THE BULL SHEET, official publication of THE MIDWEST ASSOCIATION OF GOLF COURSE SUPERINTENDENTS.

Editor: ROGER LA ROCHELLE
1818 — 177th Street
Hammond, Ind. 46324

On April 1, 1970, Stanley Rachesky, our contributing Entomologist, will be teaching a course on Urban Entomology at the College of DuPage in Glen Ellen.

This course will cover insects on vegetables, fruits, trees and shrubs, flowers, animal and nuisance, and food, fabric and structural pests. It will also cover briefly the basics of Entomology to give you a good foundation in this field. Registration is now going on at the college. Call 858-2800 for further information.

HOWARD BAERWALD

Our good friend has been in the hospital the last few weeks. We all wish Howard a speedy recovery and a quick return to the golf course. Please send all correspondence to his home at: 501 South 7th Avenue.

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GOLF COURSE SUPERINTENDENTS APPOINT DIRECTOR OF EDUCATION

Dr. Paul M. Alexander will assume the new position of Director of Education for the Golf Course Superintendents Association of America beginning February 1, 1970, according to an announcement today by GCSAA President John J. Spodnik.

Dr. Alexander comes to the Association from the USGA Green Section where he was Agronomist for the Mid-Continent Region. Before joining the USGA in July, 1969, he was Associate Professor in the Department of Botany and Bacteriology and, later, the Department of Horticulture, at Clemson University in South Carolina. During his tenure at Clemson from 1958 to 1969, he was secretary and editor of the chapter newsletter of the Carolinas Golf Course Superintendents Association.

President Spodnik said the appointment signaled the realization of many years of planning and the beginning of a new period of growth for the 3000 member Association of the nation's top golf superintendents.

"Like every other aspect of our national society and technology, the science and profession of fine turf management — and particularly golf turf — is generating so much new information almost daily that we must expand and specialize this function of our Association in order to assure that our membership remain up-to-date."

Spodnik said that Dr. Alexander's role in the Association's expanded education effort would be that of a coordinator — analyzing the current and long-range education needs of golf superintendents, screening and evaluating information now available and being developed and structuring a program of instruction and continuing review of new knowledge for the benefit of the golf superintendent on the job.

Spodnik added: "Our members are now being bombarded with a tremendous — and growing — volume of new knowledge to the point where it is impossible for even the most progressive superintendent to keep current with new data and techniques. That is why we need our own 'clearinghouse' for such information."

The new Director of Education will have his office in GCSAA Headquarters in Des Plaines, Illinois at 3158 Des Plaines Avenue (60018).

Editorial

It is indeed a privilege to be asked to serve as editor of the association newspaper. The **Bull Sheet** has attained a notable stature in the past and with the continued help of the membership it will maintain its place as one of the finest local bulletins in the nation.

The idea behind a newspaper is to present newsworthy items for and about members, and to act as a forum for membership participation in expressing their thoughts and ideas. All members are welcome and, in fact, encouraged to participate in some way. It is not necessary to write a long article, for sometimes views and ideas are expressed better in brief. It is not even necessary to compose at all, but rather pass on something others have written. A letter to the editor requesting coverage on a particular subject or naming some individual who would write an article would be most welcome.

The important thing is that the paper not be a technical journal for there is plenty of technical material to be found, but rather for it to be a means for members of the Midwest to express their ideas and thoughts plus a place where they may read about items of current interest from outside the organization. And let's not forget about the importance of our advertisers who are the supporters of this bulletin.

Now, how about passing on some thoughts and ideas! Certainly at a time when we have so many problems which were not prevalent in past years — pollution, governmental clampdown on certain pesticides, water shortages, etc. — there should be a corresponding flurry of reaction.

Aside from environmental problems, there are things going on within our organization, both local and national, which merit some comment. In the February issue of the **Bull Sheet** there is an article on certification by Walter Boysen. Surely this should stimulate some comment since the effects of certification will be felt by all of us. Let's promote as much discussion on this issue as possible.

Remember, there is no better way to reach the some 700 persons now receiving the **Bull Sheet.** Sometimes people are reluctant to express thoughts at a meeting and this gives them a chance to present information which they have carefully thought out.

One of the goals at present is to update the subscription list. Enclosed in the May issue will be a stamped, addressed card to be returned if you wish to remain on the mailing list. Also, we would like to know of anyone who is not presently on the mailing list who would like to receive the **Bull Sheet.**

Any contribution to the **Bull Sheet** will be greatly appreciated.

Is it, as Walter Boysen stated, really desirable that in the future certification be made **mandatory.**

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PR 18	Building the Small Town Course

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IS 2	National Golf Foundation Facility Development Consultant Service

Single copies of any five **INFORMATION SHEETS** listed will be provided gratis. Additional single copies are 15¢ each.

For quantity prices on any specific **INFORMATION SHEETS** listed or information on available facility planning publications, golf instruction materials, films and services write the National Golf Foundation, Room 804 Merchandise Mart, Chicago, Illinois 60654.

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Turf Management

A. J. Powell, Turf Specialist

THATCH IS STILL AT HOME

For several hundred years thatch has been used successfully to offer shelter for man and animals. Since thatch can protect life from the elements such as rain or snow, heat or cold, it must be considered an insulator or sealant. Then is there any doubt that the accumulation of thatch on your home lawn may also protect the soil from these elements.

When used as human shelter, thatch is generally composed of reeds, rushes, or grasses (especially straw) that are combed or oriented so that the long blades lay nearly parallel for a very close fit. Many of our lawn maintenance operations tend to give the same effect to the tighly intermingled layer of partially decomposed or undecomposed leaves, stems and roots which accumulate beneath the actively growing grass. Mowing continuously in the same directional pattern, heavy irrigation and fertilization, use of vigorous species, failure to remove clippings, and delayed mowing are practices that most often cause a rapid build-up of the organic layer at the soil surface.

In effect, thatch decreases the aggressiveness of turfgrasses by restricting the movement of water, air and fertilizers into the soil. Irrigation water and light or rapid rainfall can be completely repelled by this organic layer. If thatch prevents water from reaching the soil surface, rooting depths will be shallow and a drought-susceptible condition will exist. Because of the variable thickness .and density of the thatch, mowing becomes increasingly difficult and scalping usually occurs.

Also sheltered by the thatch are many turfgrass disease organisms and insects. Control is then made very difficult because of the high pest incidence and inability to get the pesticide to the organism causing the problem.

Considering that a thatch roof may last up to 60 years even though exposed to the elements, it is no wonder that extreme difficulty is encountered when trying to decrease the thatch thickness by normal maintenance practices and natural bacteria decomposition. Thatch is much easier to prevent than eradicate. Thatch seldom becomes a problem in less than four years after lawn establishment and with low or medium maintenance thatch may never accumulate.

To approach the thatch problem, decide which type of program is needed: (a) preventative control to avoid excessive build-up or (b) curative control for an existing thatch problem. Generally if the thatch layer is over ½ inch thick, the curative control is necessary.

From the preventative maintenance approach, moderate fertilization, periodic mechanical thatching and clipping removal should be considered. Also the soil pH should be maintained between 6.5 and 7.0 to help create an environment that is favorable for microorganisms which help decompose the organic material. For curative control, remove as much thatch as possible and as often as possible without permanently damaging the desirable grasses. It should be removed only during period of rapid growth, e.g. for bluegrass and fescues — spring or early fall; for bermudas or zoysias — late spring or summer. When thatching is not too severe, the desirable grasses will immediately cover over the scarred areas and prevent weed invasion.

Although hand-raking is often tried and may help prevent thatch formation, it seldom is vigorous enough to remove the 80 bushels or so of thatch that may exist on a lawn. Machines for mechanically removing thatch are becoming very popular with the suburban hardware and rental dealers. These machines basically consist of a reel having blades, knives, or tines which revolve in a plane that is vertical to the ground. They are generally powered by a gasoline engine and referred to as a vertical mower, dethatcher or gasoline rake. They vary in size, power, depth of penetration and width between blades on tines. Thus, the amount of thatch removed and the damage to desirable grasses are variable. It may be necessary to traverse the lawn several times in different directions with removal of the loose material after each pass. The tine or rake type machine will remove organic material and does least harm to existing turf but is not suited for a major thatch removal.

POLLUTION MAIN PROBLEM ON GOLF COURSES — 1970 MILESTONE IN TURF MANAGEMENT

by V. J. Zolman

"The 1970's absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters and our living environment. It is literally now or never."

President Nixon

The consequences of pollution to our general environment have now been widely recognized. The nation's scientific resources are being marshalled to deal with the wide-ranging dangers that have been created by it. Golf course management, that has been so profoundly affected by the problems directly or indirectly arising from pollution, must follow this trend toward scientific solution.

Experts in golf course management developed through many years of practical experience new methods of dealing with our changing natural environment. New and better balanced fertilizers, for example, have been developed to deal with the problems arising from depletion of soil. In many instances, however, increasing pollution of our air and waters brought new problems—particularly for golf courses in industrial areas—that defy conventional, time tested approaches. Superintendents find that diseases, fungi and weeds spread despite careful maintenance. They find that application of standard fertilizers and of chemicals recommended against diseases and fungi no longer guarantee top quality turf. Almost invariably, the pollution has been the culprit.

Today, the soil environment for monoculture grass plants on golf courses is being changed rapidly by pollution from several sources: 1) Pollution of air, whose harmful effects for people have been well established, is equally harmful for turf grasses. The major pollutant is Sulphur dioxide (SO2) a product of combustion of coal with high sulphur content, and of liquid fuels. Hydrogen fluoride (HF) an industrial pollutant, is very poisonous to plants causing damage to susceptible crops at concentrations as low as a few parts of HF per billion parts of air. Different intensity of damages to gladioli, tulips, apples and pears have been reported in Holland.[1] Harmful effects of acute toxic or chronical toxicity depend on time exposure and the quantities of SO2 and HF in the air. Photochemical air pollutants such as ozone and peroxyacetyl nitrate (PAN) can be found in certain "smog" areas. In many cases industrial smoke stacks emit solid particles of various types of pollutants e.g., Zinc (Zn) is directly deleterious to plants. Boron (B) in areas with heavy industry is harmful to turf grasses from toxic soil.

2) Irrigation waters from lakes, rivers, brooks and wells are often heavily polluted, and are toxic to turf grasses due to high content of Epson Salt, (MgSO4 —Magnesium Sulfate). Total Sulfates (SO4), Total Chlorides (Cl) Common Salt (NaCl), Total Salt. Concentration is especially high during dry periods—at the very time when irrigation requirements are high. Thus irrigation during summer months, often contributes to pollution of the soils.[2]

3) Pollution of soil of greens, tees and fairways comes through application of heavy calibration or of "dirty" fertilizers, through application of mixture of trace minerals without proper analyses of soil, and through spray of chemicals such as fungicides, herbicides and insecticides. In polluted "tired," "poisonous" toxic soil environment chemically and biologically ruined, turf grasses cannot grow properly, and diseases, fungi and weeds are widespread.[3]

Resulting Problem — Low Restitance of Grasses to Disease

It has been conclusively established by scientists that a particular combination of environmental and climatic conditions—such as high temperature, excessive soil moisture, poor aeration and high humidity—are conducive to growth of diseases and fungi. Germs are constantly present and may become actively parasitic on grass plants if the plants lose their growth vigor. If soil environment contains factors or group of factors which are toxic or deficient even to a minor degree to green plants, the plants may be weakened to the point that they lose disease resistance and thus become susceptible to attack by the constantly present disease germs and fungi. Once the balance between plant resistance and susceptibility is tilted in favor of the fungus, disease conditions can reach critical proportions.[4]

Dealing With the Pollution Problem

Superintendents cannot successfully manage turf on polluted and toxic soils with contaminated irrigation water. Unfortunately, many superintendents are not fully aware of the problem that remains usually undetected through conventional soil testing programs that are not geared to today's environmental problems.

There are essentially two ways for dealing with the effects of pollution. One consists of a gradual rebuilding of golf courses. Unbalanced soil environment, chemically and biologically defective greens and tees, are usually ready for rebuilding after 5 but almost always after 20 years, presently at a cost of $3,000 to $8,000 for each green.

An alternative, far less expensive and more effective approach is through scientifically designed programs of treatment of soil. Such an approach is based on individual research conducted directly on golf courses with treatment program designed to restore the balance of soil environment according to requirements of monoculture sensitive turf grasses. In general, complete research program is based on a scientific testing designed specifically for golf courses by properly selected series of qualitative analyses in laboratories with modern equipment and well trained personnel. The testing is carried out for Major, Secondary and Micro-elements which have been recently found to influence directly or indirectly the vigor, health, growth and resistance of turf grasses. Research reports are then interpreted by experts evaluating analytical findings. They diagnose the problem, suggest treatment program, including calibration for 2-4 years and design main ideas for turf management which must be based strictly on scientific principles.

Detail results of such tests conducted on golf courses in the Chicago area[5] have revealed wide variations in standard range of factors (nutrients) within greens, tees and fairways on a golf course. Standard range of factors (nutrients) has been found narrow for monoculture of fine turf grasses, compared with farm crops; especially in trace minerals the differences between deficiency — standard range — toxicity, expressed in p.p.m. have been extremely narrow. Harmful effects by deficiency or toxicity to turf grasses (to a point whereby they lose resistance) is by single factors or group of factors. Usually a group of factors is taking part (deficient — excess — toxic) combined with group

of harmful climatic factors such as high humidity and temperature during summer months. All these factors —mostly the results of soil pollution could then be successfully treated and corrected with good results.

Conclusion

It has been in the mainstream of American tradition that specialized industries, in order to obtain a top quality product or service utilize industrial research as a solid scientific and economical base for prosperous business in the future. The American Academy of Science recommended research as a first step toward elimination of harmful effects of pollution in the air and water. Soil scientists in the U. S. look for new philosophy and policy in soil testing for higher yields of crops on unbalanced and polluted soils. The medical science recommends periodical check-ups in clinics for young and old and prescribe individual treatment. Superintendents must follow a similar path for turf improvement on "sick," contaminated and unbalanced soil environment. Individual research on each golf course and appropriate treatment, based on scientific principles, represent a new way for balanced soil environment. Year 1970 will be a milestone in common practice of turf management on golf courses in America.

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REPORT ON DDT

by Stanley Rachesky
Entomologist, University of Illinois

Recently in Illinois DDT has been restricted in its use for public health emergencies as designated by the Illinois Department of Public Health effective January 1, 1970.

Dr. H. B. Petty, Professor of Agricultural Entomology, University of Illinois College of Agriculture at Champaign-Urbana and the Illinois Natural History Survey just completed a comprehensive middle-of-the-road look at DDT. Following is a very short synopsis of his paper and a few added thoughts of my own.

In Illinois, DDT has been steadily phased out since the late 1940's. The last time DDT was agriculturally recommended was in 1964 on sweet corn for earworm and corn borer control. Since 1964 it has been recommended for use in Dutch elm disease spray and mosquito abatement and in a few isolated instances for the control of the bronze birch borer, iris borer and certain pine moths.

The World Health Organization has used more than half the total world production of DDT in recent years. For example, in India the annual loss of income because of malaria after World War II was near 1 billion dollars. By 1965 this was cut by 99.9 per cent. Deaths from malaria per year dropped from 750,000 to 1,500 The number of cases dropped from 7,500,000 to 150,000 per year. DDT, by prolonging human life, has without a question of a doubt contributed greatly to world overpopulation.

More research has been conducted on DDT and its fate on the environment than on any other pesticide. No human can possibly read and retain every written word. Confusion ensued. Data from research done was interpreted differently. Driven by public opinion to get to the bottom of whether DDT is bad or not we could have completely overlooked other possible pollutants, such as plasticizers, not to mention lead, zinc, carbon monoxide, etc.

How toxic is the pesticide you use around your home? Do you know the definition of pesticide? How about chemical cleaners like drain cleaners and soaps? Are they biodegradable? If you don't know, why are you using them?

The Federal Drug Administration continually checks our food supply by using "market basket" samples. Sampling is accomplished by purchasing food a 19 year old boy would consume. It was and continually has been concluded that the dietary intake of the DDT compounds remained constant and very well below the levels established by the Federal Drug Administration.

DDT is stored in the fat of humans. In the U.S.A. the average has dropped from 15.8 ppm in 1954 to