element and in excessive amounts they can cause plant injury or even death. The sensitivity of certain plants to some elements, particularly boron, is known. Where ever these are a problem the fertilizer programs must be adjusted to insure these elements are eliminated or restricted.

Micronutrients come from many sources. The ability of the plant to absorb these elements depend on the source, soil environment and plant metabolism. Micronutrient sources include oxides, sulfates and chelates. Oxides are generally unavailable because of lower water solubility. Sulfates are more water soluble and tend to be preferred over oxides, however, the cost is greater. Chelate refers to a process by which metal elements are combined with chemicals, either natural or synthetic, to create a more available form of the metal.

Chelates are more expensive and their effectiveness greatly varies depending on the chelating agent used. However, they are the most available source.

The soil environment effects nutrient availability in many ways. The best Ph range for growing most plants and providing optimum conditions for nutrient availability is 6 to 7. Excessive calcium and soil colloids can combine with metals to create unavailable forms. Chelates are most desirable under these conditions. Soils must be tested to determine Ph level and adjusted accordingly.

Plant metabolism is important as it effects nutrient absorption. An active plant will absorb more nutrients. Cold weather will slow plant metabolism and nutrient uptake will be diminished.

Soil applications and foliar sprays are both effective ways of applying micronutrients. Even though micronutrients are not used in large amounts, their availability may mean the difference between average and optimum plant growth. Make sure your fertilizer program does not neglect the "nail" (micronutrients).■

(Continued from page 10)

been blessed with in recent decades, traces of man-made chemicals will certainly find a way into our food — from pest control, packaging, protection in storage and other sources. Given today's highly sophisticated analytical techniques, these miniscule amounts can be detected, even at the parts per million level.

The only sensible course is to follow the recommendations of authorities and eat a varied diet with less fat than is now commonly consumed and include plenty of fruits, vegetables and fiber-rich cereal products. I would also put some faith in our laws and our regulators. On the whole, I think they have served us well. Remember never have people lived as long and amid such abundance as the technically advanced world of 1984.

(Keith C. Barrons — Taught crop production at Michigan State University, worked for Burpee Seed Co. and Dow Chemical Co. — NEWSWEEK, April 9, 1984.)■

—CHEMICALLY SPEAKING

April 1984

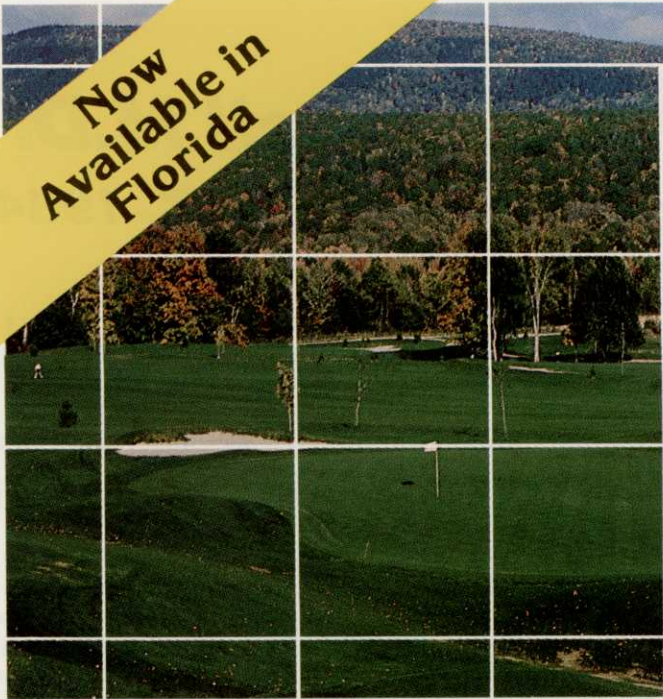
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Testimony Of G.R. Greenwell M.D.

To The Committee On Agriculture On Feb. 7, 1984

The present conflicts that exist relating to EDB are examples of what can happen when our legislative bodies have allowed bureaucracies to develop into a form of dictatorship. Your predecessors apparently have either decided not to accept the responsibility of carrying out the mandates of our Bill of Rights, or they have been convinced by the "experts" that our legislators are too stupid to ever be able to have these matters explained so that they could understand.

Many bureaucracies in the U.S. have been established and allowed to evolve into dictatorship types of government agencies. Proper checks and balances have not been incorporated in the statutes which establish some of these governmental agencies. Therefore they begin to function as a dictatorship in that they;

1. Enact regulations without being required to justify their actions prior to enforcing the regulations (for example one of our bureaucracies recently pro-

claimed that water with more EDB than .1 ppb increases the risk of the consumers developing cancer to a dangerous level).

2. Immediately were allowed to embark on enforcing this regulation (law) without being required to explain why this magic number is valid. They have not been required to develop these regulations "in the sunshine" or have them evaluated by our legislators and, or, consultants appointed by our legislators so that we can be more sure that such a regulation, or "law", is just and is in accordance with our Bill of Rights in that it is needed to assist us in our pursuit of freedom and happiness. No factual data has been made available to any of us that any emergency exists.

How many "swine flu epidemic" type of so called catastrophes must you allow to take place before you feel you should require these bureaucracies to follow democratic processes and the mandates of the Bill of Rights? They have been permitted to assume that their responsibility only requires them to be concerned with some of us possibly harming others. If this assumption is valid they should be developing regulations that would prevent you from operating an automobile because you could possibly harm other people. Their interpretation of their responsibilities have been allowed to govern their conduct without them establishing the validity of this interpretation. (similar to the conduct of a dictator)

In June 1981 the Florida legislature inacted a law that demonstrates their disapproval of the F.D.A. operation since they felt that the F.D.A. was unnecessarily preventing products from being made available to the people of Florida as rapidly as they should. This statute (500.16?) established a Florida F.D.A. type of government agency, but that law like most other laws establishing these types of agencies, failed to incorporate anything which would prevent the Florida Agency from becoming similar to the F.D.A. These laws establishing government bureaucracies usually fail to require these bureaucrats to be adequately accountable for their actions. Therefore they become dictatorships that can become capable of causing a great deal of hardship without providing significant benefits to the people.

Apparently the Florida Department of Health & Rehabilitative Services and EPA etc., have been allowed to assume that their responsibility is to prevent suffering, illnesses and injuries etc., without due concern for protecting our rights under the Bill of Rights and Constitution. Particularly our right to freedom and pursuit of happiness. They should not be allowed to interfere with our freedom unless they can prove we are causing hardship or interfering with others in their pursuit of freedom

(Continued on page 16)

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(Continued from page 14)

and happiness. For example, these agencies have not been required to produce factual or scientific information which would verify that there is a widespread emergency situation related to the January 1983 recommended uses and application of EDB, nor have they been required to place this evidence (if it exists) before a scientific or legislative body for validating their conclusions before causing a great deal of expense and mental anguish to many people.

No evidence has been published that verifies that EDB exposure (as much as 40 yrs.) has contributed to the development of cancer in any human. The extent of risk to humans is based on unscientific assumptions which are inconsistent with demonstrated facts.

Our state agencies have proclaimed (without producing valid evidence) that EDB in drinking water at concentrations greater than 0.1 ppb significantly increases the risk of developing cancer due to its lifetime cumulative effect. If a person consumes 2 liters (approx. 2 qts.) of water per day containing that concentration of EDB he will consume 51.1 mgm in 70 years. This would be 0.852 mgm/kg. body weight during the lifetime. The National Institute of Occupational Safety and Health stated that no lifetime dose of EDB less than 686 mgm/kg has ever been shown to produce adverse effects in experimental animals. The Florida H.R.S. Department is claiming that the maximum safe lifetime consumption for a human (who has not been shown to be more susceptible to developing

cancer from such exposure than the mice and rats used in the studies producing cancer) is .12% of the dose that fails to produce cancer or any other adverse effect. Black pepper has been shown to produce cancer in mice at a dose equal to the amount the average person consumes in 20 years. If the EPA assumption is correct over 30% of the people in U.S. should have cancer in 20 years time of average pepper consumption.

If you allowed the maximum acceptable concentration of EDB in drinking water to be 100 parts per billion the person who drinks 2 liters per day (which is considered acceptable intake) would require over 563 years to consume an amount of EDB "below which no adverse effect were produced in experimental animals".

I have tried to obtain reports of the information which the State Department of Health & Rehabilitative Services said was supposed to verify that this regulation is immediately needed. Dr. Stephen King, who determined this magic number and assessed the danger, has been unavailable on the occasions I have tried to contact him, therefore, I was referred to Dr. Atkeson, his assistant. Dr. Atkeson told me that the information upon which Dr. King bases his decision was contained in the EDB Position Document 4 of the U.S. E.P.A. (he also told me that he would send me a copy of this information right away), approximately 2 weeks later, on November 31, 1983, I met Dr. Atkeson at a public meeting in Brandon and I had a copy of Position Document 4 and he asked me where I acquired my copy since he had been unable to obtain one prior to then. (Did they get the basis for the decision to start mass hysteria and begin spending thousands of dollars from a document they haven't seen?)

That EDB Position Document 4 developed by the U.S. E.P.A. and published September 27, 1983, which was purported to contain information validating the Florida standards was developed by following very unscientific and questionable procedures. The E.P.A. announced certain suppositions. After the rebuttals were received the E.P.A. rejected the information in many of the rebuttals and arrived at their conclusions without further outside scrutiny. This is like me setting up a debate with Rep. Martin and after each of us presents our arguments Rep. Martin decides who won the debate, without him being required to justify his decision to an impartial observer. Therefore the scientific validity of the conclusions reached in the document has not been verified. You should enact legislation that requires a review of these agency decisions and opinion of a qualified (group or individual) impartial observer.

No method of determining the potential risk of cancer development being brought about by animals or humans through exposure has been verified to be reliable by the scientific community. The formula presented in Document 4 is based more on assumptions than demonstrated facts. No reports of studies (on animals or humans) have been reported that verify we can predict cancer development rates by exposing a group of animals to a specific dose of carcinogen for a lifetime or a specific period of time.

Evidence that the assumptions used by the E.P.A. for developing their conclusions in these matters are invalid

(Continued on page 17)

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(Continued from page 16)

is far greater than the amount of data indicating possible validity. For example cancer has been produced in mice by exposing them to a mushroom extract (derived from the most common commercial mushroom) at a dose of 1.34 mgm/kg. A one oz. serving of mushrooms would provide a dose of 1.84 mgm/kg to a 170 lb. man. This is 137% of the cancer producing dose in mice. Many humans consume more of this "cancer producing" mushroom than 1.34 mgm/kg on many occasions, yet no human cancer has been related to consumption of this common variety of mushrooms. A derivative of this carcinogen has been shown to produce cancer in 30% of mice which were administered a single dose of 400 mgm/kg. (The animals that developed cancer due to EDB received more than 686 mgm/kg). Therefore if we permit ourselves to apply the same risk calculation formula used by the EPA for calculating the cancer risk involved with a man eating one ounce of mushrooms more than 30% of those involved would develop cancer. If you believe that indicates their formula or risk assessment is correct I would like to meet with you after this hearing and sell you a bridge.

The Board of Toxicology and Environmental Health Hazards Assembly of Life Sciences National Research Council in 1980, estimated that trihalomethanes in water and EDB in water estimates of risks are extremely crude. The results of the studies presented did not establish that these agents cause cancer, but an exposure to them may be statistically related. They concluded at that time (based on these "extremely crude" formulas) 10 parts per million of EDB water may increase the cancer risk by 2 chances out of 100,000 during a 70 year life. The American Cancer Society estimates that 25 out of 1000 people will develop cancer without EDB exposure.

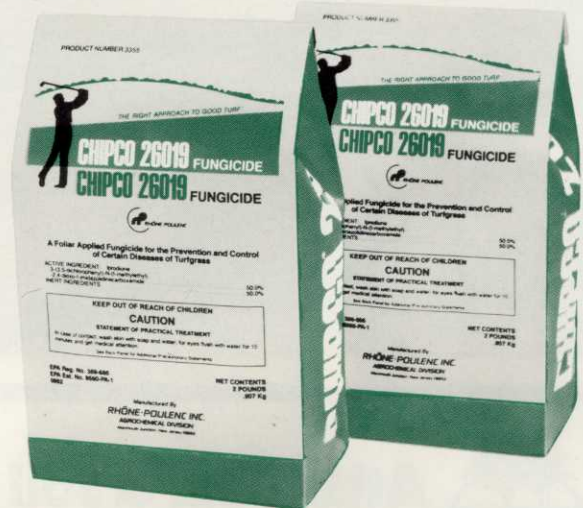
In conclusion, I suggest that you should not allow the bureaucrats to enforce a regulation of the use of EDB more strict than January 1983, until after they have demonstrated that their evidence of danger will be considered valid by disinterested scientific observers designated by you. The maximum limit of EDB in drinking water I would recommend in the interim would be the same as recommended by the expert interviewed Friday, January 27, 1983, on educational television show "McNeil-Leher Report", Mr. Havender, which was 100 parts per billion, the same level I suggested November 21, 1983. Also, someone or some qualified group should be charged with the responsibility of developing a cancer risk formula and verifying the validity, at least in animal studies, before applying it to humans and threatening severe hardships and economic impact without first of all verifying to you and, or the scientific community that an emergency exists.

Most importantly this controversy should cause you to realize the need for legislation that will require the various government agencies to justify their actions before they are allowed to cause us to incur significant hardships and or expenses (interfere with our rights of the pursuit of happiness and freedom). The democratic system should extend down from the highest to the lowest level of government. Don't allow anyone to convince you that these matters are too complicated for anyone to provide you with an understandable explanation, so they can develop a type of dictatorship which is accountable to nobody.■

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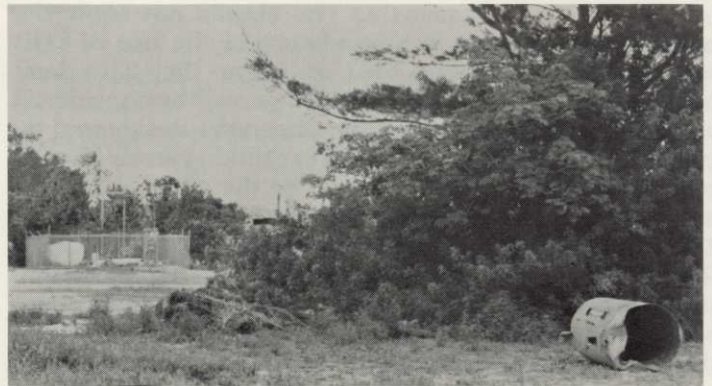
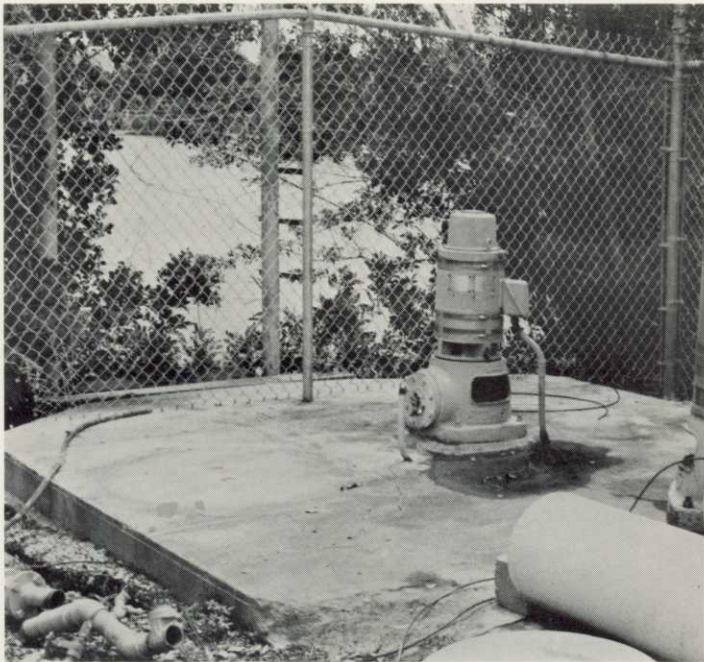
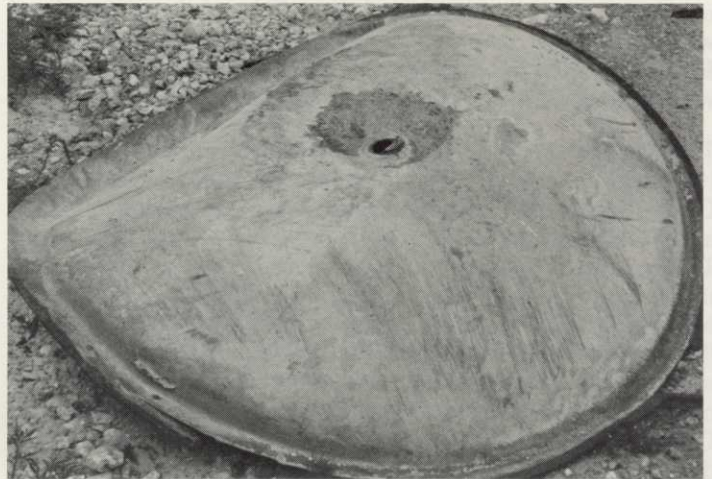
Turf Fungicide

Irrigation Systems Can Be Killers

By BRAD G. KOCHER

One recent morning I arrived at work and found my irrigation system shut down. To my amazement, I found the surge tank (that is 6 feet high and 30 inches around) missing from the pump station. The gate was still locked. Did someone steal it? My irrigation man came running over and told me the irrigation tank was 300 feet away with the bottom blown out. During the night it had ruptured, took off like a rocket, cleared a 6 foot fence around the pump station, sailed 300 plus feet through the air and hit a pine tree 15 feet off the ground. We can only thank God that it didn't happen during the day with employees and golfers around.

Editors Note: If you have had bizzare happenings on your golf course, send information and pictures to us for publication in future issues of the Florida Green. We can write the story for you.■



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Something New For Pythium

LYNN GRIFFITH
A & L Labs

The turf industry in Florida can always use a new fungicide, especially a systemic one. Aliette is a new turf fungicide from Rhone-Poulenc chemical, makers of Ronstar and Chipco 26019. The material has been available in Europe and South America, and should be labeled for turf this year. Aliette is currently labeled for some ornamental plants, and can be purchased from some of the local suppliers.

The chemical name of Aliette is Phosethyl-aluminum. It controls Pythium and Phytophthora systemically, like Subdue or Ridomil. These water-mold fungi are among the worst diseases of turfgrasses. They are severe root rot pathogens, especially in wet weather and poorly aerated soils.

The main interest in Aliette stems from the fact that it translocates downward. When applied as a foliar spray, it

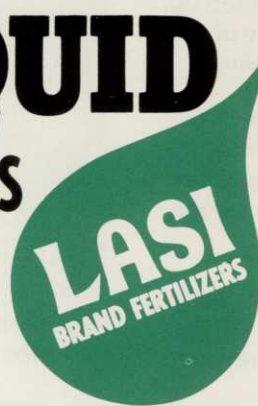
is absorbed by the leaves and travels downward to the roots. Once there, Aliette works within the plant's own chemistry to combat root rot. One of the problems with many Pythium fungicides is that they must penetrate the soil quickly and thoroughly in order to be effective. In some soils, fungicide penetration can be big problem, especially with tight, compacted, poorly aerated soils. (Such soils are also ideal for Pythium.) The concept of foliar spraying to control root disease is a whole new aspect in turf disease prevention.

Research with Aliette on turf was begun last fall at the University of Florida, but the Christmas freeze cancelled any potential results. Dr. Ed Freeman is conducting tests right now with Aliette on bermudagrass, using 2, 4, and 6 ounces per thousand square feet. Aliette should be useful for disease control in most of the major commercial turfgrass varieties. The material is also being tested for aerial blight of ryegrass.

Aliette should be quite effective in controlling Pythium on commercial turf, especially in poorly drained or waterlogged soil. After excessive rainfall, it can be sprayed on without significantly adding to the excess moisture. The product is reasonably safe, but it is volatile so keep the bag closed. Aliette is also competitively priced, and is actually cheaper to use than some existing fungicides. The product should be a very useful disease control tool for the Florida turfgrass industry.■

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Palm Beach Trade Winds



By MICHAEL J. BAILEY
Boca Greens Country Club

Par 3, Executive Municipals: A Vital Link To Success Of Golf

Ultraexclusive, meticulously maintained and the Golf capital of the world. These are common adjectives for golf courses throughout Palm Beach County. However let us continue one phrase further — “the garden spot of the world”. There are several communities nestled throughout the world, boasting of established wealth and class, yet there is no place quite as majestic as beautiful Palm Beach. All too often we associate the exclusive country club as the standard to judge all by, but for this issue of the Florida Green, the topic is of a totally different type of operation that we often overlook — the Par 3, Executive and Municipal courses. They are a vital link to the continuing success of introducing golf to the non-members country club golfer, who wishes to pursue the game. Within this realm, we will explore this topic as shown by the cover photo revealing the 7th hole at the Palm Beach Par 3 Golf Club. The course is found deep in the heart of the most choice piece of real estate in America. The course is nestled within 35 acres of land with an estimated value exceeding 35 million dollars. The course was designed by Mr. Dick Wilson and built in 1960 between the shore of the Atlantic and the seawall of the Intracoastal Waterway.

The 2450 yard course is composed of 18 Par 3 holes with lengths varying from a testy 99 yards to a demanding 221 yards. The greens average 2400 square feet in putting surface, while there are 13 strategic traps to play havoc with your accuracy.

If you are one to assume short courses are relatively easy to play — guess again! This course possesses all the demanding elements to rattle your scorecard, whereupon

a sub-par round is a rarity. The geographic location of four golf holes paralleling the ocean just 200 feet from the pounding surf, not to mention the consistently strong offshore winds, four lakes which come into play on seven holes, respective elevations within the sand dunes, the ever-present Intracoastal Waterway just waiting to swallow your shots on three holes, and the overall beauty of Palm Beach, (whew!). One tends to find the game of golf here to be extremely demanding, yet exceedingly enjoyable and relaxing.

Let us profile the typical par 3 golfer, as they are an interesting breed within our golf culture. Usually, their playing ability is somewhat limited, either by playing skills, physical capabilities, finances or perhaps even their desire to pursue the game seriously and instead just play golf for a relaxing form of exercise and enjoyment. A smaller, shorter course is commonly desired because of the ease to play, not to mention a shorter length of time



“Walkers are a common site at Par 3, note minimum of clubs to ease the load.”

(Continued on page 21)

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(Continued from page 20)

consumed to play. When compared to their playing on a championship layout, a longer course would not be enjoyable and perhaps they would retire from the game as over 50% of the players are elderly couples over the age of 60. Their handicaps are generally high (usually over 36), they play several times a week and are often on a fixed income. Their etiquette is generally poor. Failure to repair ball marks and divots, dragging their feet, playing with range balls and other caddyshack mannerisms are commonly observed. The key factor to the success of such operations, however, is the fact that the golfers enjoy themselves.

The ability for such a piece of real estate to pay for itself in operating expense is a credit to its clientele. The course is owned by the Town of Palm Beach. The Golf Commission advises on the operations, while the Town Manager ultimately oversees all decisions. If one is to closely scrutinize the facility, one will easily appreciate why the club is such a success. The condition of maintenance is excellent! Because of this, the golfers patronize their facility. Such quality which is more commonly found at the exclusive private clubs, can be credited to the outstanding golf course superintendent, Mr. Pete Brooks. Since his employment in September of 1980, the past four years of hard work is evident. Upon my recent visit for the writing of this article, I found the course to be in superb condition. The greens putt true, all is groomed to perfection, the turf is exceptionally healthy and there is very little to improve upon. Such quality is not uncommon, when considering Mr. Brook's background: a graduate of Lake City Community College in 1977 and the assistant superintendent at the Atlantis Golf Club, a community where Mr. Brooks credits his exposure to a high quality country club whereupon his training now exudes at the Palm Beach Par 3. Mr. Brooks is a credit to our industry; not to mention the game of golf, as Pete, who takes his game serious, has been known to tour many courses at even or near par. Mr. Brooks is not known to sit back and take it easy, but rather stands up and is active within his operations, as he and a work staff of two are constantly busy striving for perfection.

This type of operation is quite abnormal as compared to the so called bigger clubs. Let us examine the style of operation as perhaps many outsiders are unfamiliar with what all must still be done to maintain a so called smaller facility like a Par 3 course. Mr. Brooks, like most of us, has a budget to submit and be approved, while his expenditures are regulated on a government basis. Salaries are set by city standards, as they are government employees for the Town of Palm Beach. A budgeted operating expense of \$125,000 this past year at first might sound high to some individuals. We all realize the proper procedures for good maintenance and to fulfill the total spectrum, no short cuts can be allowed. Considering most everything needed to be performed on a large course must also be performed on a Par 3 course, the stated budget actually seems low.

Can you imagine what it would be like at your club, if you were to restrict all your play to within 25% of your given acreage. Obviously, the course would quickly show stress, however, this is exactly what Mr. Brooks must

contend with everyday — heavy play within a very small given space. The wear factors alone can play havoc with his program. The greens are aerified with the drum type at least six times per year. Verticutting is often performed to minimize grain on such a wind swept location. The Bermuda 328 greens are mowed as tight as nature will permit as 5/32 is the standard. Fertilization of the greens with frequent light applications is constantly aiding new growth, as the program averages 24 lbs. of N/1,000 sq. ft./grn /yr. A preventative rather than a curative concept is employed throughout Mr. Brook's program as he tries to stay on top of everything. There was an interesting occurrence with mother nature on the day that I visited that non agronomic people overlook.

Being so close to the ocean, the wind is constantly blowing. Even though on that day, the wind was a rather mild 15 mph, Pete says "wait until winter, when its constantly blowing at 40 MPH." Spraying, irrigation, dehydration and salt burn are common problems, The salty wind can become so severe, actual leaf tip burn looks much like fertilizer burn - afterall, the principles are the same. To compensate, irrigation can aid with washing off the salts and a few days later, mowing off the leaf tips will produce new green shoots until the next stiff wind comes. Mr. Brooks also acknowledges, the salty air even reduces the life expectancy of equipment. Frequent, thorough hosing off still cannot eliminate the problem as paint dulls quickly and rust is frequent.



Grandparents playing golf with their grandson. Carrying hand bags and walking are a common practice.

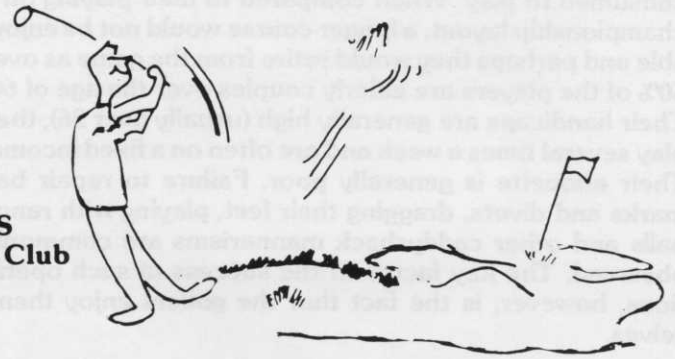
It seems so ironic to be so close to mother nature's beauty, yet everything is not ideal, as she ultimately controls all. Mr. Brooks has been working on evaluating the most ideal plants that are best adapted to his conditions. He does not want to over landscape and create extra maintenance. Landscaped windbreaks in isolated regions of the course has aided in blocking the wind and protecting the turf. Strategically located pockets of Seagrapes, Sabal Palms and other adaptable plants are beneficially beautifying the course. Mr. Brooks' goals are to beautify the course and achieve turf maintenance to the best level attainable within his capabilities of the budget and the geographic location.

It seems a course smaller in size would be easier to maintain, yet we of the profession are the first to realize this is far from true. Let it be known, there is no such thing as a small job for a golf course superintendent. There may be small golf courses, but the intensity of responsibility is just as severe — "if not more so per given acre." ■

NORTH FLORIDA

DIVOTS

By **EDDIE SNIPES**
Selva Marina Country Club



“Working For The City”

The word municipal, according to brother Webster, means “self government locally”. Oh, but this is what a golf course superintendent has always wanted; to actually self govern the golf course and be the final word of authority. This is a nice thought but in reality a municipal golf course has a more complex situation than one might suspect.

Government of the municipality and the high number of rounds of golf played a year are probably the two main concerns of a superintendent of a municipal course. Generally, a superintendent works directly for the city as a city employee or for the golf pro who in some cases leases the course from the city.

Attitudes about the golf course will be pending at election time. The mayor, city manager, and councilmen will all have great impact on the golf course budget and the course itself from election to election. Monies derived from the golf course operation may be used to bail out faltering departments in the city rather than being put back into the golf course. In this case, flexibility of the superintendent and the ability to compensate and change maintenance direction are a key for continued success. Visibility of the superintendent and good public relations

might help to ensure needed appropriations for the golf course and promote a professional image to the governing bodies of the city.

With forty to fifty thousand rounds of golf played a year, or more, maintenance on a municipal course may be taking a back seat to the dollar sign. In a situation like this, less different heights of cut and chemical edging to reduce handwork are ways to maximize limited maintenance time due to heavy play. The importance of concentrating on doing a few things well and completely will be more beneficial on a municipal course than trying to over extend your maintenance abilities. Patience should be a prerequisite when hiring employees on a municipal course. Being able to understand and cope while working under heavy play conditions are a necessity. Many superintendents have good luck with retired or semi-retired personnel that have the demeanor necessary to work under such conditions and not be overly lax.

Municipal golf courses and municipal golf course superintendents bring golf to the masses. Their special problems and uniqueness should not be overlooked or side stepped because of the value that they hold in furthering the game of golf and our profession.■



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The Florida Municipal Golf Course Association

By ALAN WEITZEL
President

Why form an association? I was not around back in the 1930's when the South Florida Golf Course Superintendent's Association was formed, but I was in 1978 when the Florida Municipal Golf Course Association was, and I bet the reasons were very similar, "Education". Just as in the 1930's when members of the various golf courses started comparing their courses to one another, a need arose where the superintendents of these courses found it beneficial to meet to exchange ideas. Thus, in the late 1970's a similar concern arose from the managers of municipal golf courses when taxpayers became increasingly concerned on what government was spending its tax dollars. Thus, in 1978, the Florida Municipal Golf Course Association was formed.

There are 60 municipal golf courses in the state of Florida run by 42 municipalities/counties. 26 of these municipalities have become members of the Florida Municipal Golf Course Association which accounts for 73% of the municipal golf courses in the state. This high percentage of membership is even more impressive when one considers that the majority of those municipalities who are not members

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do not actually manage their golf facilities, but lease them to outside private concerns.

Membership in the Florida Municipal Golf Course Association is open to any municipality or organization interested in the operation of a municipal golf course. Annual dues are \$30 per year. The association meets 4 times a year with meetings held either at a municipal golf course or in conjunction with an allied association trade show. The meetings usually last 2 hours in which 1 hour is usually reserved for a round table discussion. This discussion allows each member present a chance to voice a problem they are facing at their facility or enlighten the group on something new they are doing at their golf course.

One of the most important things that the association does each year is publish an annual survey. Each regular member is sent a 10 page survey form to complete. The responses of these surveys are then compiled in a book and distributed to the members. This year we had 21 municipalities take part in the survey. This survey has become a source of pride to the association as well as a valuable tool.

Anyone wanting any further information on the Florida Municipal Golf Course Association can write or call one of the following officers.

Alan Weitzel/President
c/o Briary Bay Golf Course
9373 S.W. 134 St.
Miami, FL 33176
Phone: (305) 235-6754

Ray Weaver
c/o Dubsdread Golf Course
549 W. Par St.
Orlando, FL 32804
Phone: (305) 843-7311

George Pickel/Sec.-Tres.
c/o Mangrove Bay Golf Course
875 62nd Ave. N.E.
St. Petersburg, FL 33702
Phone: (813) 893-7772



West Coast Buccaneers



By MALVIN HALLFORD
Seven Springs Country Club

Seven Springs Country Club is a 36 hole condominium development located in Pasco County which has as one of its courses a 4,468 yard par 64 Executive Course. This course was built during the early Seventies for the membership of the club only while the Championship Course remains semi-private.

From a playability standpoint the course is extremely challenging to play for the good golfer to say the least, while high handicappers find the course quite unforgiving.

From a maintenance standpoint the course offers some interesting challenges. The greens average just a shade over 2,200 sq. feet while the tees average around 1,240 sq. feet. Couple these small figures with the fact that during the season we'll average close to 230 rounds per day on the Executive Course, and you can see its pretty hard to keep the putting surfaces looking good and impossible to keep the small tees covered with rye during the busy season. One problem of significance is pin placements on some greens which are under 2,000 sq. feet in size. It is difficult or impossible to have the pins moved far enough

away from the previous day's cut to reduce traffic wear. This problem of small size goes into another area. We also have a few traps on the course but the ones we have are small and demand hand attention instead of using a machine, thus causing a sharp rise in labor costs.

In comparison to the Championship Course the area of maintenance is quite small encompassing only slightly over sixty acres. This necessitates constructing tees that have sufficient teeing area to accommodate mostly iron play yet not look out of place on a course of this size. Another problem in maintaining our Executive Course is accessibility to the course with equipment. All the adjacent property is condominium property which is off limits for our equipment making long out of the way transporting necessary at times.

All in all though the biggest problem I feel that we have is a fine golf course which is played so seldom by the majority of our members and that very few non-members ever get a chance to see. ■

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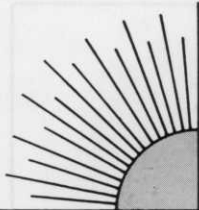
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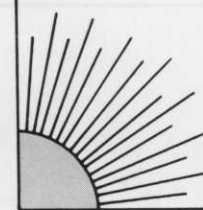
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South Florida Sunshine



By BRAD KOCHER
Inverrary Country Club

The Municipal Golf Course

South Florida has many municipal golf course operations. Depending on who you talk to, these operations are designed to provide recreational service to the residents and in some cases, provide both a service and a source of revenue.

Municipal courses are usually very crowded. Golf is one of the most popular leisure sports in Florida and there are many retired people who have the time to enjoy a lot of golf. As a result, many muni-courses open at dawn's early light and close when the sun goes down. In this manner, the course can be enjoyed by more residents thus minimizing complaints that not enough people can play and enjoy the public service.

Early tee times do present some maintenance problems. It is difficult to do a lot of maintenance work ahead of the morning tee times, when golfers tee off at dawn. Mowing,

watering, fertilizing and spraying is difficult enough to get accomplished ahead of play in the morning with a 7:30 or 8:00 A.M. tee off typical of private clubs, let alone the 6:30 or 7:00 A.M. tee off time at municipal courses. This can severely hamper the efficiency and productivity of a maintenance operation.

Most municipal operations do not adhere to the highest standards of maintenance typical of private clubs. The reason for this is there is generally not a demand for highly manicured turf areas by the golfer. The rates charged are much lower by comparison to private clubs and the price to deliver a highly manicured course would cause green fees and cart fees to be more than most golfers are willing to pay. It's not that muni operations cannot have high standards. There are a lot of very talented superintendents who are capable of delivering a high quality product. However, the expense of maintenance to cost of product (green fee and cart) would be excessive by most golfers standards.

Probably the two biggest problems that plague public fee courses are the efficiency problems created by governmental bureaucracy and purchasing limitations. To begin with, the chain of command often involves a multitude of public officials. It can start with the City Manager, go through several councilmen, commissioners, head of parks and recreation, course manager, then superintendent. With this many officials to approve budgets and purchases, the course superintendent almost needs to be politically motivated and oriented to be able to get his job objectives accomplished.

Of equal consideration to some municipal operations are their involvement with unions. The wages that are paid at these courses are generally higher than competitive market rates in the industry, and the benefits as well are also excessive. This causes labor costs at most muni operations to be out of competition with the courses they must compete against.

The biggest drawback at union controlled courses is the difficulty in managing their workers effectively. Just like any operation, there are good and bad employees. The time it takes to discharge a bad employee is excessive and usually puts an undo amount of strain on both supervisor and fellow workers. It is commonly stated that it can take up to a year to fire a bad employee. There is an inordinate amount of warnings, grievance procedures, arbitration, etc. that take up the productive

(Continued on page 28)

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(Continued from page 26)

time of many people. I happen to believe there should always be proper warning and documentations of improper work performance before an employee is discharged, but the union procedures are much longer than what could be considered reasonable. I guess the real losers are the other employees who see how long an unproductive employee can keep his job.

Also at most municipal operations, 40 hours a week is the limit for an employee. This does pose scheduling problems for weekend work (grass does not quit growing on Saturday and Sunday). In addition, studies have shown that a little overtime is not only productive, but very motivating for employees both from having a greater sense of involvement and from a financial standpoint.

Purchasing is the other area that inhibits many municipal operations from working effectively. Budgets must be prepared a year to a year and a half in advance and are usually strictly followed. Budgets at many courses are guidelines, and allow for the unpredictability of weather, new insect problems, and other extremes that can affect turfgrass management. It would be a slow reaction by most municipal operations to the emergencies that can frequently occur.

Additionally, superintendents must go through a long chain of command and extensive bid procedures for capital expenditures. Bid specifications must allow for these competitive bids on equipment without specifying any manufacturers. One, three or five gang reel mower may be unequivocally superior or unique, yet the specifications must be written in terms that allow for these bids. The types of requirements usually result in the lowest bid being the major criterion for purchase. Quite often a less desirable piece of equipment ends up being purchased because it is the lowest on the bid sheet.

Municipal courses, like any other course, have problems. It takes a special superintendent or manager to be able to deal effectively with the agronomic, personnel and purchasing considerations particular to his operation. He must be able to relate them to the governmental red tape that must be overcome to operate effectively. The business of "selling programs and ideas" to commissions and city managers becomes a full time consideration and one that takes a different talent, patience and perception than most superintendents possess.

As a last observation, I find it somewhat controversial that municipalities and county governments find it desirable to get involved in golf course operations. In most every area of governmental involvement, they are providing a public service that does not conflict with private enterprise. Parks, public beaches and recreation facilities rarely compete with the private sector dollar for business. However, municipal golf courses compete directly with other public course operations that are held individually.

I usually get the answer that municipal courses make it affordable for more people to enjoy golf. The question arises - at who's expense? If all the costs (including admini-

nistrative) were tallied up for the cost of a municipal operation, I doubt that most would be at a break-even status. Then the questions surface, (1) how many residents in the area served by municipal courses use them? and (2) should taxpayers be underwriting the cost of an operation that serves so few?■



"Who says a tornado cannot strike twice in the same place." On Tuesday, April the 9th, a tornado struck the Boca Greens Country Club, taking the roof off the house in (photo 1) not to mention knocking down, snapping or destroying over 200 trees within the project (photo 2). Over the next four days, extra crews and overtime within the maintenance department had put back up those trees downed and hauled away and cleaned up the trees unsalvageable. Just as the crew headed for home on the afternoon of Friday the 13th at 2:16 p.m. another tornado swept thru the West Boca Raton area, only to find most every tree that had been previously staked back up to be blown down once again! Yes, the wind can really be blown out of your sail - however, we knew surely a tornado would not strike ... a third time???

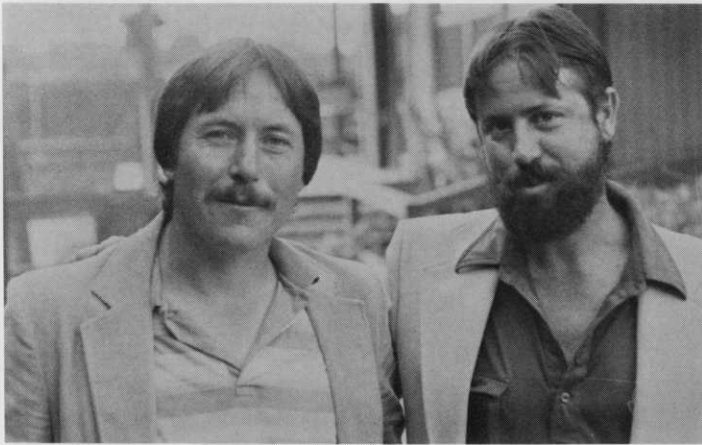


Treasure Coast "Tide"ings

By JAMES P. CALLAGHAN
Rio Mar Country Club

Sebastian Municipal & Island Dunes... Two Unique Operations

Newton Krages and John Cowan are two sharp Golf Course Superintendents. You have to be sharp in order to provide the playing conditions that they do with limited budgets, equipment and manpower.



John Cowan, left, and Newton Krages — two "unique" golf course superintendents.

After reading about much political controversy concerning the neighboring Sebastian golf course, I thought Newt Krages would be a good candidate for the FLORIDA GREEN. I must say that I was very impressed upon my arrival at the golf course. It was in very good condition.

The most unique fact about Sebastian Municipal is not really a problem. The city of Sebastian (pop. 3,500) is the second smallest city in the entire country that operates a municipal golf course! The course was designed by Chuck Ankrom (who designed Monte Carlo, Sandpiper Bay and Indian River Plantation) and was built on land leased from the Sebastian Municipal Airport. Sebastian Municipal is a very challenging golf course spread out over 155 acres. It is well-trapped, has lots of water hazards and boasts elevation changes that are not common to Florida golf courses.

Newt Krages was hired by the city of Sebastian shortly after the earthwork began. Newt stated, "I was rather fortunate to have been on the job from the beginning. It has made my job a lot easier since I know how the course was built from head to toe." He continued, "Sebastian must be given credit for making sure the first golf course superintendent was hired before the course was built."

The city of Sebastian has undertaken a tremendous responsibility. Shortcomings are unavoidable with a municipal operation. The city has to pay off a large bond issue that was secured to pay for the golf course. Since the golf course is chartered to be self-sustaining, there are times when correct procedures are not carried out.

The day that I visited the golf course and made plans to play golf, we were greeted by a heavy thunderstorm. After 1.2 inches of rain fell in less than thirty minutes, water stood in many places on the course. Most private courses would have been closed under the conditions that were present. Although I was delighted to be able to still play, I knew that the course really should have been closed. Municipal courses rely on the constant ring of the cash register and closing the golf course because of standing water isn't justified. With the constant flow of golf carts on wet fairways Sebastian Municipal now has a severe compaction problem. Since the course is to remain open whenever the elements are favorable, a program of extensive cart path construction has begun. This should help to alleviate the compaction created when conditions dictate restricted cart use.

Newt realizes that a municipal operation is different but he has been able to make the most of his operation. He maintains the golf course with a crew of 5 and is able to provide good playing conditions. He commented, "We can't groom as much and special projects put a strain on the operation, but we manage to give the golfer conditions expected in order for him to have an enjoyable round of golf."

Before the course was built, the city had the foresight to provide for an adequate maintenance facility and equipment. Newt's only reservation was that all the basic equipment was purchased before he came aboard and he would have made several substitutions.

The biggest headache for Newt has been poor fittings and some bad pipe in the irrigation system. Just about every 2" tee on the golf course has split along with several sections of various size pipe. Newt was on site when the system was installed and feels that this problem was due to faulty materials that couldn't be detected until they were in operation.

(Continued on page 30)

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Since Sebastian Municipal is still in its infancy, it's large financial obligation (\$1,600,000) is paramount. This fact hinders Newt's operation to some degree. Construction bonds are going to have to be refinanced shortly and higher interest rates will probably add another burden to the cash flow. Also, the lease between the Sebastian Airport and the golf course has not been approved by the FAA and substantial back-rent is owed the airport. These financial problems have shrouded the future outlook somewhat. It's difficult to plan budgets when you can't rely on available funds.

Over the years, politics have been most controversial in the small city of Sebastian. The original governing body for the golf course was a five-member committee that operated the golf course on a day to day basis. Now the new mayor has taken that authority away from the committee and the operation is in the hands of the golf professional who will now work in the capacity of general manager. Luckily for Newt, he has a good rapport with the golf professional.

Because of politics, uncertainty will always exist in a municipal operation. Newt Krages has mastered living with the aura of uncertainty hanging over his head and manages to provide the City of Sebastian with an excellent golfing facility.



This par 3 at Island Dunes, carved out of a mangrove swamp, is typical of the enhancing environment found throughout the golf course.

Down the road some forty miles, John Cowan has encountered similar problems at Island Dunes in Jensen Beach. Island Dunes is an oceanfront high-rise condominium project with a nine-hole (par 31) golf course designed by Joe Lee. John's time is split between the golf course and landscape operations at the condominium and clubhouse. Since the golf course is a selling point for condos, John has received adequate funding in order to keep the grounds in good condition. But John stated that uncertainty is lurking in the shadows. Because only a few sales have been made, the future will be hard to predict if the developer doesn't receive the return on the investment that's anticipated.

Although John's maintenance crew is the same size as Newt's (5), sometimes it's difficult to keep up especially when something goes wrong. He commented, "There are times when I have to shift all my employees to landscape detail and we fall behind on the golf course. When existing plant material is torn out to make repairs, we have to jump on restoration. It just takes awhile to catch up on our other chores." John tries to keep two employees on the golf course and two on landscape maintenance. The fifth man alternates duties as mechanic and filling in wherever needed. This structure works well except when someone is on vacation or out sick. "I'm lucky to have a very flexible crew, but whenever I'm a man short, we are predisposed for untimely surprises to take us a step backwards", John stated.



An efficient operation at Sebastian Municipal provides for excellent course conditions!

Having worked at Augusta National, Seminole and Mariner Sands, John has had a taste of large scale golf course operations. He laughs at the first predicament he encountered at Island Dunes when he took over last winter. Only one walking greensmower was in operation for the first Pro-Am. With 55,000 square feet of greens to be mowed by eight O'clock, the greensmower was out at 4:30 A.M. working by the light of a pickup truck! John put it all in a nutshell. He said "short courses don't have small problems - they have the same major problems as championship golf courses, and those problems are escalated by minimum labor and equipment. As much as a routine and preventative maintenance schedule is wanted (and much needed) it's almost impossible. All you can do is give it your best shot!"

Various limitations are by far the most difficult problems to overcome at many Executive, Municipal and Par 3 golf courses. Both Newton Krages and John Cowan feel that they have learned to deal with limitations effectively. And they both feel that their accomplishments are worth substantially more when compared to accomplishments that result from unlimited budgets. Overcoming unique problems have made them unique golf course superintendents!■

Renovation: Adventure Into Anxiety

By DENNIS M. CREWS
Central Florida Turf Inc.

It is hard to understand how one word can strike fear into the hearts of Golf Course Superintendents.

The word Renovation is not that devastating when used in a sentence.

But the act of Renovation, taking place on the superintendent's well manicured golf course can bring out even the deepest, darkest emotions and characteristics.

But in my opinion the majority of anxiety can be lifted through proper preplanning.

The smoothest running job normally obtains the best results excluding one item: weather. The weather is something that we can not control, but should be figured into the planning.

It is really difficult to give someone an accurate price quote on a new 18 hole golf course irrigation installation in less than 24 hours. But it does happen.

Consideration of time should be given to anyone who is asked to quote prices on any job no matter how large or small. Then the next step is to start the planning procedure between the contractor and the club. The Superintendent should always be included in all phases of negotiations for he is the club's resident authority on the golf course. The final results will be a success only if Architect, Superintendent, Consultant, Club Representative and Contractor work harmoniously on the project.

Everyone involved should be aware of the scope of the work and the results that are expected.

Pressures from club members to have new planting "grown in" can and do cause some unnecessary problems for all parties involved. As much information as possible regarding changes in greens, traps, fairways, tees etc . . . should be brought to the attention of club members to answer any questions in their minds.

Renovation is a field in which expertise is required to achieve a suitable finished product. But similar to most other things in life today you cannot expect a Cadillac result on a moped expenditure.

This brings us back to planning again. The Superintendent should do as much up-front work as possible to obtain a clear understanding of all aspects of the project.

Renovation is a normal, necessary procedure in the golf course industry. The Adventure into Anxiety can be smoothed considerably only if you plan in advance.■

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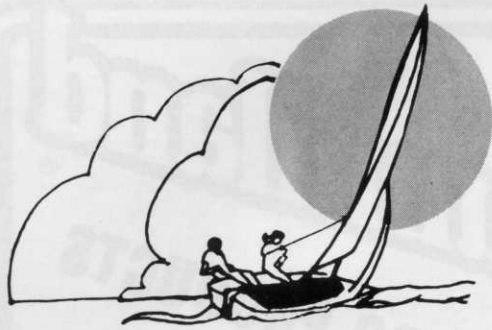
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Sunrise Country Club

Manual Versus Automatic Irrigation

In this day of modern technology and advanced equipment, there are still superintendents burdened with the problem of manual irrigation systems. After discussing this topic with several superintendents who have manual systems, some contrasting viewpoints were found with most being disadvantages while some advantages were found.

Let's cover some of the disadvantages first. Employee turnover was at the top of everyone's list. Due to the hours and type of work involved, employees become disinterested quickly and move on. (There are exceptions, of course, as Hugh Bebout at Sarabay Country Club has had the same night waterman for 18 years.) Finding good responsible employees is also a concern. Some courses employ one man who waters six days a week while others use two or three and divide the week up between them. Average salary ranges from \$4.00 per hour to \$6.00 per hour.

The inability to syringe presents unique maintenance problems, especially during overseeding. Most manual systems are not charged when not in use and need either heads running or lake valves open to relieve pressure. This makes it difficult to syringe without inconveniencing the golfer and disrupting play.

Availability of parts and accessories is becoming scarce as most older manual systems become obsolete. With the



Par 3 190.

demand decreasing, most suppliers are not stocking the necessary parts and equipment.

The demand for better playing conditions presents problems unique to courses implementing manual irrigation. Since most manual systems have single row head placement the coverage is very limited. Good timing and proper scheduling are a must for fertilizing, aerifications, weed control, etc., in order to get the desired results. Some clubs try to time maintenance practices with periods of regular rainfall to insure success of the programs



Par 5 dog leg left gulf in background.

they have set up for the growing season. With the weather becoming more and more unpredictable here in Florida, this practice is sometimes a big gamble.

Maintenance and cost of repairs of a manual system are two of the few real advantages to manual irrigation. Since the system is attended when in use, this cuts down on the worry of heads sticking on or not coming on at all. Most quick couplers are much shallower than automatic pop-ups. This makes for ease of replacement and maintenance. The cost of replacing a quick coupler is about \$25. compared to \$70. and up for most automatic heads. Line breaks are also less frequent because the systems are only charged when heads are out and there is an outlet for pressure.

Some of the superintendents polled felt with water becoming a precious commodity, they might have an advantage

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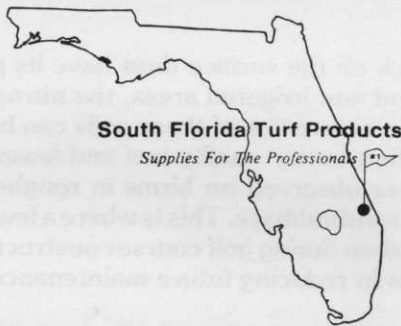
when water usage is cut back or put on a limited basis. The reasons given were that they could run one head at a time on a green or tee where with most automatic systems, two or three heads come on at a time.



Par 3 185 trap surrounds green.

As you can see, the disadvantages outweigh the advantages quite heavily. All the superintendents polled had the same conclusion. The sooner they can convert to an automatic system the better!! All the courses except for one had plans in the near future of converting over to a total automatic system.

Next time you are out adjusting your time clocks, give some thought to your less fortunate colleagues who don't share the same luxury!■



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Watching Your Tees & Q's

By STEVE BATTEN AND BUD WHITE
United States Golf Association-Green Section
Southeastern Region



Florida Mucks & Peats

Organic soils which contain peat and muck are common to all coastal regions in the Southeast from Texas to North Carolina. Fibrous peats formed from decomposed vegetation are common to the cooler regions of North America such as Canada, but in Florida, the warm humid climate has helped to form one of the largest accumulation of well decomposed organic soils in the world. These Florida organic soils range from well decomposed black muck to less oxidized red peats. Both are common to the water flowing regions of central Florida.

The red fibrous peats are common in north central regions north of Okeechobee. The black muck soils can be found in large deposits in the lower water storage areas of the Everglades from Lake Okeechobee south to the tip of the Florida Everglades west of Ft. Lauderdale and Miami. The texture can vary from a fine well oxidized muck to peaty mucks, mucky peats and fibrous peats. The peats most commonly mined east of Tampa and La Belle, Florida are peaty mucks used as solid amendments for agriculture.

Muck is a localized term that is used to refer to the black or dark brown organic soil formed from the oxidation of marsh grasses and other vegetation. The oxidation of the marsh vegetation is referred to as Trophiphacation.

Muck can absorb up to 33 percent water by weight, so they can have some advantage in agriculture by helping to store soil nutrients such as nitrogen. However, on golf courses this water storage capacity has cost thousands of dollars annually in golf car rental revenue by closing a course after a rainy period. The ability of muck to hold water similar to a sponge makes muck fairways difficult to drain.

Often muck layers as deep as 3-5 feet below a fairway will cause a wet soil condition even if the topsoil is fine

sand. Muck should therefore be removed prior to construction or mixed into the sand to form a mixture that is dominant in sand to organic matter.

Of course most Florida golf course superintendents are aware of algae and disease problems associated with wet greens soil mixtures that have a large amount of muck. The largest concern by most turfgrass managers however is what's below the greens soil mixture. If solid muck is below, then a subsurface tiled drainage system should definitely be considered prior to construction. Also all muck should be removed, if possible, away from the actual green site to prevent future water retention problems.

A layer of muck on the surface does have its place. If used on birms and non irrigated areas, the nitrogen and water holding characteristics of these soils can be taken advantage of. Often better quality turf and fewer nematode problems are observed on birms in roughs with a muck cap over a sand subbase. This is where a few dollars and a little care taken during golf course construction can pay big dividends in reducing future maintenance costs.

Common sense management of these slightly acid organic soils will help to produce good quality turf. Since these soils are lacking calcium and magnesium, dolomite will provide an excellent liming material. Be sure to keep up on steady applications of phosphorus and potassium to encourage turfgrass root development. When applying micronutrients, concentrate on zinc and copper because these two are commonly deficient in muck soils. When faced with growing turfgrass on muck soils, the best thing we as turf managers can do is to turn off the irrigation and let the golf cars roll. ■

Growth Of Municipal Golf Courses

BY ALAN WEITZEL

In 1931, when the National Golf Foundation started keeping records, there were 5,691 golf facilities in the United States; of these only 543 or 9.5% were municipal facilities. Over the next 30 years the growth of golf in the United States was rather slow. By 1960, the number of golf facilities in the United States had only increased by 12% with 6,385 golf facilities being recorded. Municipal golf courses however showed substantial gains with a 65% increase in golf facilities. In 1960, municipal golf courses represented 14% of the total golf facilities in the United States. The decade 1960 to 1970 is generally regarded as the period of greatest growth for golf. During this period of time, the total golf facilities in the United States increased by 37%. Municipal golf facilities experienced a similar record setting growth with a 48% increase in golf facilities. By 1980, the growth in golf facilities started tapering off. Only 1,817 new golf facilities were opened, 26% being municipal golf courses.

Today, according to the National Golf Foundation, there are 12,197 golf facilities in the United States of these, 15% are municipal facilities. There are municipal golf courses in every state of the Union, except for Vermont. The top 5 states are California with 138, Texas 123, Illinois 117, New York 99, and Ohio 70. Florida is ranked 9th with 59 facilities.

Now that we have looked at the National trend, lets look at the State of Florida. In 1946, when the National Golf Foundation first started breaking courses down by states, Florida had only 100 golf facilities of which 23 were classified as municipal. By 1960, Florida had only 31 municipal golf facilities, an increase of 35%. The nation had experienced only a 21% increase in municipal golf courses; however, the State of Florida had experienced a 75% increase in total golf facilities while the national growth was only 32%.

During the boom years of the 60's, Florida added 211 more golf facilities of which 10 were municipal. The growth rate of total golf facilities in Florida grew by 120%, exceeding the national growth rate of 37%. During the 1970's when the national growth rate had slowed to 18%, Florida still experienced boom times with a growth rate of 57% in total golf facilities. Municipal golf courses had a 44% growth rate which was by far the largest increase in Florida. The national growth rate of municipal golf courses was also fairly high with a 36% increase in facilities.

How do we account for this rapid growth in municipal golf courses in Florida, as well as the rest of the nation, in the last 13 years? I can only surmise what I have seen in Florida in the last 10 years. Where you have golf courses closely linked to real estate projects, you have an ideal situation for growth in municipal golf courses. For example, a developer owns a large tract of land which he plans to develop into a planned community. He usually will build many of the amenities such as the golf course first to attract potential home buyers or builders. At some point in time, the project is either successful or fails. If the project is unsuccessful, the developer will obviously try to sell the golf course, and in comes the local government to bail the developer out. The other course of action is the developer who is successful and completely sells out the project, now wants to move on, but still has a golf course tying him to the project. He will usually try to get the project's homeowners to buy the course and turn it private. If this does not work, he will try to sell the course on the open market. Often a municipality will buy the course to preserve green space. In rare occasions the developer, due to restrictive covenants on the property, may be forced to donate the course to local government in exchange for tax write offs.

(Continued on page 36)



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(Continued from page 35)

But what about the future growth of municipal golf facilities, with taxpayers becoming increasingly concerned about taxes and government spending, will growth continue? In Florida, with more and more retired people moving here each year, small towns are quickly becoming cities. Despite the tax consequences, these newly emerging cities want to provide their citizens with as good, if not better, facilities than where they came from. This aides in the growth of the cities by attracting new people as well as industry to the community. As cities become large, there are increasing environmental concerns, such as preserving natural habitats. A golf course becomes an ideal solution by providing green space, and at the same time if efficiently operated, provides revenue to the city. Finally, there is the human factor that affects the growth of municipal golf courses no matter how large the city. As long as you have government officials who like to play golf, you will probably always have a continued growth of municipal golf facilities.■



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Responding to the requirements of the growing market, Ransomes, Inc. has established a wholly owned Distributorship, Ransomes Florida, Inc., to address the commercial lawnmower market in Florida. Heading a very experienced and qualified staff will be Lou Oxnevad, a Florida Golf Course Superintendent for the past 16 years. Lou will serve as General Manager for the West Palm Beach based operation.

Ransomes Florida, Inc. will address the needs of the golf course and municipal market offering the wide range of commercial rotary and reel mowers manufactured by Ransomes, Inc. and Ransomes Sim and Jeffries.■

Now, You Can Control The Weather

"We can send a man to the moon and back, but we cannot do anything about the weather." That phrase used to be the case, but now there is something that you can do about it. You cannot control mother nature, but you can work with her. With the advent of cable TV and super stations such as the National Weather Channel, it is possible in some regions to tell what is going on with the weather and you can feel like a meteorologist.

Such is the case at Boca Greens, where I have been blessed to be in a region where Cable TV is accessible to my office. Via the local cable network, I have access to the National Weather Channel, a station which observes the weather, on a national basis, 24 hours a day. If local storms exist, a segment during the color radar program will reveal: where the rain is falling, they will observe the direction of movement, discuss the cloud tops to reveal the intensity and advise on weather bulletins should severe weather be imminent.

If this is not enough, sometimes your local cable network will be hooked into the U.S. Weather Bureau Radar System, such as in my case. I have a direct hook-up to the Miami Radar with a sweep of a 100 mile radius. I can observe from the Bahamas, to the Keys, to Fort Meyers, to Vero and anywhere else in between. I can actually sit in my office and predict when it might rain in Boca. By observing the movement of a front, I often have observed fronts to intensify, disipate, or even become stationary.

An important item to consider, if you actually pursue cable, is to buy a color TV. At first my boss said "why not buy just a black & white" - however the color of radar denotes its intensity, so a color TV is a must! A small unit can be purchased for approximately \$200. I can absorb that cost a hundred times over by a reduction in the cost of effective chemical applications, the knowledge of when to keep the crew on payroll, or to concede to a rain day and send the crew home.

Quite often a maintenance building complex is located in a remote corner of a project. If this is the case, then consider an installation into a more accessible cable area such as the clubhouse. A cable TV with color would be a hit in the lounge or the locker rooms and if severe weather should occur, the channel can always be changed to the radar weather channel.

I must admit, I am so impressed with the luxury of this management tool, I have become spoiled. To predict the weather in South Florida is nearly impossible. I pity our local meterologist. They are forced to predict the unpredictable.

Obviously, there is very little that I can do about the weather, but I can be made aware of what is going on within my world. Any by the way, there is one big benefit to such a convenience, "I can always catch a good movie during my lunch break."■

Peanut Butter, Parsley, Pepper & Other Carcinogens

BY BRUCE N. AMES

The trace of the carcinogen ethylene dibromide (EDB) now allowed in food is insignificant compared with the level and risk of many cancer-causing agents found in every meal, most of which are natural and traditional. These carcinogens come from four main sources.

1. Nature's pesticides. Plants synthesize toxic chemicals in large amounts to defend against insects and other predators. Plants in the human diet are not exception. The variety of these chemicals is enormous and new ones are being discovered constantly. However, little information is available about the toxicology of most of the natural plant toxins in our diet, despite the large doses to which we are exposed. Many, if not most, of these plant toxins may be "new" to humans in the sense that the human diet has changed drastically through human history. By comparison, our knowledge of the toxicological effects of new man-made pesticides is extensive, even as general exposure is exceedingly low.

Recent laboratory studies have uncovered an extraordinary variety of natural mutagens and carcinogens in edible plants. A few of these natural carcinogens are: the main flavor ingredient mustard and horseradish, chemicals in black pepper, hydrazines found in extremely large amounts in edible mushrooms, compounds present in some herbal teas, and others present in celery, parsnips and parsley. The amount of nature's pesticides we are ingesting is at least 10,000 times the level of man-made pesticide. Nature's pesticides, in fact, are found in levels of parts per hundred or parts per thousand, while man-made pesticides are present at levels of parts per million or parts per billion. The man-made pesticide residues currently allowed in our diet don't represent, in my opinion, any significant cancer hazard to the public.

2. Mold carcinogens. Molds make a great variety of mutagens and carcinogens. Some of them, such as aflatoxin, are among the most potent ever discovered. These carcinogens are found in peanut butter, corn products, apple juice and many other foods. For example, aflatoxin is allowed in peanut butter at a level of 15 parts per billion. Aflatoxin is about 1,000 times more potent as a carcinogen in rats than EDB. Why make a big fuss about tiny traces of EDB, when the risk from eating the average peanut butter sandwich comes out as more than eating a rare highly contaminated muffin? (The risk from eating a peanut butter sandwich is so low I don't think twice about eating one.)

(Continued on page 39)

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Bahiagrass

(*Paspalum notatum*)
by Steve Batten

Bahiagrass is the only sod forming turf that can be grown in Florida without irrigation. Its excellent drought tolerance is due to a deep root system and the ability to go into a prolong dormancy. Therefore, it has found a place on golf courses in roughs where turf density is not as critical a factor as the fairway playing surfaces.

A prolific viable seed producer, bahiagrass can reproduce rapidly during warm humid conditions. It can also encroach onto bermudagrass fairways from stolons that grow laterally 1.5 feet per year. When a stolon is observed, the top or terminal end will be shiny, round, and purple in color. The terminal end will also be bulbous where sheaths come down into the stem. Since iron deficiency is common to bahiagrass, it will often have a light yellow green color in the spring.

Common post emergence controls include applications of MSMA in bermudagrass turf. At present, an experimental herbicide, Oust, is being evaluated for post emergence control of bahiagrass in bermudagrass at several southern universities. (Illustration from TURF MANAGEMENT FOR GOLF COURSES, Fall 1982, by James Beard, published by Burgess Publishing Co., Minneapolis, Minn., illustrated by Steve Batten)

(Continued from page 37)

3. When we cook our food we make mutagens and carcinogens, since all burnt and browned material contains them. The burnt and browned material we ingest each day from frying our hamburgers, browning our muffins or roasting our coffee is even more than that inhaled each day by a two-pack-a-day smoker. Both of these sources are also very much greater than the burnt material we inhale from air pollution. It should be emphasized, however, that though there are known carcinogens made by heating protein and cooking our food, we don't yet know the risks, while we do know accurately the enormous risks from smoking.

4. In studies on humans, high fat has been associated with colon and breast cancer and heart disease. Experiments with animals also have pointed to high fat in the diet as being associated with cancer. Though these studies aren't definitive, the National Academy of Sciences Committee on Diet, Nutrition and Cancer suggested that it might be prudent to cut down on fat as well as to drink alcohol in moderation. A high intake of alcohol also has been associated with cancer in a number of studies on humans.

There are other risks arising as a consequence of scaring the public unnecessarily. There is roughly a one-in-a-million risk of death from a car accident in driving a distance of 60 miles. I suspect that the risks to the public are greater if everyone starts driving to the supermarket to return their muffins.

It is also possible that the public health could be endangered by *banning* the use of ethylene dibromide as a fumigant. If we do not use fumigants on grains, there will be much more insect infestation and mold contamination, and the cancer risk from the powerful mold carcinogens may be much greater than the risk from EDB residues. The alternative fumigants are mostly untested for cancer. They could be flammable, toxic or cause cancer.

The most dangerous item available in the supermarket, of course, is not the muffins with EDB residues, the black pepper, the celery, the mustard or the peanut butter. It is cigarettes. Cigarettes are causing 30% of the cancer in the U.S. and 25% of the heart disease; they are known (not hypothesized) to cause cancer in humans. The most sensible action that states can take to protect public health is to encourage reduced smoking (such as by taxing cigarettes). Even a small lowering of cigarette consumption would reduce cancer enormously; it would cut the risk more than would any amount of action taken on the EDB residues.

I don't mean to imply that large amounts of EDB might not be dangerous to humans. As pesticides go, it is a potent carcinogen in rodents. The new standards set for EDB are useful and overdue and should keep industry from getting sloppy. The Ruckelshaus standards seem pretty reasonable while EDB is being phased out.


On the other hand, the risk to workers using EDB could be significant. The government's air standards until

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(Continued from page 39)

recently were such that workers were allowed to breathe in an amount of EDB roughly equivalent to eating a million ounces of bread a day with EDB residues of 30 parts per billion (the new Ruckelshaus standard for bread). Two studies of workers who were breathing in close to this amount of EDB for decades showed no increase in cancer. But because of the limitations of these studies, I and others fought to get California to lower the allowable level for workers by more than 100-fold. Our experience with asbestos and radium has taught us we can't ignore occupational carcinogenic hazards.

Humans are ingesting, and have always ingested, large amounts of many natural chemicals that might cause cancer. It is among those chemicals, not the traces of EDB allowed in our diets, where most scientists believe we will find the main environmental causes to the common human cancers.

Mr. Ames is chairman of the Department of Biochemistry at the University of California at Berkley. This article is adapted from his September 1983 article in Science magazine, "Dietary Carcinogens and Anticarcinogens." ■



Experimental Mole Cricket and Nematode work has been performed thru the State of Florida over the past few months in regards to examining various new labeling pending results and EPA approval. Nearly a dozen courses in geographically different locations have been host sites for various chemicals, not to mention combinations of various insecticides. Preliminary testing is inclusive at the time of going to press, however the future looks promising from a few of the site locations.



Two Lofts Turf-Type Ryes PVP Certified

Lofts Inc. recently announced that Palmer and Prelude turf-type perennial ryegrass varieties have received Plant Variety Protection Certificates.

Prelude was awarded PVP Certificate *8200177, and Palmer *8200178. Each of these varieties has been on the market for only one year, and were developed jointly by Lofts and Rutgers University's New Jersey Agricultural Experiment Station.

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Palmer and Prelude are notable for several important qualities, including improved mowability; tolerance to drought and heat; dark green color; good winter hardiness; improved resistance to crown rust and brown patch; quick establishment; and fine-leaved, dense growth. Both varieties are well-suited wherever a ryegrass is applicable, particularly in overseeding programs.

Under U.S. patent laws and the Plant Variety Protection Act, any unauthorized reproduction of these varieties is prohibited. Both Palmer and Prelude turf-type perennial ryegrasses are available only through Lofts Inc., its subsidiaries and distributors. ■

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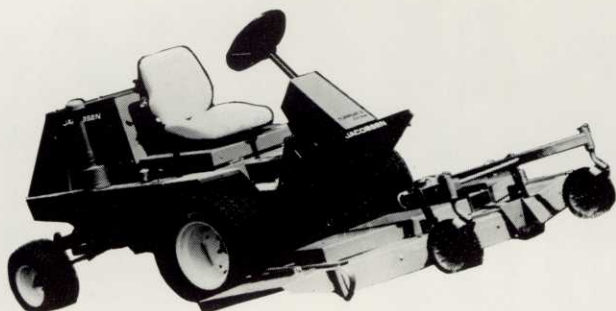
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"You've Come A Long Way Bob"

By JOHN A. CALHOUN

It is not often that a man dedicates 42 years of service without leaving a long lasting impression on the people he has worked with and the industry he has served so faithfully. Such is the case with Mr. Robert T. Willis, Superintendent of golf course and grounds at the Pointe Vedra Inn and Club.

Bob's history in the industry began in 1942. As a part-time postal worker in Winchester, Virginia, Bob became familiar with the Greens Chairman at the Winchester Country Club. As a result, Bob was offered a full-time position on the 9 hole course as a laborer. Fifty-five cents per hour was an enticing figure back in those troubled days, so Bob plunged into a career that would soon take him to the top of his profession. It wasn't an easy task though, his first job on the course was edging sandtraps that had grown completely in. Keep in mind that these were the days when sophisticated power edgers and power rakes were far from invention. As a matter of fact, the revolutionary invention of the wooden tee forced Bob to remove all the little sand boxes and water pails from the teeing areas.

Bob must have been in exceptional shape back in 1942, he cut greens with an 18" Toro push mower. After 3 months of toil and labor and frustration he had the whole operation "dumped in his lap". His education really began at this point. After he mastered the operation of the Worthington tractor with the Model "A" engine; equipped with a



sickle bar on the side and a 3-gang fairway rig, he hot footed it over to Beltsville, Maryland to the experimental station to learn the technical side of the business. He had extra time for the trip because of the low maintenance required on his 2 pieces of equipment. Besides that, Bob promised his only employee a penny an hour raise if he covered his job while he was gone.

While in Beltsville, Bob learned that he had Common Bent grass on his greens and Bluegrass on his fairways and tees. This was perplexing to Bob because he always

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(Continued from page 42)

thought the Bluegrass was a type of music that he really liked, not something that had to be mowed all the time. He also found out that the only material he could get to control fungus on his greens was BiChloride of Mercury, and the only place he could get it was at the Doctors office. This seemed sensible to him at the time because a fungus sounded like something a doctor needed to treat anyway. Of course, the only control for weeds was mechanical, which was fine because he had to have something to do in his spare time now that he was a Superintendent. When he wasn't pulling weeds, which, by the way, is still a favorite pastime of his today, he was working with his irrigation system. Bob's innovation really shined in this area. He had the capacity to water 2 (two) greens at one time with the portable sprinklers they owned, but increased that capacity to 4 (four) greens with the purchase of a portable pump that he used to pump water out of the local creeks. Of course, he was restricted somewhat to that capacity and volume because of the 1" main lines, reduced to 3/4" at the hose bibs.

Bob's innovation did not end there, modernization and progress was in demand. Ballwashers were the latest craze at the swankiest golf courses in the area, and Bob's limited budget was not going to keep him from giving his members the best of quality. So, he constructed a ball washer made of a two by four, with a hole drilled near the top, and stuck this in the ground. He inserted a rod of three eighths inch pipe tubing, (With a notch towards the



end), into the two by four. Then he took the water pail and hung it from the rod. (These were the same water pails from the tees, he never throws anything away). The final touch was a G.I. brush attached to the two by four so the ball could be scrubbed. This eliminated the necessity of having to lick the ball to get it clean, which the members really appreciated. Their appreciation was so great that by 1950 they allowed Bob to buy his first POWER greensmower. He still had to mow his tees with a regular push lawnmower though. So in 1952, much to the disappointment of the Winchester Country Club, Bob made his move to Sanford, Florida to work at the Mayfair Country

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Club. By comparison, Mayfair was super modern, there were 5-gang pull mowers, Ford tractors, Jacobsen power walk mowers, and many other modern conveniences. The Cow Barn, however, (which served as his headquarters), was something of a disappointment. The PGA would not hold a major tournament there with such a facility on the grounds. So Bob was fortunate enough to construct a new golf course maintenance complex. (This one even had a bathroom!!!). A new dimension in modern day golf course management was born. The PGA came back and held four tournaments at Mayfair during his stay there.

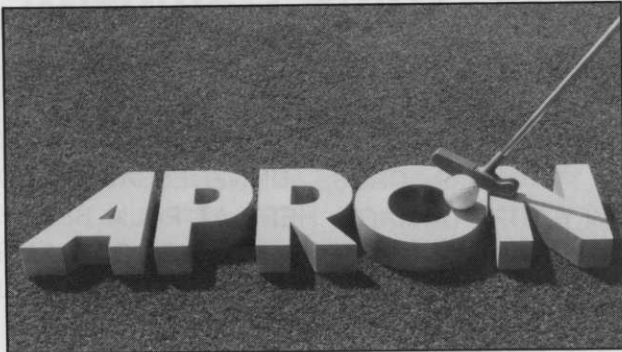
He was also one of the very first to do research on nematodes in the State of Florida. Doctor Vernon Perry, of the Sanford Station of the University of Florida, and Bob did extensive research in the field. Another giant step was hurdled in the progression of the turf industry.

Bob became familiar with different hybrids of Bermuda-grass. The Common Bermuda on the greens was not satisfactory, so he tried Tifton 127. This was too thatchy, thus 328 was planted. (He still likes Bluegrass though, as long as he doesn't have to mow it. It takes a certain breed of man to step forward in an ever changing field and consistently come up with a high degree of success.)

When Bob left Mayfair in 1965 he came to Jacksonville Beach Golf Club. He worked there for nine months and

did such a good job that Dr. Gene Nutter approached him for the position of Superintendent at the Ponte Vedra club. Bob accepted and thus began an eighteen year marriage that will last forever. Bob's touch can be seen in all areas of the golf course and grounds. He was involved in the construction of 9 new holes, and the re-construction of eighteen. His innovations and knowledge of golf course and grounds maintenance and construction have touched the lives of many students and colleagues. It is little wonder why in 1968, he was selected as the recipient of the coveted Wreath of Grass Award. Over the years Bob has developed a style and technique that has been educational, successful and, above all, innovative. (Just a small note here directed to Mr. Robbie Robbins, Superintendent at the Gainesville Golf and Country Club. Robbie, after extensive research I have concluded that, contrary to your belief, Bob was not the first to use four mules instead of two to pull the gang mowers. His budget would not allow the purchase, besides, the extra speed would cause marcelling).

Now, at the time of his retirement, June 30, 1984, after 42 years of service to the golf industry, while he hunts with his new shot-gun, and fishes the shores of Lake Marion, he can reflect on how many things he has accomplished and achieved, and at how many lives he has touched and how many good things he has done with his knowledge and always, ALWAYS, come up with a smile. Thanks Bob, from all of us.■



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Photography 101

(2ND OF A 3 PART SERIES)

By MICHAEL BAILEY

How often have you heard someone say "it's so easy to maintain a golf course, because all you have to do is just mow the grass." All too often, the laymen also misconceives the art of photography. "Afterall, the only thing you have to do is just point the camera, push the bottom, and voila - there's the picture." To the contrary! The art of photography is just as technical as agronomy or horticulture, and to be honest, I wonder if there are not times when growing turf is not easier than capturing the classic photograph.

This is the second of a three part series dealing with the principles of good photography. Now that you have bought a good camera, or at least we all realize it requires a relatively good camera to capture a good photograph and anything short would be like fertilizing with just 6-6-6. Let us now indulge upon the specifics of 101 in photography.

The most basic of photographic principles is the science of light rays being perceived on photosensitive film to form an image via a mechanical item, being either a simple box camera or an ultra sophisticated 35mm SLR camera.

Light enters into a camera via two means: the shutter speed (the length of time the hole opens and closes to allow light to penetrate) and the aperture as denoted by f stops (the diameter of hole size) as a low f stop number of 1.8 is a wide open setting and is proportionally twice as large as the next f stop of 2.8. The f stops typically correlates as follows 1.8, 2.8, 3.5, 4.5, 5.6, 8, 11, 16 and 32 respectively. Remember, the lower the number, the larger the hole size and the higher the number, the smaller the hole size. A common question is "what difference does the f stop matter and why not just leave the aperture ring set in the middle?" Generally, this would hold true, but here is the principle. Under low light conditions, a low aperture of 1.8 should be advisable — however, a draw back is the lack of depth of field (the ability of all perspective images to be in focus). Under brightly lit conditions, a high aperture of f 16 would be better as the depth of field would be greatly increased.

The other means of regulating the amount of light to enter is via the shutter. The slower the shutter speed, the greater amount of light while the faster the shutter speed, the less amount of light may enter. There are some general guides to follow. Shutter speeds slower than 1/60 of second may produce a blur while 1/500 of second will capture most all action scenes.

To put all of this into perspective both the f stop and shutter speed must be synchronized to produce the correct light exposure. If one or both items are set wrong,

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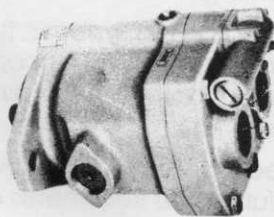
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your picture will either be too dark (under exposed) or too light (over exposed).

Now that we understand the principles of perceiving light on film, let us now evaluate the different types of film. Film is either based as slow, medium or fast recording as noted by the ASA number. A slowed based ASA 25 film would be ideal for non-moving nature scenes because the grain is minimal and the resolution is fine. ASA 64 film is slightly faster and better adapted to action, however, a high speed 1000 film is perfectly suited for low light and fast action but grain is offensive and trueness of color is lacking. This is not necessarily a plug for Kodak but I personally prefer Kodak film over most all manufacturers because of more realistic true to life colors. When one looks at all those film boxes and numbers behind the counter, one can easily become bewildered.

First of all, color slides are less expensive than color prints and since prints can always be produced from slides, you should seriously consider the commitment to slides. A slide projector could actually pay for itself within a few years if you are one to take a lot of pictures.

Now that we have evaluated the best type of camera, operative settings, shutter speeds and the various types of film, let us look through the eye of the camera: the lens. The focal length of a lens is measured in millimeters, with 55mm being a true perspective to the human eye a wide angle 28mm would produce a panoramic view and items will look very far away. A telephoto lens, anything over 100mm, compacts the view and makes items seem closer than they really are. A zoom lens is the best of all worlds, although there are a few drawbacks. A 28mm to 90mm zoom lens encompasses most all focal lengths the average photographer will ever need, but the resolution quality is inferior to a standard lens. If you do not plan to make enlargements in excess of an 11 x 14, a zoom is best suited for you.



The camera can be a valuable tool for recording pertinent occurrences on the golf course.

A lens is an investment that you may keep for years, if proper care is taken. Keep the lens cap on (except when in use), never touch or breath on the glass of the lens and use only lens cloth tissue for cleaning. A UV (ultraviolet light) filter should be purchased to screw on the front of the barrel to protect the glass from the elements while this will have no effect on meter settings. Treat your lens as it if were a piece of fine crystal glass - because it is.

After all of this explaining, lets now get to the heart of the subject: the concept of actually taking a picture. To snap a good photograph requires the review of a relatively long mental punch list. First, make sure you have taken off the lens cap (otherwise all will be totally dark through the viewfinder). Keep your fingers (or anything else as a matter of fact) away from the front of the lens. Focus on the subject and refocus again until all is perfectly clear. Try to set a high f stop with a shutter speed preferable 1/125 or greater. Keep the horizon level (trees do not normally grow at 45 degree angles). Try to locate the subject relatively close to the middle of the frame (do not cut off desirable parts - however feet would be advised rather than a head). Shoot away from the sun and try to hold the camera as steady as possible. Now, your almost ready to push the button. Tell your subject you are ready (so they're awake) and gently depress the shutter button. If properly taken, the camera should remain still. All too often amateurs push the button too hard thereby jolting the camera.

Just as there is a proper way to carry a golf bag over your shoulder, strap your camera over your shoulder not over your neck, as this commonly looks like a hacker. Buy a 2 inch wide camera strap at your local K-Mart for less than 5 bucks. This extra wide strap is stronger and will aid in padding your shoulder. Balance the camera over your shoulder and let the camera hang down to your hand. Cradle the lens and camera body while walking; as you want to minimize the jolting action while walking. When you are ready to go into action, you want to have the camera quickly accessible. An important item is to become very familiar with your camera and feel at ease taking photographs. Film is the least expensive item in this profession, so take extra shots by bracketing an f-stop above and below thereby assuring one of the exposures should be ideal.

Just like all good superintendents - keep good records. Carry a little notebook for recording your valuable information of light conditions (low, medium, bright) f-stop, shutter speed, distance of subject, type of film (ASA number) and the time of day. A review later will reveal pertinent information to digest, if a picture does not come out quite the way you invisioned the shot.

Do not become disappointed if your first few rolls turn out poor in the beginning. After all, how long did it take you to score your first par? There are many amateur photo clubs that are anxious to gain new members. Join a club, take lots of pictures and who knows, you just might take a few pictures of the golf course. The last of the three part series will next time, deal with the specifics of advanced photography.■

Comparison of Tifdwarf & Tifgreen-328

County Extension and other advisory personnel are often asked for recommendations regarding grass selection for various uses. One of the most perplexing situations can be whether to use Tifdwarf or Tifgreen-328 bermudagrass for putting surfaces on golf greens. Following is a comparison of the two varieties, which are the best bermudagrass hybrids available for putting surfaces in Florida.

Tifdwarf bermudagrass is darker green during the normal growing season, finer textured and tolerates a lower mowing height than Tifgreen-328. Tifdwarf, thus, is capable of producing better appearance and putting quality than Tifgreen-328. Tifdwarf, however, has inferior cool weather color, is more difficult to overseed, is less vigorous (competitive), less tolerant of herbicides and more prone to thatch buildup.

Tifgreen-328 turns a pale green color during cooler winter months in South Florida, e.g. Palm Beach, Broward and Dade counties, when bermudagrass growing conditions are marginal. Excellent color can usually be maintained, except for a few weeks during the coldest part of winter, by adjusting fertilization and mowing height. Cool weather tolerance of Tifgreen-328 gives a golf course in South Florida the option of eliminating overseeding to maintain winter color where a brief period of poor color is not objectionable to the membership.

Cool weather tolerance of Tifdwarf in South Florida is inferior to Tifgreen-328. Instead of becoming pale green, Tifdwarf turns a flat, dark purple color, when viewed closeup, and is dark, dirty and withered appearing at a distance. Overseeding is necessary under such circumstances, however, Tifdwarf forms a close knit, dense sod which requires more extensive preplant preparation than Tifgreen-328 to insure successful overseeding. Both grasses must be overseeded to maintain winter color north of Orlando since they turn brown during winter months.

The University of Florida recommends that the putting surfaces, fringes and slopes of greens be planted with the same grass variety to minimize contamination and/or encroachment on putting surfaces by the fairway grass. Tifgreen-328 performs well with the previous recommendation because of its adaptability to various mowing heights, however, Tifdwarf is shorter, not as upright nor its leaf blades as large as those of Tifgreen-328. These features permit Tifdwarf to be mowed more closely than Tifgreen-328 on putting surfaces, but they are a disadvantage at higher mowing heights on fringes and slopes.

Tifdwarf's vertical growth habit is short and non uniform, which is noticeable during establishment at higher mowing heights on fringes and slopes. Growth at these heights is clumpy and interspersed with areas of depressed or flattened growth. Clumps are usually scalped and light green following mowing, whereas, depressed areas are dark green. A uniform mowing height is usually not achieved on fringes and slopes until Tifdwarf has completely established and developed a moderate thatch. Sponginess accompanying thatch buildup permits mowing equipment to sink sufficiently into the sod to produce a uniform clipped surface following mowing. This situation makes use of Tifdwarf undesirable on fringes and slopes since it does not readily 'hold' golf balls and is susceptible to scalping once it develops the sod depth necessary to achieve uniform mowing height.

Commercial planters hesitate to plant Tifdwarf on slopes of greens for aforementioned reasons but in doing so increase the susceptibility of Tifdwarf putting surfaces to encroachment and contamination by whatever grass is planted on such slopes. Ormond bermudagrass planted on slopes can completely crowd out Tifdwarf greens in which the primary putting surface eventually becomes Ormond bermudagrass with small patches of Tifdwarf contamination. Closeness of the fairway grass on slopes to putting surfaces makes it

(Continued on page 49)

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easy for small pieces of that grass to be scattered or blown onto putting surfaces during mowing or carried there afterward by other maintenance operations. Cleats on golfer's shoes are an excellent method for mechanically planting clipping material into putting surfaces. Eventual contamination is almost a certainty since much of the clipping material is capable of producing roots under favorable environmental conditions.

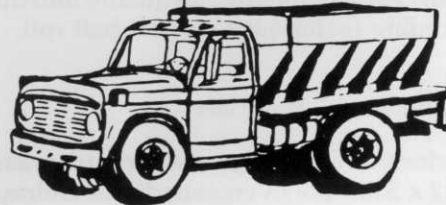
A final disadvantage of Tifdwarf is the occurrence of apparent natural mutations within otherwise pure stands of Tifdwarf. There is no way a pure stand of Tifdwarf can be guaranteed under the circumstances since there is no way of predicting the occurrence of mutations.

In summary, Tifdwarf is capable of providing a superior putting surface, however, the disadvantages of this grass make it inferior to Tifgreen-328 bermudagrass with time. ■



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A Comparison Of Overseeding Management Techniques

Putting greens in Florida are overseeded during the winter months to provide a contrast in color, to improve the playing surface, and to provide a medium for wear and minimize damage to dormant turf. Ward et al. (4) documented that topdressing the overseeding improved the speed of emergence, stand density, uniformity, and putting quality as determined by visual observation, especially where thatch was present. Schmidt (3) concluded that topdressing after seeding was an important step in the overseeding procedures. Recent trends have been away from topdressing and in many instances no vertical mowing. Many golf course superintendents are reluctant to disrupt the playing surface since they feel this affects playing quality of the putting green. Powell (1) noted that many people believe topdressing is necessary while others see no significant affect from this practice. Without adequate seedbed preparation it is difficult to establish the cool-season overseeding and ensure a uniform stand of cool-season grass when the warm-season grass goes dormant.

A study was conducted at the University of Florida Turfgrass Field Laboratory, Gainesville, FL from 10 November 1982 to 24 March 1983 to evaluate overseeding techniques on turf establishment and quality and the influence of overseeding techniques on golf ball roll.

Methods and Materials

The study was performed on a 'Tifgreen' bermudagrass putting green. Plots 2 x 5 m were overseeded with 'Delray' perennial ryegrass at the rate of 150 g of seed/m² in 4 replications. Preparation of the bermudagrass seedbed was divided into 6 establishment treatments as follows:

- 1.) No preparation = Seeding + brushing. (A stiff broom was used to brush the seed and/or topdressing material down into the turf instead of dragging with a steel mat due to small plot size.)
- 2.) Scalping = Low mowing a 3 mm + seeding + brushing.
- 3.) Verticut = vertical mowing with a 2.5 cm blade spacing twice over, the second moving at 90° to the first + seeding + brushing.

- 4.) Scalp and verticut = Scalping + vertical mowing + seeding + brushing.
- 5.) Verticut and topdress = Scalping + vertical mowing + seeding + brushing + topdressing (Topdressing with 1.5-3 mm of fertilized native topsoil) + brushing.
- 6.) Sandwich = Scalping + vertical mowing + topdressing + brushing + seeding + brushing + topdressing + brushing.

Mowing was withheld for 3 days following seeding then begun on a 3 times per week basis at a 6 mm mowing height. Irrigation was 3 times per day with approximately 2 mm of water for the first 5 days, daily applications at 6 mm through the second week, and every other day thereafter to match seasonal evapotranspiration rates. A 16-1.6-6.7 (N-P-K) fertilizer was applied 2 wk after overseeding and monthly thereafter at the rate of 5 g N/m². Data collection included visual estimates of percent cover and turf quality weekly during November and monthly through March.

In order to evaluate the effect of each establishment treatment on golf ball roll during the transition period, data were taken with a United States Golf Association (USGA) stimpmeter. Based on USGA Green Section recommendations, 3 golf ball rolls in each direction were performed on the flat portion of the plots in a north-south orientation and distances were measured (2).

Results and Discussion

Ratings on percent cover during the entire study period are presented in Table 1. The best treatments at the first cover rating on 17 November were those which had been topdressed. These plots had 4 to 5 times more turf cover than any other treatments. How rapid the cool-season grass becomes established is especially important in making a smooth transition from warm-season to cool-season turf. Topdressed treatments still had almost twice as much cover as any other treatment at the second week evaluation. On 29 November the best treatments were those topdressed, although statistically they were not dif-

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Table 1. Visual estimates of the effect of overseeding establishment treatments on percent turfgrass cover.^z

Overseeding treatment	11/17	11/22	11/29	12/6	12/20	12/27	1/24	2/24	3/24	Mean
No preparation	9 by	46 b	73 ab	87 ab	82 a	83 ab	90 abc	94 b	97 a	79 b
Scalp	7 b	46 b	70 b	82 b	75 a	78 b	85 c	90 b	94 a	75 b
Verticut	12 b	49 b	79 ab	89 ab	78 a	82 ab	90 bc	94 b	96 a	80 b
Scalp & verticut	10 b	46 b	70 b	81 b	75 a	78 b	86 c	90 b	94 a	75 b
Verticut & topdress	57 a	85 a	92 ab	97 a	87 a	90 ab	96 ab	98 a	98 a	92 a
Sandwich	58 a	89 a	94 a	97 a	90 a	91 a	97 a	98 a	98 a	93 a

^zPercent cover from 0-100 as visual rating.

^yMean separation in columns by the Waller-Duncan k-ratio t-test, 5% level. Angular transformation was performed for statistical analyses.

Table 2. Visual estimates of the effects of overseeding establishment treatments on turf quality.^z

Overseeding treatment	11/22	11/29	12/6	12/20	12/28	1/24	2/24	3/24	Mean
No preparation	4.7 by	6.0 ab	7.3 ab	6.3 bc	6.3 ab	7.3 b	7.7 b	8.3 a	7.1 b
Scalp	4.3 b	5.7 b	6.7 b	6.0 c	6.0 b	7.0 b	7.0 b	7.7 a	6.6 b
Verticut	5.0 b	6.3 ab	7.3 ab	7.0 ab	7.0 ab	7.7 b	7.7 b	7.3 a	7.1 b
Scalp & verticut	4.3 b	5.7 b	6.7 b	6.3 bc	6.7 ab	7.0 b	7.3 b	7.7 a	6.7 b
Verticut & topdress	7.0 a	7.0 ab	8.3 ab	7.3 a	7.7 a	8.7 a	9.0 a	8.3 a	8.1 a
Sandwich	7.7 a	7.7 a	8.7 a	7.3 a	7.7 a	8.7 a	9.0 a	8.0 a	8.3 a

^zQuality as visual ratings from 1-9, 9 = best.

^yMean separation in columns by the Waller-Duncan k-ratio t-test, 5% level.

(Continued from page 50)

ferent from the no preparation or verticut treatments. Thus, only at 3 wk after overseeding was there equivalent cover on plots not receiving topdressing as part of the treatment. Similar trends were noted throughout the experiment period until the last evaluation on 24 March. Averaged over the study period, topdressed plots had higher percent cover ratings.

Turf quality ratings, which subjectively combine color, texture, density, and uniformity, closely followed the percent cover ratings (Table 2). Turf quality was greatly improved by topdressing at the first evaluation on 22 November and was consistently higher for the topdressed treatments through November although there was no difference between topdressed plots and the no preparation or verticut treatments on 29 November. Evaluations during the remainder of the study indicate that topdressed plots had high turf quality ratings.

Ball roll data taken 10 days following overseeding indicated the sandwich treatment in the north direction had a lower length of roll (Table 3). The mean over both directions indicated no differences in ball roll lengths among treatments. Thus topdressing did not significantly slow ball roll. According to USGA Green Section standards experimental treatments would rate in the medium-slow

ball roll category. This can be attributed to the stage of transition of the overseeding and partially due to the 6 mm mowing height. But overall turf quality on the topdressed plots was excellent even though temperatures were higher than average through December and some bermudagrass growth persisted almost until January.

Conclusions

Topdressing after seeding or sandwiching the seed between 2 layers of topdressing produced the highest percent cover and best turf quality during the initial establishment period. One week following overseeding, topdressed plots had 4 to 5 times more turf cover than any other treatment. This advantage in germination rate persisted for the first month. Percent cover ratings were not different between the single topdressed and double topdressed (sandwich) plots. Thus there appears to be no benefit from the added work of double topdressing or sandwiching the seed. Ball roll data indicated no differences among treatments at 10 days after overseeding. Therefore topdressing after seeding benefited seedling establishment without notable effects on ball roll performance.

Table 3. Measurements of the effect of various overseeding establishment treatments on golf ball roll.

Overseeding treatment	Ball Roll Lengths ^z		
	North	South	Mean
cm.....		
No preparation	183 ay	183 a	173 a
Scalp	173 ab	170 a	173 a
Verticut	168 ab	163 a	165 a
Scalp & verticut	168 ab	165 a	168 a
Scalp & verticut & topdress	165 ab	160 a	163 a
Sandwich	155 b	163 a	163 a

^zMean of 3 rolls using USGA Stimpmeter.

^yMean separation in columns by the Waller-Duncan k-ratio t-test, 5% level.

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Guest Editorial

By JOE SNOOK
Riverbend Country Club

One by one, our pesticides are being confiscated by a bureaucratic system which seemingly feels that we should all suffer because of the misuse by a small number of applicators.

Why are our elected officials and government employees not following their guidelines and existing laws? (The Florida Department of Agriculture recommended the excessive rates of EDB as a buffer treatment in citrus groves — more than 10 times the highest rate indicated on the label!) Golf course superintendents were advised during pesticide licensing of a fine of \$25,000 and a prison term of up to one year for knowingly misusing a pesticide.

The headline in local newspaper, as some of you may have already seen, stated "EDB Ban Is a Mistake". Quoting from that article, "We are concerned that the decision to ban EDB is based on the momentum of hysteria and is not scientifically based" said Dr. Elisabeth Whelen, Director of the American Council on Science and Health. Dr. Milton Ovyne, National Coordinator for the U.S. Department of Agriculture said that he believes banning EDB was imprudent. He stated, "EDB isn't even in the same league with cigarettes"!

If enough pressure is exerted by the Florida G.C.S.A. and G.C.S.A.A. along with an edict for a change of the political boondoggling we have grown accustomed to, perhaps we can retain and have returned to us that which is rightfully ours. I have advised my representatives, both state and federal, of my feelings concerning total banning of pesticides without total regard of all segments affected. The next time you receive a questionnaire from your congressman, please take the time to express our concern on this matter. Hopefully, we can put an end to the massacre of our valued chemicals.■

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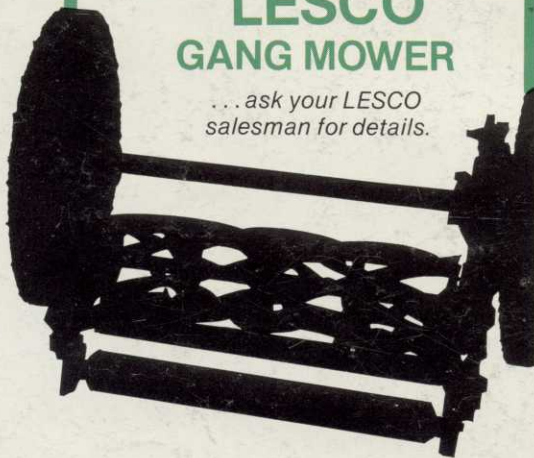
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