



Better Turf for Better Golf

TURF MANAGEMENT

from the USGA Green Section

Trends in Management Practices in the Southeast

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In any form of activity a trend is usually caused by the pressure of desire for improvement. In the case of management practices on golf courses, the pressure is being brought about by golfers over the country who are constantly demanding a better quality golf course with less expenditure. There is a constant demand for economy in operation while at the same time Joe Blow wants to know why the second green is still lousy. This causes the never-ending "battle of the budget" which all golf course superintendents must face. Consequently, superintendents are constantly searching for better and better ways of doing things cheaper. The pressure by golfers to improve the golf course, and the superintendents' striving to keep abreast of new developments in the field, establishes a trend which is now bringing about quality golf courses in the Southeast—in fact, at present, golf courses in this area are better than they ever have been.

Soils

Many trends are being established at this time in all phases of golf course management. Let us start at the bottom—that is, with the soil. Recent research in soil physics has shown that the classic mixtures of former days are not the most effective media in which grass may be grown. In the last couple of years the old one-third sand, one-third soil, one-third

peat formula has been pretty well discarded in favor of a mixture with a high sand content. One reason for the failure of the old mixture is that more golf is being played than ever before and the greens are having to demonstrate more resistance to compaction than ever thought necessary.

Soils work done in Texas and California has indicated that, generally speaking, a good soil mixture should contain in the neighborhood of 60 to 75 per cent sand, 10 to 15 per cent topsoil, and the remainder, peat or some other source of organic material. Such a mixture is designed to give resilience, maximum resistance to compaction, and adequate water holding capacity, while still providing a porous media which will not hold excessive amounts of water.

It is easy to make a mistake in such mixtures. Soils materials, when properly mixed, make a good, non-compacting green. The same materials, when mixed in improper quantities, will make a good brick substitute. Wherever possible, those considering new greens construction should have the soil analyzed in a laboratory which can recommend the best mixture of materials to provide the desired putting green topsoil mixture. At present there is at least one commercial laboratory in the United States which does this type of work. The cost of

analysis is relatively small when one considers the terrific expense of building a green that should last permanently.

In connection with the matter of proper soil mixtures, one rather disturbing trend is becoming more and more evident as new golf courses are being built and others are in a rebuilding program. That is a tendency in many instances for the soil components, while in the proper proportions, to be very poorly mixed.

Three or four golf clubs in the Southeast have spent several thousand dollars rebuilding greens and two have spent a couple of hundred thousand dollars building new greens, only to face the reality of finding it necessary to rebuild all greens. In all these cases there was to be an "in place" mixture of the soil. That is, putting on the required sand, soil and peat, then mixing with a rototiller or disc. In none of these cases has this method succeeded. The end product was a layered condition which cannot be regarded as anything but trouble in the future. On one such course, when the cup is changed the bottom of the hole must be dipped out with a spoon. It is nothing but pure sand. All the peat and topsoil are in the upper two inches. This layered condition will eventually stop adequate water penetration and root growth. This kind of layer is usually deeper than an aeration tool will penetrate.

For a number of years experiment stations which have studied this problem have recommended that soils be mixed off the site and trucked onto the area, or at least mixed off the green before laying in place. This appears to be the only method which will assure the proper mixture of the topsoil components.

Grasses

Next on the list of trends come the grasses. The South is blessed with Bermudagrass, a well adapted species, which has many variations and lends itself very easily to fine turf production. To say that there are a number of new grasses available for putting green use does not nearly tell the story it did a few years ago. All progressive golf courses have made some movement toward the use of fine textured Bermudagrass for greens.

In Florida the Gene Tift selection is still being used in many cases, although many superintendents feel that the Everglades variety is giving a better surface

Good Housekeeping!

No, I'm not selling magazines, but would like to make a few choice remarks about equipment buildings and shops. All of us have seen shop buildings that were neat, clean, and orderly, with a place for everything and everything in its place. Almost invariably, when we leave such a shop to inspect the golf course, we find well maintained grounds. Conversely a dirty, cluttered shop full of dirty equipment frequently is a good indication that we will see areas that are not well maintained.

Good equipment, at best, is expensive and deserves proper maintenance, care, and protection. We all know that well maintained equipment is the cheapest route regardless of its initial cost. Our equipment, whether new or old, inexpensive or expensive, deserves the best of care. It all starts with **GOOD HOUSEKEEPING.**

From Turf News of Texas

and is equally as easy or easier to maintain. Tifgreen Bermudagrass has been used throughout the southern and southwestern United States, and its use is continuing to grow. This phase of fine turf production is now only one-third of the story.

The improved Bermudagrasses are being increasingly used on fairway and tee turf, and their popularity probably will continue to grow. Ormond Bermudagrass is being introduced into many golf course fairways and tees in Florida. It is unfortunate that this grass has not demonstrated sufficient winter hardiness for use in the upper South.

In many areas of the upper South, U-3 Bermudagrass is being used to replace bluegrass and fescuegrass which have not withstood the hot summers. At present, in the mountains of North Carolina and Tennessee programs have been set up to introduce Bermudagrass into weedy fairways to replace poor bluegrass turf.

Tiffine and Tiflawn are finding a place on many golf course tees throughout the

Georgia, Alabama, and Carolinas area. They are tough enough to withstand the heavy traffic, but in these areas the season is short enough that they do not develop the extreme thatch that they do in the Florida area.

Also worthy of mention is the trend in planting Bermudagrass. The planting of greens is quite an operation, and if the golf course crew is assigned the task, some phase of golf course maintenance usually suffers. This fact has brought about the contracting of planting jobs, which has, on the whole, been very successful. Thus the golf course can be maintained up to the original standard without any interference. Contract planting is also faster since machines have been developed to rapidly broadcast plant the greens.

A machine for the vegetative planting of fairways has been developed in Missouri and it has proven very successful in the planting of Bermudagrass. This machine plants directly into sod and leaves no ridges or valleys to interfere with subsequent maintenance or with the lie of a golf ball. Such a machine was used in Athens to replant Bermudagrass in bare areas following the treatment for dallisgrass. On one area there was 100 per cent dallisgrass, and after it was eradicated no Bermudagrass was present. This machine was used to replant such areas, and an excellent stand of Bermudagrass resulted. In such areas where plowing up or discing would be detrimental to the play of golf, these machines have a definite place of usefulness.

With respect to grasses, there is another trend in the Piedmont areas of Georgia, Alabama, and the Carolinas. For several years some clubs in the high altitude areas of Tennessee and North Carolina have been growing bentgrass for putting greens successfully. Charlie Danner in Nashville has proved that it could be done also at lower altitudes where the temperature and humidity remained fairly high all summer. In Chattanooga there are now three private clubs which have bentgrass greens.

Recent cold winters followed by troublesome transition periods in the Atlanta area have caused many clubs to try bentgrass in that area. At present there is one 18-hole golf course on which Pennncross bentgrass is being used on all

greens. This past summer some difficulty was experienced but this was primarily because of poor construction. At any rate, the club will soon have 18 good greens. On the East Lake course in Atlanta a program has been undertaken to change the east course entirely to bentgrass.

Mr. J. W. Dudley, Green Committee Chairman at the Athens Country Club, Athens, Georgia, has become interested in the possibilities of bentgrass. Mr. Dudley's interest and cooperation has permitted the setting up of a controlled bentgrass experiment to ascertain which variety is best adapted to the conditions which exist in Athens. All major types of bentgrass, given the best possible soil in which to grow and maintained as well as our "know how" permits, will be evaluated. After several years we should know which grass will perform best under the widest range of conditions. This same type test is being carried on in Birmingham under the supervision of B. P. Robinson and at Pinehurst under the supervision of Henson Maples. This distribution of test areas will also give us an idea of the possibilities of bentgrass throughout the upper South.

In the first paragraph of this article, economy was mentioned. Now we speak of bentgrass. Are these two subjects compatible?

In computing the cost of these grasses as a winter overseeding, it was found that it is usually no more expensive to grow bentgrass in the winter time than ryegrass—as a matter of fact, we figure on coming out with less expense in the long run. The high price per pound of bentgrass is balanced by the low seeding rate. When ryegrass costs about 12 cents per pound and is seeded at about 50 pounds per 1000 square feet the cost is about \$6.00 per 1000 square feet. If bentgrass costs \$1.20 per pound and is seeded at four or five pounds per 1000 square feet, the total cost is no more than that of ryegrass.

Another thing which favors bentgrass is its similarity in texture and growth to the fine leaf Bermudagrasses into which it is to be sown. One other factor should be considered. As the weather warms in the spring, the bentgrass will go out more slowly and give a much more gradual transition period than will ryegrass

which may be here today and gone tomorrow. In Athens a test area was overseeded with Seaside bentgrass and some bent remained all summer in spots where Bermudagrass was not present. Extremely cold weather caused severe damage to the Tiffine Bermudagrass greens and in this particular instance there were no bare spots in the test area at any time during the summer. It is thought that by judicious use of vertical mowers, together with proper fertilization in the spring, the Bermudagrass can be encouraged while enough bentgrass is maintained to provide good color and a good putting surface.

Fertilizers

Let us now leave the grass and discuss what makes it grow. The use of fertilizer continues to increase in all areas. It has been found, in the last few years, that as a result of maintaining a high fertility level throughout the golf course there are less weeds to fight, there is less damage by dry weather, and the golfers are much happier because they see a dark green densely turfed golf course.

Some of the fertilizers available are standard materials that have been used for a long time. These are supplemented by many new materials which have various qualities which give them an advantage. All of the fertilizer types are being used more effectively because there is a better understanding of their behavior. Without going into the pros and cons of the materials, it seems that all have a place in golf course maintenance as long as they are used in the manner in which they are supposed to be used.

Pest and Disease Control

In the field of turf management a great deal may be said about pest controls. First, let us consider insect control. One of the chief characteristics of fine leaf Bermudagrass is its density, which readily discloses any damage done to the turf. Couple this with a soft and succulent type leaf and you have trouble with insects.

Tifgreen Bermudagrass seems to be the leader in this category. Never in the annals of Bermudagrass turf has there been a grass so inviting to all types of worms. Sod webworms, cutworms, and army worms run rampant on this grass. Recently there has been a report from

Arizona that rabbits, given free choice over all Bermudagrasses, pick Tifgreen three to one. Sod webworms and cutworms are by far the greatest enemies of Tifgreen, and they must be treated accordingly. The infestations have been so frequent that many superintendents feel they should spray all greens at least once a month from June to August or September as a preventive control of these pests. They are easily controlled, but the material must be applied while they are active.

In disease control, Pythium still seems to be the major problem. This disease, which attacks the seedling winter grass, spares nothing and can encompass an entire green overnight. Dr. Homer D. Wells at Tifton has probably done more research work on this disease than anyone else, and so far has come up with no absolute answer although he is investigating two new materials which show strong promise of control. At present the recommended treatment is one pound of Captan 50-W and the regular recommended rate of Actidione per 1000 square feet at the time of planting. Subsequent treatments should contain only half this amount of Captan.

In the area of pest control probably the greatest strides have been made in the control of weeds. Disodium methyl arsonate has proven to be one of the greatest herbicides for golf course weed control since the discovery of 2,4-D. In fact, the combination of these two materials probably has done more toward cleaning up weedy golf courses than any other material since the game was invented. This combination of materials has proven effective against almost all weeds found on golf courses including crowfoot. While disodium methyl arsonate is expensive, the improvement in playing conditions justifies the expenditure. The cost of hand weeding is far greater than the cost of materials for chemical control.

The most successful rate of application seems to be four pounds of anhydrous disodium methyl arsonate plus one pound of 2,4-D per acre applied twice at seven day intervals. This usually takes care of about 90 per cent of the weeds. The remainder is usually taken care of with a follow-up spot spraying. Experience indicates, however, that spot sprayings

usually result in application of excessive material, so the greatest damage to Bermudagrass comes in the third treatment where more than the required amount is applied.

Another observation of interest is this. It was found that Tifgreen Bermudagrass is more susceptible to 2,4-D damage than most other Bermudagrasses, and about one-half ounce per 1000 square feet is all that should be applied at one time.

The most desirable time to control weeds is at the time of their germination. An old favorite insecticide, chlordane, shows great promise in pre-emergence control of crowfoot. In experiments at Rutgers University, it has been found that heavy applications of chlordane would effectively control the germination of crowfoot seed.

On a bentgrass green in Chattanooga it was found that the application of two pounds per 1000 square feet of actual chlordane controlled 95 per cent of all crowfoot seedlings. It is thought that under most circumstances one and one-half pounds per 1000 square feet will be adequate. Lead arsenate, when used at a rate of 10 pounds per 1000 square feet may increase this effectiveness. Because the activity of soil organisms decomposes chlordane and related compounds, the material should be applied shortly before the germination of crowfoot is expected. This application kills the seed as they germinate—so that few plants will ever be seen in the turf. The bentgrass was not damaged at the two pound level and it may be assumed that no damage will be seen in Bermudagrass turf either.

Knowledge

The final and most encouraging trend to workers in experimentation and extension is that of increasing attendance at educational meetings. In the Southeast we now have five bona fide turf conferences—Gainesville, Tifton, Memphis, Charlotte, and Knoxville. These are, of course, in addition to the regular meetings of superintendents' associations.

The increasing attendance at all these meetings shows a desire for better management on the part of the superintendents themselves. Through this type of self-education we can see no end other than the continued betterment of golf courses and playing conditions in the Southeast.

COMING EVENTS

- August 4**
U.S.D.A. Turf Field Day
Plant Industry Station
Beltsville, Md.
Dr. Felix V. Juska
- August 6**
Rutgers Turfgrass Field Day
Rutgers University
New Brunswick, N. J.
Dr. Ralph E. Engel
- September 9**
Penn State Turfgrass Field Day
The Pennsylvania State University
University Park, Pa.
Dr. Joe Duich
- September 14-15**
Midwest Regional Turf Foundation Field Day
Purdue University
Lafayette, Indiana
Dr. William H. Daniel
- September 15-16-17**
University of Florida Turfgrass Management Conference
Dan McCarty Hall, University of Florida
Gainesville, Florida
- September 17 and 18**
28th Annual Golf Course Superintendents' and Turfgrass Field Day
University of Rhode Island
Kingston, R. I.
- September 23-24-25**
Northwest Turf Association Conference
Washington State College
Pullman, Washington
Dr. J. K. Patterson
- September 28-29**
Utah-Idaho Turf Conference
Twin Falls, Idaho
Mr. Jay Richardson
- September 29**
St. Louis District Field Day
Sponsored by St. Louis District Golf Association and Mississippi Valley Golf Course Superintendents Association
- October 1-2**
Arizona Turfgrass Conference
University of Arizona
Tucson, Arizona
Mr. Joseph S. Folkner
- October 5-6**
New Mexico Turfgrass Conference
New Mexico A. & M. College
State College, N. M.
Prof. C. E. Watson
- October 8-9**
Rocky Mountain Turf Conference
Colorado State University
Fort Collins, Colorado
Prof. George A. Beach
- October 21-22-23**
10th Central Plains Turfgrass Conference
Kansas State College
Manhattan, Kansas
Dr. Ray A. Keen
- November 16-20**
Fifty-Second Annual Meeting of American Society of Agronomy
Netherlands-Hilton Hotel
Cincinnati, Ohio