

JB

PROCEEDINGS

TWENTY-SECOND ANNUAL

SOUTHEASTERN TURFGRASS CONFERENCE

GEORGIA COASTAL PLAIN EXPERIMENT STATION

and

ABRAHAM BALDWIN AGRICULTURAL COLLEGE
COOPERATING

TIFTON, GEORGIA

APRIL 15-17, 1968

JB
BEARD
COLLECTION

PROCEEDINGS

22nd Annual

Southeastern Turfgrass Conference

Tifton, Georgia

April 15-17, 1968

Sponsored By

UNIVERSITY OF GEORGIA COASTAL PLAIN EXPERIMENT STATION

In Cooperation With

ABRAHAM BALDWIN AGRICULTURAL COLLEGE,

UNITED STATES GOLF ASSOCIATION GREEN SECTION

and

SOUTHERN GOLF ASSOCIATION

TABLE OF CONTENTS

	Page
MANAGEMENT PRACTICES THAT SAVE DOLLARS - Tom Mascaro -----	1
PREVENTIVE MAINTENANCE VS. CURATIVE PRACTICES - A Panel Discussion - Dr. Paul Alexander, Moderator -----	11
GOLF-COURSE CHEMICALS --- YESTERDAY, TODAY, AND TOMORROW - John E. Gallagher-----	17
FINANCING MAINTENANCE OPERATIONS - James W. Dudley-----	23
COST OF BENT VS. BERMUDA MAINTENANCE - A Panel Discussion - James B. Moncrief, Moderator -----	28
PLANTING AND MAINTENANCE OF ORNAMENTALS - Gerald Smith-----	29
PERSONNEL --- IN-SERVICE TRAINING - A Demonstration by Palmer Maples, Jr.-----	32
HOW BIG IS GEORGIA'S TURFGRASS BUSINESS? - Glenn W. Burton -----	34
ATTENDANCE ROSTER-----	36
Total Representation From Each State-----	42

FOREWORD

There is much interest in this country in the development of small city and community areas where lawns and yards can be beautified and a crowding of people under unsightly and unfriendly conditions can be reduced. When one thinks about the large masses of people surrounded by nothing but steel and brick and concrete in some of our larger cities, we wonder why we have been so slow in coming to the concept of building beautiful and restful cities.

Those of you who have been so faithful in attending and supporting the annual turf conferences know and appreciate the value of turf in man's life. The restful beauty of a green turf, whether it be on the lawn, golf course, or athletic field, will be of increasing value in a hurried life. You have, over the last 22 years, indicated your belief in these things by your participation in the turf program of this Station. We hope that from your standpoint, this effort has been well repaid.

We are grateful for having had the opportunity of providing the 22nd Annual Southeastern Turfgrass Conference program and, along with all of those on the Station staff who are working in this area of research, I would like to express to you our appreciation and our hope that you will be with us for the 23rd Annual Conference.

---Frank P. King, Director

Georgia Coastal Plain Experiment Station

MANAGEMENT PRACTICES THAT SAVE DOLLARS

Tom Mascaro

President, West Point Products Corporation, West Point, Pennsylvania

The cost of maintaining turfgrass areas has been increasing year after year. Unfortunately, operating budgets have not been increased rapidly enough to meet these ever-increasing costs. Club officials must recognize this and unless they are satisfied with a sub-standard course, they must take a hard look at their operation and supply the funds to provide people with what they want. It appears to me, as I visit clubs around the country, that bar stools have more chrome, carpets are thicker, walls are expensively paneled and draped, and the golf courses are going to pot.

I would like to go on record by saying that the superintendent is not to blame for this situation. By and large, the average superintendent is doing an amazing job with the funds and facilities with which he has to work. He is making every effort to learn more about how to develop new techniques that will save the club money. He attends turfgrass conferences and monthly meetings. He trades information freely with fellow superintendents.

But in my opinion, this is not enough. He needs to get through to the club officials and get them to recognize where the problems are. The basic problem is simply this: "You must spend money to save money."

O. J. Noer had a classic statement of his own that said it in a different way. He was heard saying many times, "A golf course is not a place to **save money, or waste it.**"

These statements pave the way to our discussion on cutting costs in turfgrass management. When we begin an analysis of any operation to bring down costs, the first things we look for are those areas where most of the money is being spent. The sum total of savings on little things is insignificant. It is in the big spending areas where the greatest savings can be made.

Where is the largest expenditure in turfgrass maintenance?

Labor, of course. This is where most of the money is spent. Labor budgets today average about 70% of the total budget. I wonder how many people realize that in 1939, 30 years ago, the labor budget averaged 70%. It is obvious that little or no change has taken place. This is obviously not true in other industries.

Coupled with the fact that labor useage is high is the fact that labor is also scarce. Competition for manpower, that is getting higher wages and more benefits in other industries, is slowly driving turfgrass management into a corner.

What can be done? Well, it's better to start too late than never, and the way to start is with a plan -- A plan that covers all aspects of the problem. You can make up your own or use the following as a general guide. Remember, don't cloud your plan with a lot of unrelated problems. Stick to one concept and that concept is doing the job that the membership wants done with a minimum of labor and cost. Don't compromise. Cheap labor and improvised equipment waste money. Your club is not looking for something cheap. They want top quality at a reasonable cost.

Areas to explore:

1. Your overall system of operation
2. Operations that lend themselves to mechanization
3. Preventive equipment maintenance program
4. Parts inventory and control
5. Reconstruction to reduce maintenance
6. Re-design of fairways and roughs
7. Comprehensive study of sand traps
8. Labor and labor relations

Let's elaborate on each one of these points:

1. Overall system of operation

When you take a cold, hard look at the average system of operation on many golf courses, you find that the sequence of operations and the methods employed were not developed from the standpoint of efficiency but rather were developed through trial and error.

In many cases, we find not a planned operation, but an inherited system. This does not mean that the whole system of operations is bad, but it does mean that there is plenty of room for improvement. It is my feeling that the whole system must be re-evaluated. A scientific and practical approach must be developed to meet the challenge of the 60's with its rising economy, high prices, and labor shortages.

In evaluating a system of operations, one must start with cost and time studies. This is something that is seldom, if ever, mentioned in any turfgrass publications.

The first thing you need to get into cost and time studies is a stop watch. This little instrument will give you a lot of information. For example, how long does it take to mow a green? If you determine the time that the reel is actually cutting grass, you will find that the total time is only 10 to 11 minutes for an average 6,000 sq. ft. green. The rest of the time consumed is used up in getting to the green, preparing the mower, emptying the basket, hand-spitting, etc.

In industry, we are guided by a rule known as "Parkinson's Law." His law states, "Work expands to fill the available time." (It might be a good idea to type Parkinson's law on a piece of paper and glue it to the back of your stop watch.) It means that if you have an hour's time to get dressed, you consume the time doing so. If you have only 10 minutes to get dressed, you accomplish the same job in that amount of time. Therefore, if it is the custom at your club to allot 3 hours to a man to mow his greens, then he will use this time to complete the task.

If you change the procedure, you must also change the time consumed and this is directly related to cost. What we are really attempting to do is not to force a man to work harder and faster, but we are developing a system which will make him more efficient and, therefore, do more at less cost.

The formula I use is: 10 minutes a day represents a saving of \$100 a year, because you must add to the hourly rate vacation and all benefits the employee receives. Projecting this formula, if we have a crew of 10 men, at a savings of \$100 a year each, we wind up with \$1,000 saved.

Assuming that I am correct in my observations and taking the low figure of 1 hour per day saved, this represents a saving of at least \$600 per year -- this amount times 10 (10 men) is \$6,000, representing a nice portion of your labor budget.

What I have pointed out here, however, does not mean that you can proudly tell your club officials that they should deduct this money from your budget. Every cent that you save is going to be needed for the inevitable increases in wages, including your own salary, and equipment to replace manpower.

2. Let us now explore Operations that lend themselves to mechanization. Here is another area where a great deal can be done.

Far too many golf courses are still back in the horse and buggy days.

Antiquated equipment or, worse yet, total lack of equipment means that the job to be done must be carried on with expensive hand labor. In this day and age, we cannot afford to dig ditches by hand. We are wasting money when we mow an area with an 18-inch hand-pushed rotary mower when the job can be done with a riding triplex. We should not waste a man's time in walking when he can ride. We should use machines that require one man rather than a crew. Many operations can be mechanized today with modern equipment. Some of these operations include aerification, top-dressing, dragging, mowing, watering, and even supervision.

Two-way radio systems increase efficiency tremendously, making possible immediate contact with workmen on any part of the golf course.

Closed-circuit television is also being experimented with in turf-grass management. There are many areas where remote observation saves a great deal of time and effort. For instance, a TV camera can be installed in the pumphouse. Meters, dials, and operation of the pumps can be observed on the monitor set installed in the equipment center. Two-way radio systems and closed-circuit TV greatly enlarge the superintendent's ability to manage many more things in a shorter space of time.

3. We should initiate and enforce a Preventive equipment maintenance program. Much has been said on this subject, but not much has been done about it.

Ford Motor Company has published these figures. Failure to replace a damaged \$10.00 dry-type air filter on a tractor can cause more than \$150 engine damage. Replacing a \$2.50 hydraulic fluid filter may save \$25.00 to \$50.00 in parts and labor later. A cracked hose between the air filter and carburetor costs just \$1.00 to replace, but can cause \$100.00 or more engine damage. In less than half an hour, \$1.00 or \$2.00 worth of labor, you can clean, service, and fill a battery that might save a new \$20.00 battery. Just a few minutes spent each week inflating tires correctly can save \$10.00 or \$20.00 or more in yearly excess wear to tires. We could go on and on. With a good preventive program of equipment maintenance, we not only pick up impressive savings, but equally important is the equal savings in down time while repairs are being made.

4. Parts inventory and control is another area that saves money in wasted down time. Many supply distributors have spoiled you with their

efforts to keep you supplied with parts on a minute's notice. It takes more than a minute to get you the part, and both you and your supplier are losing money and patience.

It does not take much time to sit down with your supplier and determine those parts on each machine that are going to wear. Order them and stock them in your own parts inventory. Ask your supplier to replenish your parts stock in an orderly fashion as you use the parts. When a good parts-inventory system is installed, you will find that you will not have to run all over the place to get things moving again.

5. Reconstruction of the golf-course layout is a big area to explore to reduce costs. You must learn that you have to spend money to make money. Many golf courses were designed when labor was cheap.

Tees are usually the prime target in reconstruction. Many tees and tee areas cannot be maintained efficiently with modern equipment. Reconstruction will eliminate many headaches, along with saving a great deal of money. Reconstruction of bridges, hard-to-maintain creeks and banks all fit into these areas of exploration for cost savings.

6. Re-design of fairways and roughs can easily knock off 15 to 25 acres of intensive-care turf.

Many golf-course fairways have become bowling alleys and greens have become saucers. Constant mowing in straight lines has destroyed the free-flowing design of the architect. Fairways have become wider than they need to be. Stake out each fairway to make it look like its original design and you will find that you will pick up quite a few acres

that do not need the intensive care you are now giving them. When this is done, it will be reflected in savings in mowing time, fertilizer, water, and wear and tear of equipment.

7. A comprehensive study of your sand traps may reveal a substantial area for cost reduction.

I believe I am correct in stating that the maintenance of sand traps is the second-largest item in your budget. Anything you can do to eliminate traps or reconstruct them for easier maintenance is going to reflect substantial savings each year.

8. Labor and labor relations is seldom considered as a cost-saving area, since we usually relate it to higher wages, more benefits, and more manpower. Yet, if we look at it logically, we find that labor and labor relations have a profound effect on costs. I am talking about efficiency in performance. I am talking about attitude. A well-adjusted worker who likes his work, communicates well with you, and enjoys working at your club is an asset to your organization and can be directly related to cost of operation. The first thing you must offer is a decent, living wage with all the expected benefits, but it doesn't stop there. A good man wants to become part of the act. He is willing to share your problems if he can share in the praise.

Recently, a golf course superintendent told me that while he was having lunch in the clubhouse, a member came by and praised him for the fine condition of the course. He said it made him feel good all over, and the raise he had been thinking about didn't seem as important. I asked

him if he had gone right out and told his men the same thing. Unquestionably, they would have felt as good as he did about it.

There is virtually nothing that motivates people more than pride. I feel certain that many of us work for less than we could get somewhere else or in another line of work because we are willing to trade dollars for satisfaction. We all would rather work for less dollars and be happy than to make a lot of money and be miserable. I believe this is especially true of workmen who choose golf-course work for a living.

In many ways, it is a hard way to make a living -- rain and mud, stinking hot and freezing cold, complaining members, flying golf balls, and tiring work, with no one appreciating the work that has been done.

The disadvantages of the job must be offset with enough good things to make him want to stay on. Becoming part of the team is a strong motivating force that will keep him on the job day in and day out.

Building the team is your responsibility. Learn to communicate with your men. Bring them into the act. Hold meetings with them. Explain in detail what you are trying to accomplish. Involve them in your short- and long-range plans. You will find that it will pay big dividends.

When you sense that a man will not become part of the team, get rid of him. If you cannot replace him, you may be surprised to find that your team will take up the slack. Get rid of deadheads. Take the money you were paying them and give it to your good men. Analyze it this way: If you have 10 men and two are fouling up the works, get rid of them. For round figures, let's say they were making \$2.00 per hour, that's \$4.00

an hour you have picked up. If you divide the \$4.00 among the eight remaining men, you can increase their wages 50¢ per hour. You can get a lot of mileage with this kind of money. Bring your men into the act. Let them know that you have just so much money to spend on labor to get the job done. Every additional man you hire is robbing their paycheck. Make them conscious of this. The less men to do the job, the more they make. Efficiency will skyrocket. Your men will give you more ideas than you ever dreamed of to cut costs.

Summarizing the points that I have outlined, I would say that I have lightly skimmed over some of the important areas that you can study for cost savings. If you apply yourself, I am sure that you can come up with some surprising answers. When you do come up with answers, go over them with your officials. If you can sell them your ideas, you will find that they will help you to achieve your goals.

Remember, as superintendent of turfgrass maintenance, you must concern yourself with only three primary areas of activity. These three areas are covered by the three F's:

1. Finances
2. Future planning
3. Fouled-up details.

PREVENTIVE MAINTENANCE VS. CURATIVE PRACTICES

Panel Discussion

Moderator: Dr. Paul Alexander, Clemson University,
Clemson, South Carolina

Talk by Charlie Danner, Capital City Club, Atlanta, Georgia:

Gentlemen, at Capital City Country Club, we are firm believers in preventive maintenance. Listed below are some of the practices we believe in and try to follow:

A. Disease Prevention

Disease prevention starts when a green is built. Good surface drainage is a must, not only off the green surface but off the aprons, collars or borders of the green. Another must to prevent disease is air drainage. A thick grove of trees or thick underbrush, that blocks free flow of air across a green, will only bring on disease attacks. Sub-surface drainage is desirable but not nearly as important as surface drainage or air drainage. Whenever too much moisture is present, accompanied by high temperatures and high humidity, we can expect an outbreak of disease and the sooner we get a preventive spray on the greens, the better it will be.

At Capital City, there is one time during the year when we get on a rigid schedule of spraying greens for preventive disease control. This is after overseeding the greens in October. We start spraying with nothing to spray but seed and top-dressing and spray once each week until the grass is established and cool weather sets in. After

this, we try to make the weather work for us instead of against us. We know that for disease to break out, we must have high temperatures, excessive moisture and high humidity, all present at the same time. In either winter or summer, when these three conditions are present, we start spraying immediately and continue spraying until the weather changes. We know that during the winter, 55° or higher is considered as a high temperature and during the summer months, above 85° is a high temperature. Last year, our fungicide bill at Capital City amounted to \$1,643.00, all due to a wet and humid spring and summer.

B. Insects

We find that insects, such as sod webworms, cutworms, and armyworms, have a way of sneaking up on you. Cutworms seem to find a home in aerifier holes. We have found that as soon as the weather warms up and the ground warms up, we had better start our preventive applications for worm and insect control. We find that applications every 3 weeks seem best for worm and insect control.

C. Weeds

We have found that pre-emergence weed-control chemicals do a much better job than post-emergence chemicals. First, one application of a pre-emergence chemical does the job where for post-emergence, it takes three to four applications of a chemical and you are lucky if you do a good job. At Capital City, we have gone through the past two summers with almost 100% weed control on our greens with one application of a pre-emergence chemical applied and immediately watered in. We

have not been quite as successful on our fairways using a spray. We feel we could not get the material watered in fast enough. This year, we have switched to a granular material and believe we will get better results.

D. Poa annua Control on Greens

We conducted an experiment on our No. 2 green for Poa annua control last August and the results look very promising. We will pass this on to you.

We wondered if we could put on a pre-emergence chemical for control of Poa annua and then overseed the green for winter play. We have a large green at No. 2, so we split the green in half. We sprayed the back half on August 14th with a pre-emergence chemical and did not spray the front half of the green. The green was top-dressed the week before Labor Day and top-dressed again when it was overseeded on October 3rd. We hoped the top-dressing would create a layer between the chemical and the seed. Apparently our theory worked, as we had 100% germination of seed and a very good stand of grass for winter play. Sterilized top-dressing is always used at Capital City. To this day, no Poa annua is present in the treated half of the green, but it is in the untreated half. We still feel that we have to experiment further with this and next fall, we plan to treat the back half of all our large greens. If we are successful again, the following year we will treat all of our greens. We have learned the hard way to be suspicious of all chemicals until we are thoroughly familiar with their reaction on our own golf course,

applied with our own labor and our own equipment. Some things that worked for me in Nashville, Tennessee, have not worked at Capital City.

E. Compaction of Greens, Tees and Fairways

At Capital City, we aerify greens twice yearly, the first time in April and again around Labor Day. We use a straight, punch-type aerifier on the greens. Our greens are only 5 to 6 years old, have a good soil mix, and do not need as much aerifying as old, compacted greens. Old, compacted greens should be aerified more often and top-dressed following aerifying to help amend the soil and relieve compaction. Whenever we aerify, we use 3/8-inch spoons or tines.

Our fairways are aerified twice yearly, in April and September. We use a tractor-drawn Grasslan model aerifier, using 3/4-inch spoons. We feel aerifying of fairways as often as possible is helpful in relieving compaction, which has become an increasing problem due to golf cart traffic. Tees should be large enough to move the tee markers frequently without having to use the same spot too often. Aerifying tees is very helpful in relieving compaction.

F. Drainage

Any low area, either on a green or fairway, will give nothing but trouble. On a green, the sod can be lifted, the area raised up level, and then resodded. For fairways, we have found it best to install 4-inch trenches with tile laid in the bottom of the trench and backfilled with pea gravel up to the level of the sod. This seems to work much better than

3-inch trenches filled with gravel without tile. Every golf course needs a small trencher to cut these narrow trenches.

G. Cup Changing

Cups should be changed frequently to prevent compaction, every day if there is heavy play. Some public courses change cups twice daily. If a cup is left too long in one place, compaction will result, the grass will show excessive wear, and this spot will be slow to recover. At Capital City, our regular schedule for cup-changing is Tuesday, Thursday, Saturday, and Sunday. Frequently in the past, we have had to change cups every day due to heavy play.

H. Thatch

At Capital City, we try to ease the job of thatch removal by the use of combs installed on our greens mowers. We set the combs down on Monday and mow in one direction. On Tuesday, the combs are set down and the greens mowed in the opposite direction. The combs are raised the rest of the week. We find this keeps the thatch under control. This is done every Monday and Tuesday throughout the growing season.

I. Top-dressing

We never top-dress our winter grasses. During the bermudagrass growing season (which, in the Atlanta area, is from 4 to 5 months), we try to top-dress once a month and use 1/4-inch top-dressing each time. We find most golfers hate top-dressing and if we are pointing for a tournament, we try to top-dress at least 2 weeks before the tournament.

J. Fertilization

At Capital City, we stick to activated sewerage-sludge fertilizer with the exception of one application of 0-14-14, which we apply at the time of overseeding in October. We apply the sewerage sludge about every 3 weeks throughout the year except that right after overseeding, we make weekly application^s for 5 to 6 weeks. These applications are at the rate of 20 lbs. to each 1,000 ft. or 1 lb. of nitrogen for each application. We will mix 5 lbs. muriate of potash to each 100 lbs. of sewerage sludge when soil tests show the need for potash.

K. Mowing

During most of the growing season, we mow at 3/16 except when the winter grasses are getting established. We start mowing the winter grasses at 3/8 and gradually lower the mowers down to 5/16 and cut at this height throughout the winter. When the weather breaks along in March, we start gradually lowering the height of cut until we get down to 3/16 and leave the mowers at this height until overseeding time in October. Our greens cutters are trained to mow in a different direction each time the greens are mowed. This tends to keep grain from forming. Also, they are trained to turn the mower off the green to avoid excessive wear on the green edge.

GOLF-COURSE CHEMICALS — YESTERDAY, TODAY, AND TOMORROW

John E. Gallagher
Amchem Products, Inc., Ambler, Pennsylvania

Yesterday

How far is yesterday? Many of you recall how very limited our arsenal of chemical weed killers was just 20 years ago. If we go back beyond 2,4-D, we had only the heavy metals, such as arsenicals, copper, iron and zinc, which at best provided marginal weed control and severe discoloration of the desired turfgrass. Turfgrass weed control, as with agricultural weed control, came of age with the advent of 2,4-D, which incidentally was used on lawns before research workers realized it could be used on crops.

In early turfgrass conference reports, two principles of management were almost uniformly stressed by agronomists. First, that these new aids be used with caution. They were not to be considered as panaceas; weeds would be killed, but the new herbicides had limits. Secondly, one should not lose sight of the importance of sound management. Good turf was produced before weed-control chemicals were available.

With each innovation, particularly one as dramatic as selective chemical weed control, there is a tendency for over-simplification of use and magnification of results. Many newer herbicides rode the glamour trail of 2,4-D, only to be shot down because too much was expected of them. In fairness to agronomists and manufacturers, this over-enthusiasm was not of their doing. Rather it was demanded by the more gullible

general public ready to over-react to the promise of each new miracle designed to reduce lawn maintenance to push-button operations. The professional turfgrass grower had already learned that miracles occur only on the seventh Tuesday of the month.

Despite this somewhat pessimistic attitude, the use of many herbicides has become routine. Think about some practices you now take for granted and ask yourself how you would handle the problem without herbicides. And while you are thinking of alternatives, keep in mind that most turfgrass installations are over-used and subject to intense wear that was not a factor 10 or 15 years ago.

Historically, we might list the following early innovations for turfgrass weed control. First is the phenoxy compounds, which have done such a thorough job of controlling the majority of broadleaf weeds. 2,4-D, 2,4,5-T and 2,4,5-TP (silvex) — each new compound did not supplant the previous one but rather complemented it, making it better in some way. It is an accepted concept among weed-research people that single, all-encompassing, broad-spectrum herbicides are the exception rather than the rule. Herbicides change weed populations, and combinations of several are needed to provide wide-spectrum weed control.

Secondly, we can list the many crabgrass-control chemicals which are proving effective. In answer to the question, "Is crabgrass here to stay?", Dr. Ralph Engel, of Rutgers, said, "While crabgrass is here to stay, it can be said just as firmly that it is no longer the threat it was 20 years ago. This weed is down and its threats will become less frequent."

The development of organic arsenicals has, for the most part, removed the guesswork from post-emergence treatment. Introducing the pre-emergence concept of crabgrass control offered the turfgrass manager one of his most efficient weed-control weapons, one that allows him to enter the season of maximum use with a well-established perennial sod free of the threat of annual invasion by crabgrass.

It could well be said of most of the major weed problems of the past that although they are still with us, the threat is no longer great.

Today

Think of a weed problem and we can come up with an answer. Admittedly, not a guaranteed 100% foolproof answer, but one which helps to solve the problem if used in conjunction with good, overall management. Let us start with Poa annua in this section because it is now considered to be the No. 1 weed problem. At least, turfgrass people are most vocal about it. We are not happy with our answers, but they can be used. Dr. Daniel, of Purdue University, worked out methods for using lead and calcium arsenate to control Poa annua. In the process, a great deal was learned about what not to do, but with an understanding of the phosphorus and temperature relationships, a predictable result is possible with minimum turfgrass injury. More recently, some of the pre-emergence herbicides, such as Betasan, are doing a fairly acceptable job of solving the Poa annua problem. Incidentally, have you ever considered how dangerous absolute control of Poa annua would be? Half the greens in the country would be down to bare soil if a one-shot treatment worked every time.

In the area of broadleaf weed control, dicamba has recently been added to our arsenal. This compound does an excellent job on knotweed, sheep sorrel, and a few other formerly difficult weeds, as well as chickweed and clover. Not that we did not have answers before, but by combining dicamba with the phenoxy compounds, we have made more effective mixtures that do a better job.

We have quite a variety of organic arsenicals for post-emergence crabgrass control. The entrance of Tuperan into the pre-emergence crabgrass-control picture offers the non-professional the opportunity to flout the agronomist by seeding in the spring and still getting a sod of only the turfgrasses planted. This selective seedling tolerance of Tuperan places it above simple pre-emergence.

Today we are much more conscious of the many ways chemicals can fit into the maintenance program. We use broadly selective and also more specific herbicides. We are using fumigants to renovate old sod and to prepare special turfgrass sites, grass-killers and sterilants where no vegetation is desired, and brush-killers to control undesirable woody plants and vines in the woods adjacent to roughs. It is hoped that we are using these herbicides as part of a total management program, expecting from them only that which they are designed to produce.

What was said by the agronomist of 20 years ago still holds today. Herbicides are not a panacea; weeds are indicators of a more deep-rooted problem, and complete control may require more extensive corrective measures. You still have to spread the wear, provide better drainage,

or add more fertilizer if irrigation leaches out the available nutrients.

Tomorrow

What do we have to look forward to in the way of new chemicals?

First, I am sure that there will be a more satisfactory answer for Poa annua control. I am equally sure that we will be able to come up with an answer for whatever weed takes its place as the No. 1 problem. I could predict that some day, you will have push-button turfgrass, but I don't really believe it. If that day comes, the most critical operation will be turning the "On" and "Off" switches of a giant vacuum cleaner. As long as we are dealing with live turf, we will have to provide intelligent managers.

The chemical manufacturer will be able to provide special formulations with controlled release for long- or short-range weed control. Liquid formulations will be designed to reduce drift and will probably be made with rapidly bio-degradable components to prevent residue buildup. The chemicals will be more specific and will have greater turfgrass tolerance.

Perhaps a more probable prediction is that a shift to contract spray operations will take place. With the drift-control design being built into spray equipment, aerial application could become a reality. Ultra low volume ground equipment, using a formulation directly from the can is already available. It would seem likely that the lag between golf course construction and enough trained superintendents may make it necessary

to have the work done by a qualified spray contractor. Whichever way the application method shifts, the turfgrass manager will still be responsible for deciding what to use and when it should be used.

Regardless of who applies the herbicide, the rules for safety will still hold. As the chemicals become more specific and application equipment more sophisticated, the proper care and handling of chemicals will become more important. A herbicide is a plant killer and must be respected as such. With closer tolerances, accuracy of timing, rates and volume of carrier will become even more critical and require great accuracy.

The future holds the promise of solutions for all major weed problems and the design change in equipment will provide for greater accuracy, but as long as we keep the human element in the equation, the potential for error will continue to exist. If weed control is afforded its proper place — that is, as a part of management and not a substitute for management — herbicide usage should be as common as fertilization and mowing.

FINANCING MAINTENANCE OPERATIONS

James W. Dudley
Greens Supervisor, Athens Country Club, Athens, Georgia

When Dr. Burton asked me to speak on financing the golf-course budget, my first reaction was to say that you go to the Board of Governors and try to hound them out of all the money you can and, of course, actually in the long run, this is what we are faced with. But on second thought, I believe that I may be able to shed some light on the problem by making an explanation of four areas that I think are important in financing the golf-course budget.

I. The first is the necessity of a budget. To illustrate, I have three slides to show you. The first, a copy of our 1952 budget, the first one I can remember ever preparing for our Club. Prior to this, it was a hit-or-miss proposition with us. Our expenditure for the year was \$17,500. Wages, if I remember correctly, were around 40¢ an hour and, I must also add, our golf course was not in very good condition. I think it is also interesting to note the first paragraph of the footnotes that indicates our first participation in the turfgrass program developed at Tifton. I believe all of us here would readily agree that Dr. Burton's work has given us many fine grasses and much progress since 1952.

The next slide is a reproduction of our 1956 budget. As you can see, at this point our budget had nearly doubled due in large measure to an increase in wages to approximately 90¢ an hour. You will also notice at this point, the format was enlarged to include more categories

of expenses and this indicates the influence of our auditing firm, Harris, Kerr, and Forster. To illustrate, this slide of Harris, Kerr, and Forster's annual report indicates how their different departments are set up. We try to copy this format so that our course can be accurately compared with others. As you can see, their average for the South for fiscal year ending May, 1967, was \$66,150, while our cost was \$61,267 — not much under, but enough to let the Board know we didn't waste all their money.

The next slide shows a reproduction of our actual expenses for 1967 and proposed budget for 1968. As you can see from the golf-course related portion of our budget, which are the expenses under my control, our golf-courses expenses have doubled again from 1956 to approximately \$62,000 in 1967 and a proposed \$68,000 in 1968.

With golf-course expenses increasing in these proportions, it is absolutely necessary for us, as golf-course supervisors, to know what we are doing and where we are going.

As far as the physical preparation of the budget is concerned, our procedures are in area 1, which includes salaries and wages. We go back to our previous year's employment records, ^{and} divide the rate by the dollars earned to find the number of hours worked by each employee. We then project the new wage scale (and I don't think I have to illustrate the point that for most of us, there has been a new scale each year) by the number of hours worked.

I think I should also bring to your attention the fact that our Greens Superintendent (at \$3,500) is actually 71 years old and semi-retired. However, he is a fine man and still wants to work, so we are glad to have him. He lives on the place in a rent- and utility-free house.

As far as maintenance and repairs are concerned, we go back 3 years and take averages and generally add 3% to 5% for inflation to each item. In this category, however, we take into consideration any large new equipment that may have been purchased which will not require a great deal of repairs for the first few years.

Other expenses are handled in the same manner -- that is, 3-year averages plus slight increases.

II. A second area, which we find has been a big help to us in financing the golf-course budget, is employee relationships. This slide shows the entrance to our shop. Our seven regular employees' length of service averages 9 years. The oldest has been with us 27 years and the newest 3 years. We have a Club insurance program in which they participate and our employee facilities are clean and adequate, as illustrated by this slide of our bathroom facilities, lunch and locker room facilities, and Bar-B-Que area. (This is a shot of Ralph, who is a fine Bar-B-Que cook.) This doubles for equipment and storage. We feel this atmosphere of caring about their physical needs has paid off for us.

III. The third area that I think is important to financing the golf-course budget is to plan your work, as this slide of our weekly work schedule illustrates. Of course, there are many times we must deviate from this schedule due to traffic and weather conditions, but we feel that to have a general work plan lets us look at the whole picture at one time and is a definite advantage.

IV. The last area that has been helpful to me in financing our golf-course budget has been to keep our men and equipment as mobile as possible. To illustrate, this slide shows the method and means by which we cut our greens and tees (slide 1). The golf carts are old (slide 2), but they get the job done. It gives us an opportunity to move the men fast, pick up the clippings, and doesn't jar the mowers the way transport wheels do. The next slide illustrates our method of cutting the fairways. We have approximately 60 acres and we get over them three times a week. Both pieces of equipment are hydraulically operated and, as you can see, we show no favorites — we have one of each make. The next two slides illustrate our method of cutting the roughs (slide of mowers at #10). Here again, we have found this type of equipment to be the simplest to operate in our fescue roughs among pine trees and, in addition, we have a 3-gang tractor-drawn, reel-type mower for open bermuda areas. The next slide illustrates mobility again in the method in which we clean up leaves and debris in the fall, and sticks and pine burrs, etc. in the spring of the year.

And so in conclusion, gentlemen, let me repeat again the first thing to do is to have a close relationship with the Board and get the money. But to get it, you must:

(1) Know what you are doing, (2) Follow a uniform system of accounts, (3) Have good employee relationships, and (4) Keep your people and equipment mobile.

At the price of labor today and what we are faced with in the future, I believe these are the most important factors in financing the golf-course budget.

COST OF BENT VS. BERMUDA MAINTENANCE

Panel Discussion

Moderator: James B. Moncrief, Agronomist, USGA Green Section,
University of Georgia, Athens, Georgia

Summary by Mr. Moncrief:

In the past, the feeling has been very strong that bent is too expensive to maintain and, therefore, bermudagrass has been used in areas where bentgrass could have been used. There have been failures in bent in the past which have discouraged country clubs from growing bent in the Piedmont area. In the Southeast, for the past 8 years, loss of bermudagrass and poor transition in the spring have caused a strong desire for a grass that does not have these problems. A grass which grows for 12 months is the most desirable, and bent comes close to fitting this description. In many instances, bermudagrass is overseeded for 8 to 9 months of the year but the critical time for bent is from about June 10 to September 10. For the rest of the year, bent is not a management problem.

We have two outstanding superintendents who will give the cost of their maintenance. Mr. Gene Baston, from the Savannah Inn and Country Club, will give his cost operation per 1,000 square feet on Tifdwarf and then Mr. Mel Warnecke, from the Riverbend Country Club in Atlanta, will give his cost of maintenance per 1,000 square feet on Penncross bent and Tifgreen.

PLANTING AND MAINTENANCE OF ORNAMENTALS

Gerald Smith

Extension Horticulturist, University of Georgia, Athens, Georgia

Golf course superintendents soon learn that most of the same factors that affect the growth of turf affect ornamentals, also. Here are some important factors that affect the growth and appearance of ornamentals in Georgia:

Location - Selecting the right shrubs for the location is quite important. Shrubs vary in their light requirements. For example, azaleas and camellias are excellent subjects for areas where there is moderate winter shade, such as that provided by pine trees. This type of shade offers considerable winter protection. Boxwoods also do best in semishaded areas in central and south Georgia. Many boxwood difficulties in these sections are more pronounced on plants in "hot" spots with excessive sunlight. Other shrubs will perform well only if located in open, sunny areas. Crape myrtle and roses are examples of ornamentals which have a high light requirement for abundant flowering.

Another consideration in locating plants is the drainage in the area. Few shrubs will grow satisfactorily if located in soils that hold an excessive amount of water. Azaleas and camellias are especially susceptible to these situations.

Planting - There is a definite relationship between the future growth of ornamentals and the planting practices followed. It is always desirable to dig a large hole prior to planting any shrub. It should be at least

2 ft. in diameter. For larger-growing shrubs and for ornamental trees, 3 ft. would be better. It is desirable to mix organic matter with the soil removed from the hole. Peat moss, pine bark, and leafmold are examples of excellent sources of organic materials. The usual ratio is 1/3 organic matter to 2/3 by volume of soil removed from the hole. The two materials should be mixed thoroughly so as to obtain the desired change in soil structure.

Planting too deeply is a common error. This can result in stunted growth or even eventual death of the plant. Therefore, plant no deeper than the shrub originally grew in the nursery.

Mulching - Mulching is a desirable practice for all shrubs in public areas. The major benefit is conservation of soil moisture during dry periods. Materials such as pine straw, pine bark, and slightly decomposed leaves are useful for this purpose. The mulch should extend out beyond the foliage mass of the plant and be 2 to 4 inches deep after settling.

Fertilization - Ornamentals are similar to turfgrass in their fertility requirements in that they respond to frequent but light applications. Split applications in March, May, and July will give much better results than a single, heavy application each year. This practice will also considerably decrease the possibility of fertilizer injury.

It is possible to fertilize satisfactorily all ornamentals in public grounds with a general-purpose fertilizer. A 1-1-1 ratio, such as an 8-8-8 or 10-10-10 analysis, is a useful general-purpose material.

It is not necessary to remove the mulch when fertilizing shrubs. Simply scatter the fertilizer evenly under the foliage mass of the plant. "Watering in" will reduce the possibility of fertilizer injury to the roots.

This is especially important following a heavy application of fertilizer.

Pruning - The ultimate appearance of a shrub depends upon the pruning practices followed. A few shrubs, such as boxwood and some of the Japanese hollies, present a pleasing appearance when sheared. Most shrubs, however, have a natural habit of growth which is destroyed when the growth is sheared evenly on the surface. A more desirable method of pruning most ornamentals is to remove individual long limbs back inside the plant with hand pruners. This method, if begun when the plant is young, is a fast method of pruning. It will not result in an unnatural appearance and will cause a minimum of interference to future flower or berry production.

PERSONNEL -- IN-SERVICE TRAINING

A Demonstration

Palmer Maples, Jr.

Charlotte Country Club, Charlotte, North Carolina

Summary by James B. Moncrief:

Management is the art of getting things done through people.

Does the superintendent spend enough time and effort training himself in the area of labor management? By improving efficiency in management, golf course superintendents will be able to maintain quality of service without substantial increase in the budget.

In order to obtain this goal, the superintendent will have to start with himself. Strict discipline for himself and a manual of his in-service training program for new employees, as well as old ones, is necessary. Planning is a very important factor. It takes much time and effort, beyond the daily duties of the superintendent to include all the phases he wants to include for improving employees.

The superintendent has a very unique situation for training personnel. As a rule, he has a small group which can receive personal instruction throughout the day. He has closer contact and should be able to motivate the worker much easier than when large numbers of people are involved.

What You Should Know About Each Employee

You should know every employee's full name, his wife's name if he is married, and it should be listed with his accomplishments, how

much schooling he has had, number of children and age of each, and his hobbies, if any. Capitalize on his interests to motivate him. Show an interest in his family. The more you can motivate him, the better job he will do for you.

Time and motion studies of equipment and men throughout the course should be coordinated so maximum efficiency of each employee is obtained. This is not always obtained unless handled properly. You may find that a different mower will do a better job after scrutinizing the operation thoroughly.

Testing an employee is always important. If they cannot write, an oral test is legitimate. Give each employee a test and a certificate to show that he or she has completed the training course.

Rewarding an employee is very important. If they do something very outstanding, time off or some useful object can be given. Reward each one for the most number of safe days or years of work without injury.

The PGA has a week of concentrated school for all potential class A members. Someday golf course superintendents will have to attend similar schools to be class A members.

Summary

Each job should be analyzed often to check efficiency of men and machinery. The superintendent will need to keep himself abreast of the latest developments and constantly scrutinize his attitudes for better management practices and public relations.

HOW BIG IS GEORGIA'S TURFGRASS BUSINESS?

Glenn W. Burton

Georgia Coastal Plain Experiment Station, Tifton, Georgia

No one knows how big the turfgrass business is in Georgia. But someone ought to find out.

In 1966, the Pennsylvania Turfgrass Council sponsored a turfgrass survey in Pennsylvania. It was conducted by the Pennsylvania Crop Reporting Service and was supported, in part, by the Consumer and Marketing Service of the United States Department of Agriculture.

The findings of this survey, summarized in Table 1, show that Pennsylvania has 963,624 acres in turfgrass and spends \$164,557,307 for maintenance annually. If every family laborer were paid for the work he does on his lawn, this maintenance cost would increase to \$231,114,614. In addition, it would take over \$333 million to replace the equipment required to maintain this turf. Fortunately, this equipment need not be replaced annually but replacement is frequent enough to cause State Secretary of Agriculture, L. H. Bull, to conclude that turfgrass is the largest single agricultural enterprise in Pennsylvania.

About three-fourths the size of Georgia, Pennsylvania supports about three times as many people. If Georgia supplies as much turf per capita as Pennsylvania (I believe it furnishes more), the turfgrass industry can be contributing over \$100,000,000 to her economy. This would rank turfgrass along with corn, peanuts, and tobacco as major agricultural enterprises in Georgia.

Table 1. Results of 1966 turfgrass survey in Pennsylvania.

Turfgrass area	No. of areas	Acreage in turfgrass maintenance	Salaries and wages pd. for maintenance	Annual maintenance costs (including salaries & wages)	Replacement value of turfgrass maintenance equipment
Home lawns	2,250,309	435,379	\$ 9,671,476 ³	\$ 53,010,428 ³	\$284,635,519
Schools	4,111	34,193	2,271,268	4,186,751	5,394,084
Sod growers	25	1,148	275,000	487,908	322,000
Golf	527	44,632	10,357,000	18,464,752	12,076,637
Airports	627	19,489	180,831	383,592	2,871,132
Athletic fields	1,952	165,920	23,423,982	24,790,381	10,409,988
Cemetery-Churches	14,838	65,584	6,690,225	11,277,294	5,658,901
Apartments	3,281	1,090	360,618	972,789	1,256,540
Motels - Hotels	1,819	3,929	881,168	1,833,490	2,706,951
Parks	1,503	56,163	37,862,696	44,165,565	5,267,444
All other types	7,652	10,884	604,481	1,134,361	2,959,172
State highways	97,000 miles	124,000	2,759,000	3,639,000	260,000
Turnpike	940 miles	1,213	193,747	210,996	80,000
		963,624	\$95,531,492	\$164,557,307	\$333,898,368

³ Does not include unpaid family labor valued at \$66,557,307.

ATTENDANCE ROSTER

ALABAMA

<u>Name</u>	<u>Affiliation</u>	<u>City</u>
Borland, Bob	Arrowhead Golf Club	Montgomery
Brown, Bill	Tieco, Inc.	Birmingham
Dickinson, Tommy	Willow Point Golf Club	Alexander City
Dickens, Ray	Auburn University	Auburn
Edmondson, Carl J.	Bonnie Crest Country Club	Montgomery
Goodwin, Gary	Hillcrest Golf Club	Birmingham
Green, John J.	Cumberland Lake C. C.	Birmingham
Jones, John	Tieco, Inc.	Bessemer
Lawrence, Doyle	Maxwell Golf Club	Maxwell Air Force Base
Moses, Cecil	Montgomery Country Club	Montgomery
Stewart, E. L.	The Knolls Country Club	Gordo

FLORIDA

Arnold, Charles, Jr.	Florida Tractor Corporation	Jacksonville
Brandreth, Ralph	Le Jeune Golf Course	Miami
Bryan, Joe	Zaun Equipment, Inc.	Jacksonville
Burt, Evert	University of Florida	Ft. Lauderdale
Caswell, Barry	Melbourne Golf & C.C.	Melbourne
Clarke, Stan	LaGorce Country Club	Miami Beach
Craig, J. M.	Gator Trailers Corporation	Jacksonville
Deatherage, A.M.	Daytona Beach G. & C.C.	Daytona Beach
Dilsaver, Carl E.	Miami Shores Golf Course	Miami Shores
Dye, Pete	Golf Course Architect	Delray Beach
Fortner, J. Leroy	Fla. Turfgrass Assn.	Sarasota
Hartwig, Lester H.	Amchem Products, Inc.	Tallahassee
Heine, Bobby	Boca Raton Hotel & Club	Boca Raton
House, Lee M.	Gadsden Country Club	Quincy
Hughes, James E.	City, Fort Walton Beach	Fort Walton Beach
Johnson, Lawrence	Buckner Sprinkler Co.	Jacksonville
Jones, Ralph J.	Wilson & Toomer Fert. Co.	Jacksonville
Kerwin, Walter S.	L. R. Nelson Mfg. Co.	Gainesville
Lites, Garry	Lake City Jr. College	Fort White
Lites, Larry	Lake City Jr. College	Fort White
Mascaro, Charles G.	Milwaukee Sewerage Comm.	Miami
McCartha, Harry	Florida Milorganite	Miami
Miller, Edward A.	Lake City Jr. College	Lake City
Monison, Oscar P.	Biltmore Golf Club	Miami
Morse, Austin R., Jr.	Riviera Country Club	Coral Gables
Ousley, J.E., Sr.	Ousley Sod Company	Pompano Beach
Proud, Roland	Textron, Inc.	Ft. Lauderdale

<u>Name</u>	<u>Affiliation</u>	<u>City</u>
<u>FLORIDA (Cont.)</u>		
Shepherd, Willie	Riviera Country Club	Daytona Beach
Sheff, Dick	Sheff Chemical & Supply	Bradenton
Smith, Carl K.	Palm Beach Country Club	Palm Beach
Svegal, Thomas F.	Dubsdread Country Club	Winter Park
Thacker, James H.	Lake City Jr. College	Lake City
Wells, W. S. (Bill)	W. R. Grace & Company	Ft. Lauderdale
White, Ralph W.	Southern Turf Nurseries	Lighthouse Point
Williams Horace	Riviera Country Club	Daytona Beach
Williams, James R.	924 S. Campbell Street	Daytona Beach
<u>GEORGIA</u>		
Armstrong, E. S., Jr.	Cowan Supply Company	Atlanta
Barnhart, George	Cherokee Town & Country Club	Atlanta
Baston, Gene	Savannah Inn & Country Club	Savannah
Baumgardner, T. M.	Sea Island Company	Sea Island
Bertrand, A. R.	University of Georgia	Athens
Bolton, J. E.	Ga. Tech Athletic Assn.	Atlanta
Boswell, Fred W.	City of Atlanta	Atlanta
Briguglio, Joseph P.	Glynco Golf Course	Glynco
Brodie, B. B.	Coastal Plain Exp. Station	Tifton
Bullock, R. J.	Ashcraft-Wilkinson Co.	Atlanta
Bullock, R. L.	U.S.M.C. Supply Center	Albany
Burns, Ernie H.	Evans Implement Company	Atlanta
Burton, Glenn W.	Coastal Plain Exp. Station	Tifton
Byrd, Willard	Willard Byrd & Associates	Atlanta
Cagle, H. M., Jr.	Druid Hills Golf Course	Atlanta
Carroll, Roy	U.S.M.C. Supply Center	Albany
Carter, R. L.	Coastal Plain Exp. Station	Tifton
Clay, Henry	University of Ga., Ext. Serv.	Savannah
Clements, Lee	Coastal Plain Exp. Station	Tifton
Cocke, W. W.	Douglas Golf Club	Douglas
Collingsworth, Roy, Sr.	Riverside Golf & Country Club	Macon
Cook, C. Joe	Cowan Supply Company	Atlanta
Cottle, Donald	Dixie Turf Farms	Ty Ty
Cowan, Charles G.	Cowan Supply Company	Atlanta
Danner, Charlie	Capital City Country Club	Atlanta
Dekle, C. I.	Forest Heights Country Club	Statesboro
Dennard, Otis L.	U.S.M.C. Supply Center	Albany
Derrickson, M. E.	Cherokee Golf & Country Club	Atlanta
Dexter, Lew	Jeff Davis Country Club	Hazlehurst
Donaldson, G. P.	Ga. Peanut Commission	Tifton

<u>Name</u>	<u>Affiliation</u>	<u>City</u>
<u>GEORGIA (Cont.)</u>		
Dudley, James	Athens Country Club	Athens
Dunning, Alvin W.	Augusta Country Club	Augusta
Ellis, Bobby G.	Robins Air Force Base	Robins AFB
England, Henry G.	City of Atlanta Parks Dept.	Atlanta
Erickson, R. J.	Ansley Country Club	Atlanta
Evans, Rufus	Dixie Turf Farm	Ty Ty
Fincher, B. A.	Stovall and Company	Atlanta
Flanders, C. Dyson	Sea Island Company	Sea Island
Fussell, George T.	Dalton Country Club	Dalton
Goodwin, J. Wayne	Lawn & Turf, Inc.	Conyers
Greenway, James L.	Kaiser Agr. Chemicals	Savannah
Hansen, Howard W.	Circlestone Country Club	Adel
Hassell, Grady T.	Lawn & Turf, Inc.	Conyers
Hayden, Harold H.	Cowan Supply Company	Atlanta
Head, Richard	Metro Lawn Services, Inc.	Marietta
Hendrix, Sammy	Evans Heights Golf Club	Claxton
Holden, Preston L., III	Vineland Chemical Company	Smyrna
Howell, D. B.	Athens Country Club	Athens
Inglis, David W.	Toro Manufacturing Corp.	Atlanta
Jensen, Ray	Southern Turf Nurseries	Tifton
Johnson, Bill	Coastal Plain Exp. Station	Tifton
Johnson, Dewey W.	Lawn & Turf, Inc.	LaGrange
Johnson, Marion E.	Savannah Golf Club	Savannah
Jones, Robert B.	Georgia Marble Company	Perry
Jordan, Alvin E.	Mystery Valley Golf Course	Lithonia
Kincaid, Ed	Lawn & Turf, Inc.	Tifton
King, Frank P.	Coastal Plain Exp. Station	Tifton
King, M. E.	Newton Croud	Griffin
Knowles, Carl R.	Ft. McPherson Golf Course	Atlanta
Kozelnicky, George M.	University of Georgia	Athens
Kraft, Art	Newnan Country Club	Newnan
Lake, John E.	Elanco Products Company	Lawrenceville
Lambert, Jimmy	Evans Implement Company	Atlanta
Land, Harold N.	Glen Arven Country Club	Thomasville
Lee, Harold	City of Atlanta Parks Dept.	Atlanta
Lord, A. E.	Palm Golf Course	Thunderbolt
Lott, S. S.	Route 1	Hazlehurst
Madden, Loyd	Marietta Country Club	Marietta
Mallard, John	Vidalia Country Club	Vidalia
Mason, Jack D.	Mason's Turf Grass Farm	Augusta
McGee, Bobby	East Lake Country Club	Atlanta
McGee, Tom	University of Georgia	Athens
McKendree, Marion	Sea Island Golf Course	Sea Island
McWhirter, Ben	Robins AFB Golf Course	Warner Robins
Moncrief, James B.	USGA Green Section	Athens

<u>Name</u>	<u>Affiliation</u>	<u>City</u>
<u>GEORGIA (Cont.)</u>		
Monson, Warren G.	Coastal Plain Exp. Station	Tifton
Moore, Hugh	Brunswick Country Club	Brunswick
Morcock, J. Cooper	Escambia Chemical Corporation	Avondale Estates
Morgan, Loy W.	Coastal Plain Exp. Station	Tifton
Neese, Jack	Columbus Country Club	Columbus
Newton, Preston	Georgia Experiment Station	Experiment
O'Neill, Robert W.	Fort Gordon Golf Course	Augusta
Parker, Ed M.	Columbia Nitrogen Corporation	Augusta
Patten, Robert L.	Patten Seed & Turfgrass Co.	Lakeland
Pendley, Jerry	City of Atlanta Parks Dept.	Atlanta
Perdue, Allen	Callaway Gardens	Pine Mountain
Poss, Robert L.	Russell Daniel Irrigation Co.	Tifton
Rampley, K. C.	City of Atlanta	Atlanta
Rhymes, W. W.	Mallinckrodt Chemical Works	East Point
Seawright, Clyde	Cowan Supply Company	Atlanta
Shields, E. A.	Standard Club	Atlanta
Shirley, Jim	Cross Creek Golf Club	Atlanta
Sisk, Robert A.	Swift and Company	Atlanta
Skinner, J. A.	Coastal Plain Exp. Station	Tifton
Skinner, Robert E.	Russell Daniel Irrigation Co.	Athens
Smith, Gerald	Univer. of Ga. Extension Serv.	Athens
Smith, Randolph W.	Jacobsen Manufacturing Co.	Atlanta
Stevenson, Jimmy	Pinecrest Country Club	Pelham
Storey, James	Warm Springs Fdn. Club	Warm Springs
Sumrell, Billy B.	Callaway Gardens	Pine Mountain
Thompson, A. A.	3095 Coral Way	Chamblee
Warnecke, M. J.	Atlanta Athletic Club	Atlanta
Wells, Homer D.	Coastal Plain Experiment Station	Tifton
Wheeler, Buck	Southern Turf Nurseries	Tifton
Williams, L. G.	Jekyll Island Golf Club	Jekyll Island
Willis, Jerry	City of Atlanta Parks Dept.	Atlanta
Wood, Hubert	Coastal Plain Experiment Station	Tifton
Zink, Harold L.	Fieldstone Golf & Country Club	Conyers

ILLINOIS

Walling, Robert	Roseman Mower Corporation	Glenview
-----------------	---------------------------	----------

INDIANA

Boyd, Edward E.	Evansville Country Club	Evansville
Ferguson, John P.	Evansville Country Club	Evansville

<u>Name</u>	<u>Affiliation</u>	<u>City</u>
<u>KANSAS</u>		
Rogers, C. D. "Buck"	Rogers Mfg. Co., Inc.	Olathe
<u>NORTH CAROLINA</u>		
Adams, James	Lumberton Recreation Dept.	Lumberton
Campbell, Don B.	Marine Corps Air Station	Cherry Point
Gray, James F.	Bur-Mil Country Club	Greensboro
Harris, Claude	Happy Valley Golf Course	Wilson
Lineberger, Abel R.	Gaston Country Club	Gastonia
Maples, Gene	Pinehurst Country Club	Pinehurst
Maples, Palmer, Jr.	Charlotte Country Club	Charlotte
McKenzie, Lloyd T.	Carmel Country Club	Charlotte
O'Donnell, Ed	Brook Valley Golf & Country Club	Greenville
Perry, Joe D.	Tryon Country Club	Tryon
Sessoms, Bobby	Lumberton Recreation Comm.	Lumberton
Sweet, Buddy	Biltmore Forest Country Club	Asheville
Sutton, W. C.	Walnut Creek Country Club	Goldsboro
<u>PENNSYLVANIA</u>		
Gallagher, John E.	Amchem Products, Inc.	Ambler
Mascaro, Tom	West Point Products Corp.	West Point
<u>PUERTO RICO</u>		
Paguaga, Felix C.	El Conquistador Hotel & Club	Fajardo
<u>SOUTH CAROLINA</u>		
Alexander Paul M.	Clemson University	Clemson
Carson, William D.	Sea Pines Country Club	Hilton Head Island
Duffee, William H.	Roundwood Corporation	Florence
Gordon, Clyde	Midland Valley Country Club	Aiken
Reid, Al	Ramar Labs & Southern Suppliers	Orangeburg
Warko, John R.	Litchfield Country Club	Pawleys Island
Willimon, Charles P.	Bonnie Brae Golf Club	Greenville
<u>TENNESSEE</u>		
Lawrence, Ken	Naval Air Station	Memphis
Moore, Tom, Jr.	Lookout Mtn. Golf Club	Lookout Mtn.
Stone, Hugh	Nashville Housing Authority	Nashville

<u>Name</u>	<u>Affiliation</u>	<u>City</u>
<u>VIRGINIA</u>		
Savage, Hurley	309 Mattox Drive	Newport News
Smith, R. L.	Giant - Vac Manufacturing Co.	Ashland

WISCONSIN

Wilson, Charles G.	Milwaukee Sewerage Comm.	Milwaukee
--------------------	--------------------------	-----------

PENNSYLVANIA

Amber	Amchem Products, Inc.	Gallagher, John E.
West Point	West Point Products Corp.	Mascaro, Tom

PUERTO RICO

Fajardo	El Condado Hotel & Club	Pagaza, Felix C.
---------	-------------------------	------------------

SOUTH CAROLINA

Clemson	Clemson University	Alexander Paul M.
Hilton Head Island	Sea Pines Country Club	Carson, William D.
Florence	Roundwood Corporation	Duffee, William H.
Aiken	Midland Valley Country Club	Gordon, Clyde
Orangeburg	Ramair Labs & Southern Suppliers	Reid, Al
Pawleys Island	Litchfield Country Club	Warko, John R.
Greenville	Bonnie Brae Golf Club	Williamson, Charles P.

TENNESSEE

Memphis	Naval Air Station	Lawrence, Ken
Lookout Mtn.	Lookout Mtn. Golf Club	Moore, Tom, Jr.
Nashville	Nashville Housing Authority	Stone, Hugh

22ND ANNUAL
SOUTHEASTERN TURFGRASS CONFERENCE
Tifton, Georgia

April 15-17, 1968

TOTAL REPRESENTATION FROM EACH STATE:

Alabama	11
Florida	36
Georgia	108
Illinois	1
Indiana	2
Kansas	1
North Carolina	13
Pennsylvania	2
Puerto Rico	1
South Carolina	7
Tennessee	3
Virginia	2
Wisconsin	<u>1</u>
TOTAL	188