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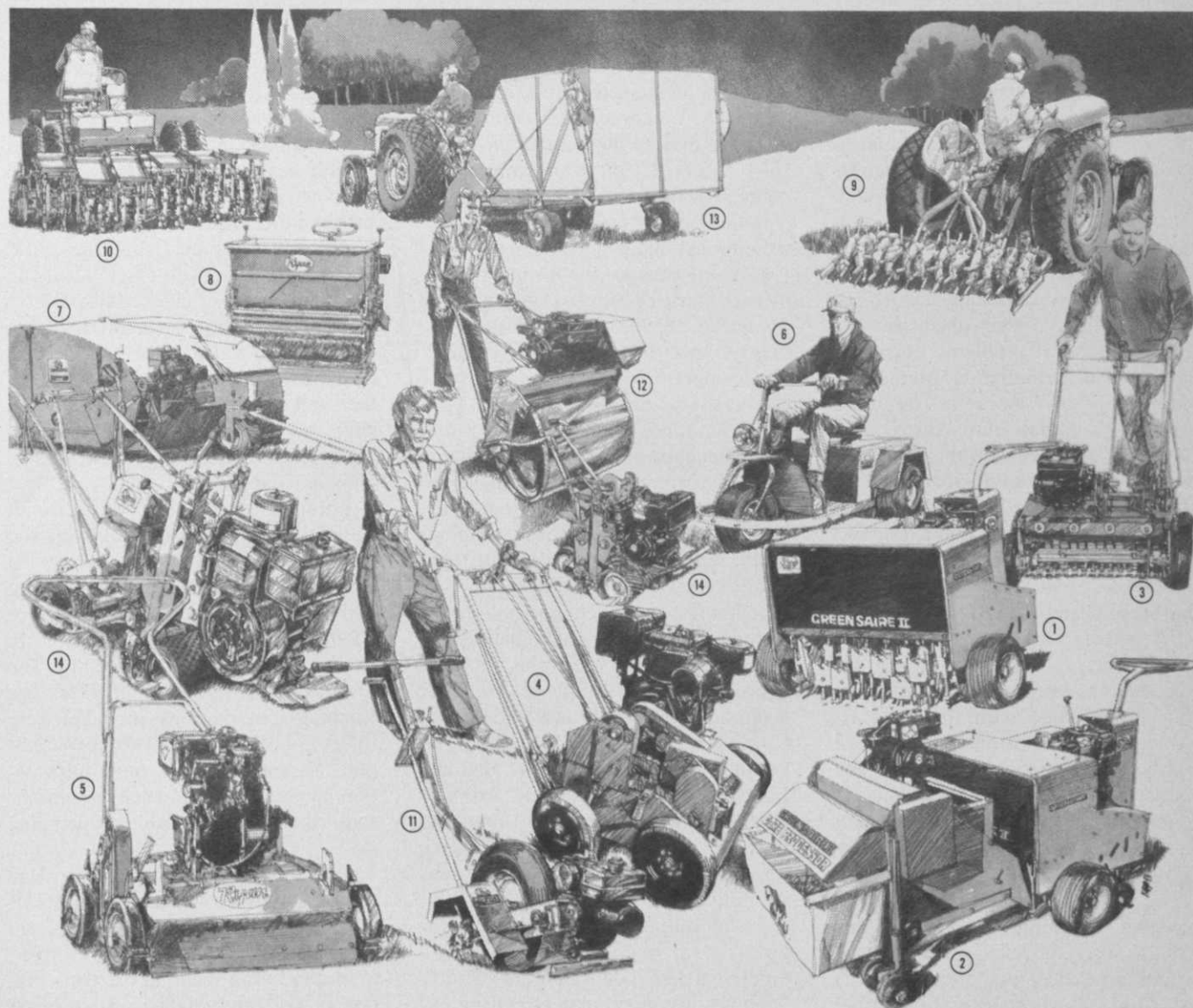
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NGF report

NGF PLEDGES CONTINUING SUPPORT TO MUNY COURSE DEVELOPMENT

ARLINGTON, HTS., ILL.—In kicking off this year's winter conference agenda in the Windy City suburb, Don Rossi, executive director of the National Golf Foundation, placed special emphasis on daily fee and municipal golf facility development, although the meeting warmed up with general overviews of the state of the industry presented by some distinguished guest speakers.

The conference, which ran from January 2 to 6 at the Arlington Park Towers Hotel, was highlighted by some encouraging remarks from guest speaker, Mark Cox, executive director of the Professional Golfers' Assn., who pledged to NGF his association's continuing support and cooperation. Cox said that in the past many efforts of both organizations had somewhat overlapped, particularly in the areas of teaching and junior programs. The Professional Golfers' Assn., said Cox, will work toward better communications with the National Golf Foundation in the coming years to avoid duplicating their respective energies where it is unnecessary.

Other guest speakers included Dr. James R. Watson, vice president, The Toro Company, who discussed the effect of several problems, such as the energy crisis and inflation, on the golf industry; Ken Emerson, executive director, National Club Assn., who informed attendees of the status of current greenbelt and other pending golf industry-related legislation; and Glen J. Hartung of the Walden Investment Corp. and treasurer, Rolling Green CC, who spoke on budgeting and financial reporting for clubs.

In stating the "Industry Viewpoint," as Dr. Watson titled his presentation, he professed confidence that all involved with the turfgrass industry will continue to produce highly satisfactory recreational and aesthetic turf facilities. He pointed to the energy crisis as one of the major factors contributing to uncertainty among golf industry people and outlined some problems that can be expected in the months ahead. Some of these were: 1) delays in delivery of certain products—both whole goods and parts; 2) shortages of fertilizer materials and an increase in their cost

along with most other materials and supplies; 3) shortages and delays in delivery of petro-chemical products, particularly polypropylene derivatives; 4) tighter budgets and higher prices in general, and 5) increased usage of all turf facilities resulting from a shorter work week.

Leading off on the heart of the agenda (municipal course development), NGF consultant, Harry C. Eckhoff presented a digest of Federal aid programs for public golf/recreation complexes. "The tremendous growth in public golf courses reflected by their whopping 64 per cent increase since 1961," said Eckhoff, "brings clearly into focus the trend in golf course development in recent years that golf no longer belongs solely to the few. It is everyman's game." He stated that population growth, urbanization, more leisure time and increased personal income and mobility were among the myriad factors responsible for the increased pressure on public recreation facilities including golf courses. A good solution to the demand problem, said Eckhoff, is more municipal courses owned and operated by cities, counties and states or regional park-recreational districts.

Eckhoff stressed the need for "municipal courses" because land costs and operating expenses, including rising taxes, make it increasingly difficult for member-owned clubs and private courses to survive financially in many communities. He added that more financial resources are available to municipalities. Among them are the sale of general obligation or revenue bonds, Federal grants, private development with leaseback and outright public or private donations.

Eckhoff listed such possibilities of Federal assistance to municipalities as: 1) Legacy of Parks: Surplus Property programs; 2) Bureau of Outdoor Recreation Grants/Land and Water Conservation Fund; 3) Commercial Public-Service Facilities on National Forests; 4) Farmers Home Administration Loan Programs; 5) Community Facilities Loan Program; 6) Revenue Sharing, and 7) Small Business Administration Loans.

In his discussion of the role of the golf car at private, daily fee and municipal golf courses, Larry Smith, NGF facility development consultant, stated that golf car rentals are presently

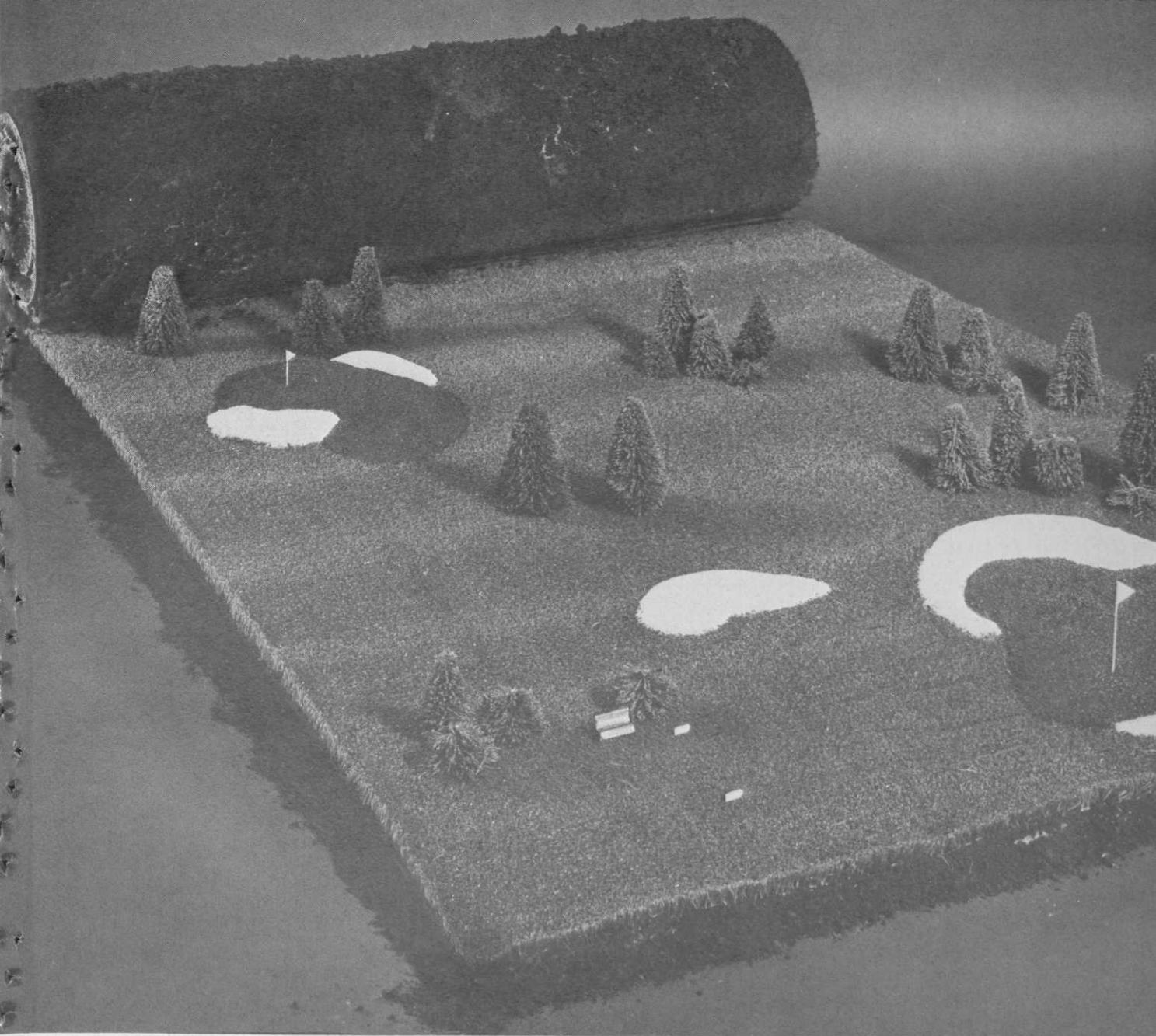
the fastest growing source of revenue for private clubs and many daily fee facilities. "At municipal courses," said Smith, "park directors and executives are finding out there is a real market for them, and more and more are adding golf cars to their courses or increasing the sizes of their present fleets. The extra income, when channeled to a golf professional in the form of either a full or partial concession," added Smith, "often means the difference between being able to afford a professional or doing without one."

NGF facility development consultant Mike Sheridan presented some of the problems responsible for the acute membership problems being experienced by private country clubs, ranging from inflation and its residual effect to taxation and general member apathy regarding the radically changing socio-economic environment in which clubs are operating.

The other facility development staff members delivered highly informative, though in some cases, specialized presentations on virtually every facet of golf course development with Fred Stewart discussing the delicately balanced relationship between the architect, contractor and the club; Sheridan D. Much telling of increasing weekday play on public courses; Jerry Claussen holding forth on the role of the golf course in real estate development; Buddie Johnson studying the sanitary land fill as a golf course site; and George Kerr rounding out current information on irrigation systems utilized in golf facilities.

Lorraine Abbott, NGF Director of Educational Services, spoke on the variety of National Golf Foundation educational service programs aiding 700 clinics and golf workshops for 74,000 participants, conducted in virtually every state of the country. The increasing importance of effective teaching methodology in developing future golfers, says Abbott, has caused golf instructors to seek more information on techniques in teaching and has sparked them to improve their personal skills.

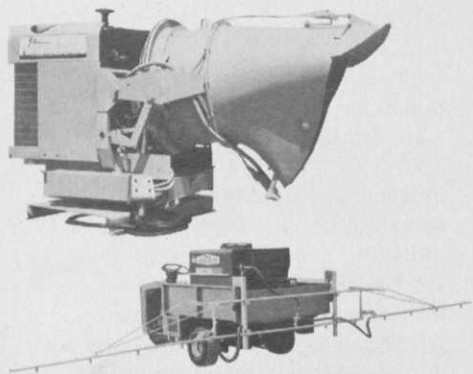
NGF Public Relations Director, Ben Chlevin, outlined current National Golf Foundation publicity and promotional programs to keep the industry informed of strides being made in the perpetuation of golf and challenges yet to be met. □



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DR. FRED V. GRAU

ANSWERS TO TURF QUESTIONS

MINIMUM MAINTENANCE

Every once in a while, a turfgrass conference will schedule a session called, "Back to Basics." Surprisingly, these sessions are usually jammed. The top-drawer superintendents attend, "just to brush up." Others come to learn the basics that somehow escaped them earlier.

Now, in everyday maintenance, we need to consider the basics. Frills are out. In the energy crunch, we need to remind ourselves that the farmer and food production represent the number one priority. Recreational turf is necessary, but not as critical.

One of the basics for turf is financial support of the entire program, which includes research, teaching and extension. An economy of shortages demands attention to alternatives. Research is essential to the discovery of alternatives that work, but research costs money. Everyone—clubs, firms, associations, individuals—should give financial as well as moral support to this program. In several states, programs are funded through the turfgrass council. Some states have turfgrass foundations. Each is dedicated to providing financial support to their respective state programs.

Teaching is essential to train turfgrass managers in the basics of establishing and maintaining all kinds of turf. We must continue to discover and develop leadership.

Extension is vital to the industry. It is the means whereby discoveries are carried to the field at no additional cost to taxpayers. In many states, the extension service is understaffed and overworked. As more clubs, firms and others join their state councils, there will be more money to encourage hiring additional personnel. Tax funds do not meet the needs.

At one time, research was funded in large measure by grants-in-aid from firms, which had made a product that

needed testing. These firms used the results to help sell their products. This source of funds has nearly dried up. Now, those who hope to benefit must consider supporting research programs or being denied the benefits.

One of the basics in a golf course budget is an item to send the superintendent to two conferences: 1) state or regional and 2) national. There should be included in the budget another standard item, which could be headed, Research and Education. If this item were to receive board approval, it would automatically be renewed each year. What a boost it would be to underfinanced turfgrass programs. But boards of directors usually act on requests from the chairman of the green committee and the superintendent. One has to ask in order to receive.

Q—Our club would like to participate in support of the turfgrass program in our state, but we don't know where to send our check or how much is our share. Whom do we contact?

(Pennsylvania)

A—Your check in the amount of \$100 would be drawn in favor of The Pennsylvania Turfgrass Council and sent to the treasurer, David M. Boyd Jr., Rte. 1, Box 5A, New Wilmington, Pa. 16142. This buys your club a Sustaining Membership in the council and entitles your superintendent to membership and to the quarterly Keynote at no additional cost. The Keynote carries valuable timely information. Clubs in other states would do well to contact their county agent and the extension specialist in turf to learn the details. A call or a note to the agricultural experiment station can accomplish the same purpose.

Q—We are anticipating a shortage of water for our golf course. There may be enough for only the greens and

tees. Is there anything that we can do to prepare for it? *(New York)*

A—I hardly know how to reply, because I do not know anything about your past management practices or the type of turf you have developed. If your fairways are heavy with *Poa annua* we can be quite sure that you will lose much (or all) or it. If bluegrass and fescue are strongly in evidence, you have a chance to survive. Several things will help: 1) thorough soil cultivation to improve rainfall penetration and reduce runoff; 2) heavy liming (if needed) to bring soil pH levels to 6.8 or 7.0 (neutral); 3) get board approval to raise the mowers to about 1½ inches (3.8 cm.), which will permit deeper rooting and, thus, better drought survival; 4) post a notice on the bulletin board that preferred lies are permissible; 5) mow less frequently; 6) consider cutting in (overseeding) seeds of drought-tolerant grasses (fescues, bluegrasses) at the appropriate times; 7) increase the potash content of your fertilizers (sulfate of potash, if available).

Q—Please tell me the best way to go about getting zoysia established from seed. How much is required per acre? When is the best time to plant it?

(Delaware)

A—Twenty pounds of seed per acre is enough to ensure a stand. Early July (start of hot weather) is the most favorable time to plant. A scarifier-seeder is highly recommended to place the seeds in contact with the soil. Pre-germination is highly recommended to start the plants off quickly. Mix the seed with sifted sawdust (equal parts), moisten and pile on a clean, warm cement floor. Turn the pile every day, moisten as needed, until tiny white sprouts begin to emerge. Now blend the lot with a granular ureaform or sewage sludge (equal parts) and seed at once. Adjustment of the seeder will

continued on page 17



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GRAU from page 14

be necessary to allow for the diluents (carriers). Do not expect rapid coverage as with hulled bermuda. Zoysia is relatively slow, but it's permanent.

Q—If bermudagrass is as drought tolerant as we are led to believe, why is it that so many bermuda fairways are watered so much? (Oklahoma)

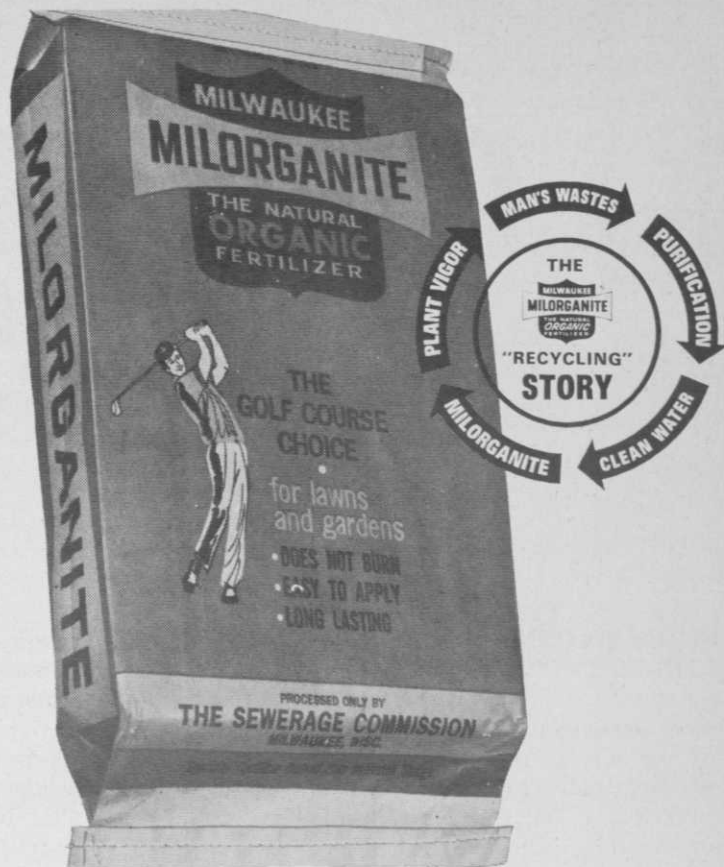
A—One reason is appearances. We have built up an image of "green-equals-perfection," which is only partly true. Perfection in fairway turf means smooth, dense, closely-clipped turf that holds up a ball for a true shot. Color is quite secondary to the game of golf. Adequate nitrogen is every bit as important to quality in fairway turf as is water. I've seen bermudagrass turf hold a reasonable green color after 90 days in Texas summer heat. It was well fertilized and retained its playing quality. Twenty-five years ago, I was in Detroit hitting shots from different kinds of fairway turf with Al Watrous and Horton Smith. We agreed that the best controlled shots were hit from dry, firm unwatered patches of red fescue. Good golfers do not like soft lush turf, which lets the ball sink into the grass. It could be that we need to reassess our values and redefine priorities.

Q—We hope to establish zoysia fairway turf from seed. Can it be over-seeded with cool season grasses the same as with bermudagrass? (North Carolina)

A—Yes, zoysia can be overseeded with a high degree of success. It will be very important to mow closely ($\frac{3}{4}$ inch or 1.9 to 2.0 cm.) and to cut the cool season seed through the turf into contact with the soil. Every since I saw my first zoysia in 1931, I've noticed that bluegrass acts like a "weed," if one tried to grow pure zoysia turf. What I'm saying is that bluegrass invades naturally. The most conspicuous winter weed in zoysia turf will be wild onion or garlic. □

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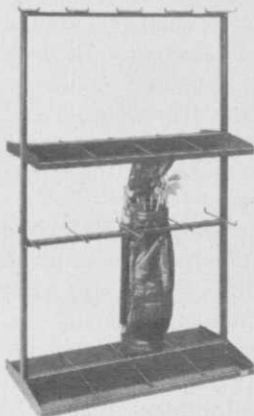
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DR. JAMES B. BEARD

TURFGRASS RESEARCH REVIEW

NITROGEN CONTRIBUTES TO THATCH ACCUMULATION

Thatch accumulation in bermudagrass turf in relation to management. V. H. Meinhold, R. L. Duble, R. W. Weaver and E. C. Holt. *Agronomy Journal*. 65(5): 833-835. 1973. (from the Soil and Crop Sciences Department, Texas A&M University, College Station, Tex. 77843).

The objective of this investigation was to determine the effects of fertility, fungicide and clippings on thatch accumulation in a Tifgreen bermudagrass turf. The experiments were established on a mature turf that had been maintained under putting green conditions. A split plot design with three replications was utilized.

The three main plot treatments consisted of (a) alternate fungicide applications of Fore and Tersan OM applied at two week intervals, (b) regular mowing with clippings returned and (c) clippings removed but no fungicide applied. Subplot fertilizer treatments were then superimposed over these three main plot treatments. Included were (a) two nitrogen sources (ammonium sulfate and activated sewage sludge) each applied every two weeks at 0.5 and 1.5 pounds per 1,000 square feet and (b) potassium chloride applied every four weeks at rates of 0 and 1.5 pounds per 1,000 square feet. The duration of the experiment lasted from May 15 to October 23.

The effects of various cultural practices were evaluated by measuring (a) total thatch accumulation, (b) lignin content of the thatch, and (c) soil microbial activity. Total thatch accumulation was determined by taking eight random plugs from each subplot and physically measuring the depth of

the thatch layer. Chemical analyses of lignin content were made three times during the experimental period on two inch diameter plugs. The soil microbial activity was measured on one-inch diameter soil plugs taken from the individual plots. The live vegetation was killed with cacodylic acid prior to measurements of carbon evolution. Finally visual ratings of turfgrass quality were made, particularly of color and scalping tendency.

Results of this study reveal that the higher nitrogen level increased thatch accumulation by 30 per cent and the lignin content of the thatch by 15 per cent. At the same time, the higher nitrogen levels resulted in reduced microbial activity compared to the lower nitrogen level. In comparing the two nitrogen sources utilized in the study, the activated sewage sludge decreased thatch accumulation and lignin content and at the same time increased microbial activity compared to the effects of the ammonium sulfate treatments. Differences between nitrogen sources were attributed to differentials in the rate of nitrogen release which in turn affected the shoot growth rate. The two potassium levels had no effect on thatch accumulation, lignin content or microbial activity. The lack of a potassium response could be partly attributed to the adequate soil potassium levels already existing on the experimental site at the time the experiment was initiated.

The fungicide program decreased thatch accumulation by 16 per cent and the lignin content by 20 per cent whereas the microbial activity increased by 30 per cent. The fungicide treated plots were not as dark green as the other plots and were not as prone to scalping. The authors attributed the

reduced thatch accumulation to a fungicidal inhibition of shoot growth.

Those cultural treatments that produced the greatest thatch accumulation and highest lignin content also had the lowest rates of carbon evolution. The return of clippings did not influence the quantity of accumulated thatch. However, thatch accumulation and rate of shoot growth were enhanced where clippings were returned. Scalping was also more severe where clippings were returned. This was attributed to the greater shoot growth rate resulting from the recycling of nitrogen in the clippings. The authors concluded that slow release forms of nitrogen applied at a level to maintain acceptable turfgrass quality, but avoiding excessive shoot growth rates, may be utilized to reduce the thatch problem.

Comments: Thatch is defined as a tightly intermingled layer of dead and living stems and roots that develops between the zone of green vegetation and the soil surface. Thatch accumulation occurs when the rate of shoot growth and resultant dry matter accumulation above the soil surface exceeds the rate of organic matter decomposition. Thatch usually has a higher lignin content because this compound is very resistant to decomposition.

Thatch that accumulates to an excessive degree has many undesirable characteristics which far exceed the benefits. Specific difficulties associated with excessive thatch accumulation include (a) increased proneness to scalping, (b) enhanced disease development and insect problems, (c) proneness to localized dry spots, (d) chlorosis or yellowing, (e) foot-printing and reduced putting quality and (f) reduced heat, cold, and drought hardness. A limited amount of thatch

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