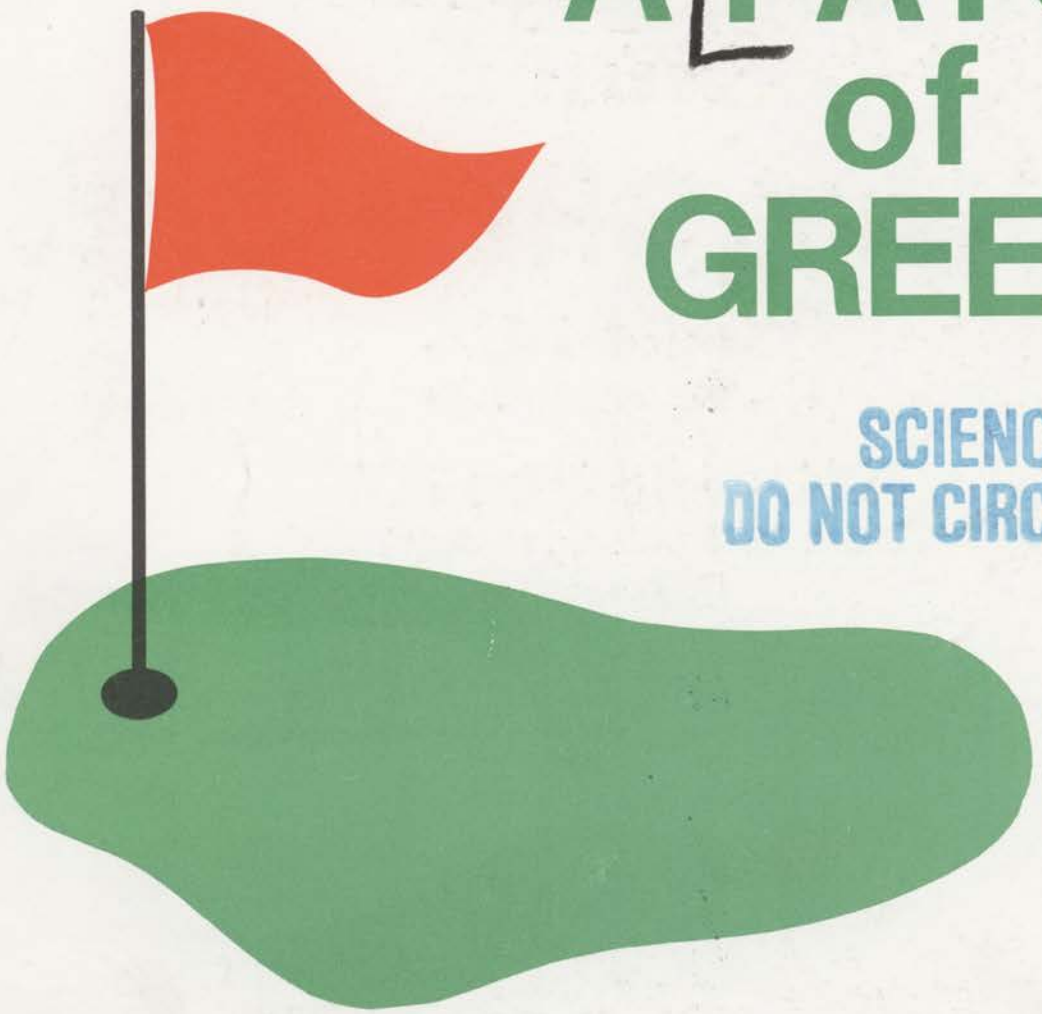
MAY/JUNE 1991

Our 66th Year

A PATCH of GREEN



GOLF COURSE SUPT. ASSOCIATION
BORDER CITIES
MICHIGAN

OFFICIAL PUBLICATION OF THE MICHIGAN & BORDER CITIES GOLF COURSE SUPERINTENDENTS ASSOCIATION

EDUCATION COMMITTEE

The March Meeting was held at Salt River Golf and Country Club. Host Glen Korhorn and the people at Salt River provided their usual great lunch which consisted of several salads, roast beef, broiled chicken, Italian sausage, barbequed chicken, vegetables, mashed potatoes and gravy, and strawberry shortcake!

President Tom Mason passed on current information about the National Association. Steve Cadenelli was elected President and MBCGCSA member Bill Roberts was elected Vice-President.

Salt River is the annual bowling meeting and there was no guest speaker. Mark Jackson used the opportunity to ask every one to expand on the normal introductions of who they are to include where they worked and how long, and what special challenges or points of interest they could share for the upcoming year. Some of the comments were about night time mowing, environmental compliance, pond maintenance, construction, documentation of employee records, new types of spin grinders, transition into computers, and — everybody's favorite — fuel storage tanks. Members were encouraged to call one another when similar interests were found.

"A PATCH OF GREEN"

Published Bi-Monthly by the

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MICHIGAN STATE UNIVERSITY TURFGRASS FIELD DAY — AUGUST 22, 1991

The 1991 Michigan State University Turfgrass Field Day, Trade Show and Equipment Auction will be held on Thursday, August 22, 1991 at the Hancock Turfgrass Research Center on the Michigan State University campus. The Field Day begins with registration at 8:30 AM and the field tour at 9:15 AM. At 11:00 AM the trade show opens, and lunch is served at noon. Following the Trade Show an auction of new and used equipment is held at 2:00 PM. This year we are instituting a new pricing policy. Advance registration for the tour will be $10.00 and includes lunch. Registering at the field day will cost $15.00. If you are not on our regular mailing list please contact Dr. Bruce Branham, Michigan State University, Dept. of Crop and Soil Sciences, E. Lansing, Michigan 48824 for a copy of the field day brochure.

FOR SALE — RANSOMES 213D Diesel Riding Reel Mower, excellent condition, low hours, asking $10,500 or best offer. Call (313) 534-5515.

Anthracnose

Karl Danneberger, Ph. D,
Research Agronomist
Ohio State University

Anthracnose is a warm weather disease that can cause serious damage to annual bluegrass greens and fairways. Recently this disease has also been found on creeping bentgrass in isolated instances. Disease symptoms appear as irregular patches of yellow-bronze turf ranging in size from a few inches to several feet. Leaf lesions initially appear as elongated reddish-brown spots.

Anthracnose is caused by the pathogen **Colletotrichum graminicola.** This fungus infects the plant via spores that are small curved and hyaline (transparent). In the presence of water, these spores germinate producing an appresoria which allows the fungus to penetrate the leaf epidermis. The fungus then proceeds to grow and develop, culminating in the formation of a fruiting structure called an acervulus (plural spelling is acervuli). The acervulus erupts through the leaf epidermis releasing numerous spores, thus continuing the infection cycle. A characteristic of acervuli is the presence of spiny structures called setae. The diagnostic key for this pathogen is the observation of the acervuli.

Disease occurence is most severe when night time temperatures are warm, moisture is present (ie. rainy period) which is followed by warm drier weather. Anthracnose has aslo been reported to occur under cool temperatures during the spring. The fungus that causes warm weather anthracnose also causes the cool weather anthracnose. Symptoms are the same but one difference between the two is the location of the acervuli. With warm weather anthracnose the acervuli appear on the leaf blade while on cool weather anthracnose the acervuli form in or around the crown region.

It may appear that this disease has no pattern — occurring in both cool and warm weather — but the one common thread is that the turf plants are under the same sort of stress. **Colletotrichum graminicola** is very effective in killing annual bluegrass if it is under an environmental stress.

No cultural practices exist that will completely control anthracnose. Moderate nitrogen applications (½lb./1000 sq. ft.) monthly during June, July and August, however have proven effective for reducing the amount of disease.

Fungicide applications are effective for controlling anthracnose. The sterol inhibiting (Bayleton, Banner and Rubigan) and the benzimidazole (Tersan 1991, Fungo 50 and Cleary's 3336) fungicides have performed well. Daconil 2787 has been effective only through preventive applications. I have found that the first fungicide application to be the most critical. If the application can be made at or just before the first infection, this pathogen can be easily controlled. If damage occurs, control through curative treatments is more difficult.

In using fungicides for controlling **Colletotrichum graminicola**, especially with the benzimidazoles, thought should be given to how best use them. As previously mentioned the benzimidazoles are effective, but we have found resistance in the field to these fungicides with repeated use.* Alternating or mixing the benzimidazoles with a fungicide with a different mode of action would be advisable.

*W.W. Shane and T.K. Danneberger, 1989. First Report of field resistance of **Colletotrichum graminicola** on turf tobenzimidazole fungicides in the United States. Plant Disease 73:775.

Update on 2,4-D and Human Health Concerns

by Dr. Marie Swanson

2, 4-Dichlorophenoxyacetic acid is one of the phenoxy herbicides. It is a synthesis of halogenated phenol and sodium chloroacetic acid. Its chemical structure is similar to indole acetic acid, which is the natural plant hormone known as auxin. 2,4-D's similarity to this hormone is the basis for its herbicidal action. Unlike 2,4,5-T or **2,4,5-trichlorophenoxyacetic acid**, 2,4-D is not contaminated with TCDD (**2,3,7,8-tetrachlorodibenzo-p-dioxin**) during manufacture.

2,4,-D was developed as a plant gowth stimulator. Its primary agricultural use is to control weeds in grain crops and sugar cane. It is sprayed on forests, pastureland, rangeland, turf, lawns and along roadsides, railways and power lines to kill undesirable plants. It it also utilized to control ripening of citrus fruits and bananas. 2,4-D is one of the most widely utilized herbicides in the United States. In the 1950's, annual use of 2,4-D was about 24 million pounds; the 1960's it ranged from 30 million to 60 million pounds; and in the 1970's, use averaged about 45 million pounds. Unlike any other halogenated aromatic hydrocarbons, 2,4-D is excreted rapidly from the body because it is water soluble. This property also results in more rapid degradation of 2,4-D in the environment.

Historically, the herbicidal effects of synthetic auxins were first noted in the 1930's. By 1942, 2,4-D was synthesized in England and it was tested in the United States in 1945. The most common use of 2,4-D in recent times are shown in Table 1. Applications to lawn and turf account for only 5% of 2,4-D utilization.

Table 1
Herbicide Use of 2,4-D

Applications and Proportion of All Uses

Wheat and other small grains	31%
Corn and grain sorghum	26%
Pasture and rangeland	25%
Industrial and commercial	9%
Lawn and turf	5%
Aquatic weed control	3%
Rice and fruit	1%

Concerns about the human health effects of 2,4-D were raised primarily as a result of the interest in health effects related to the use of Agent Orange in Viet Nam. Agent Orange is a 50-50 mixture of 2,4-D and 2,4,5-T. 2,4,5-T and its contaminant, TCDD, have been associated with a wide range of adverse human health effects. As a result, its utilization is much more limited than is that of 2,4-D. Both 2,4-D and 2,4,5-T are regulated water pollutants.

Major studies of the human health effects of 2,4-D

CONTINUED PAGE 27

2,4-D: The Rest Of The Story

by Donald D. Jurhartz
Horticulture Specialist and Consultant
MTF Member

At the 1991 Turf Conference I sat in disbelief as I listened to one of the speakers — Dr. G. Marie Swanson, of the MSU medical facility — recite "evidences" that, to her proved, in her words: "The consistancy of the association between 2,4-D and non-Hodgkin's lymphoma across geographic areas, in different work groups, and utilizing various methods of assessing exposure strengthens the conclusion that 2,4-D is probably a human carcinogen."

What Dr. Swanson said, in effect, was that based on studies she cited (United States, Canada, Sweden, Finland and New Zealand) 2,4-D does cause cancer in humans. She further goes on to state, "The evidence from human studies leaves little doubt that exposure to 2,4-D results in elevated risk of non-Hodgkin's lymphoma among persons directly involved in the application of these herbicides. Risk is especially high among those who have direct skin contact, who use 2,4-D for more than 20 days per year, and who fail to change into clean work clothes immediately after application of 2,4-D."

The real danger comes from persons who read and cite only summaries of studies without looking at the methodology, total conclusions, whether the studies can or were repeated and the conclusions drawn, and the comments made by the peer scientific community. In other words, what do other scientists and regulatory agencies say about the studies.

Let's look at the studies Dr. Swanson used to indict 2,4-D as a human carcinogen. We must keep in mind that 2,4-D is one of the most exhaustively researched pesticides used today. For more than 40 years it has been used worldwide. Effects of human and animal exposure to 2,4-D and the fate of 2,4-D in the environment are well documented and understood. The 2,4-D controversy started from several case studies (109) done by a Swedish researcher who investigated these individuals as they were identified from hospital registries. About a third of these cases had exposure to phenoxy herbicides versus the estimated ten percent from the general population (determined by telephone interviews drawn from the general Swedish population), thus indicated a five–fold greater risk of contracting non-Hodgkin's lymphoma for those reporting exposure to phenoxy herbicides. However, the scientific community has raised serious doubts about the validity of this study in that the most commonly used herbicide in Sweden was 2,4,5-T (no longer used in the U.S.). Also, the results of the study have not been able to be reproduced and, in fact, a Swedish study of 354,000 male agriculture and forestry workers showed no increased risk of non-Hodgkin's lymphoma, and another Swedish study of 20,245 licensed pesticide applicators found no increased risk of this type of cancer. Most scientific

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Jim Timmerman Receives Award at the Annual GAM/Michigan and Border Cities Golf Course Superintendents Association Meeting —

1991 DISTINGUISHED SERVICE AWARD

by Kevin Dushane

It is my pleasure and a real honor for me to present the Michigan and Border Cities Golf Course Superintendents Association "Distinguished Service Award" to a gentleman who I have known for many years. And I was fortunate to have the opportunity to learn the science of growing grass as an Assistant Superintendent under this individual's tutelage. This year's recipient is Jim Timmerman, golf course superintendent at Orchard Lake Country Club. When I was asked to present this award to Jim I was a little hesitant to do so because it is difficult to follow in the footsteps of one who has so much talent and grace in presenting achievement awards. As most of you know, Jim has had many requests to bestow accolades to deserving individuals. But the selection committee found it awkward to ask Jim to give himself this award, so here I am.

The criteria used to consider an individual for this honor is threefold:

1) An individual must have had a significant influence upon our Association.
2) He or she must have benefitted the profession of the golf course superintendent.
3) This person must have aided in the development and enjoyment of the game of golf.

Jim has more than met these points and exceeeds them in a way that most persons in our profession will never have the opportunity to achieve. His involvement in the local, regional and national sphere of golf course management has reached the highest pinnacle at each level. Jim's educational background cannot be matched by but a few in the entire country. There are not many golf course superintendents who have a Master's degree. And, after knowing Jim for over 18 years I can attest to his dedication towards education, not just for himself, but for all turf managers.

Jim's educational background is immense. He graduated in 1964 from Michigan State University with a Bachelor of Science degree specializing in Soil Science. Before working towards his Masters Jim worked at Detroit Golf Club for a summer and was Assistant Superintendent at Westwood Country Club in Buffalo, New York. Then in 1968 he received his Master of Science degree from MSU in Soil Science and Turfgrass management. As I mentioned before, this is an educational achievement very few golf course superintendents have attained. Jim has continued his education over the years by attending many regional and national seminars and has completed the Dale Carnegie course. Also, Jim completed the certification program of the Golf Course Superintendents Association of America becoming certified in 1977.

His golf course background goes back to 1963 when he worked at Walnut Hills Country Club in Lansing. In the summer of 1964 Jim was a golf course laborer at Detroit Golf Club in which he worked for Clem Wolfrom. When I asked Clem what he remembered most about Jim, Clem spoke of Jim's dedication to his work. Jim would drive down to Detroit every day from Howell, a one-way trip of over 70 miles. He came in as a laborer and did the grunt work required of everyone who first enters the business.

In 1968, after receiving his Masters, Jim was hired as an agronomist for the USGA Green Section. For two years he visited many eastern state golf courses aiding other superintendents in solving their specific turfgrass problems. This gave Jim the opportunity to utilize and expand his vast educational background.

Then in 1970 Orchard Lake Country Club hired Jim as their Superintendent of the Greens and Grounds, a position he has held ever since. I believe Jim is only the fourth superintendent in the long history of Orchard Lake.

Jim has been involved in the advancement of the golf course superintendent for many years. In 1975 he was elected to the MBCGCSA Board of Directors and served as our President in 1980/81. He was on the Board of Directors of the Michigan Turfgrass Foundation in the late '70's and was President in 1981. Jim played a key role in equipping the Hancock Turfgrass Research Center after it was completed in 1979. And he was instrumental in the hiring of a then unknown plant pathologist in 1981, now one of the country's finest, Dr. Bruce Branham. Gordie

CONTINUED PAGE 24

MIDWEST REGIONAL TURF FOUNDATION EDUCATIONAL EVENTS — 1991

July 30 — Midwest Regional Turf Field Day, Trade Show and Equipment Demonstration, Purdue

Nov. — Turf and Ornamental Chemicals Seminar, Purdue

Jan. 20-22, 1992 — Midwest Regional Turf Conference and Show, Indianapolis Convention Center

GUIDELINES FOR CONTROLLING MOSS IN GREENS

by Norman Hummel
Cornell University

The quality of golf course greens by present day standards is often determined by greens' speed. Golf course superintendents are mowing greens shorter and keeping the nitrogen fertility lower than ever before to obtain faster speeds. A consequence of these practices has been a reduction in turfgrass vigor to a point whereby the greens are much more prone to weed encroachment. One of the more troublesome weeds to have become a problem is moss.

Until recently, the only known means of controlling moss was through the use of mercury products. With the support of the Metropolitan Golf Association, research was conducted to look at means of controlling this serious weed. This research identified both chemical and cultural tools that could be used in a moss eradicating program.

Chemical Control

Pesticides and other materials offer hope in controlling moss on bentgrass greens. In the early spring, moss commences its growth much earlier than bentgrass, giving it an early competitive advantage. Hydrated lime applied in late March at 3 to 5 pounds per 1000 square feet will burn back the moss during this period. The lime can be spread easily if mixed with a dry sand topdressing.

An effective treatment for moss control would be the Scotts Goosegrass Control; a betasan-ronstar combination. Labelled for use on bentgrass greens, this product provided 83% control from only a single application. While this product will cause some discoloration, it appears to be one of the more promising moss control products.

Siduron (Tupersan) and bentazon (Basagran) provided from 53 to 74% control of moss. While they were not quite as effective as the Scotts product, both siduron and bentazon were much safer since no injury occurred for either product.

You should note that with the exception of bentazon the most effective treatments are preemergence herbicides. While it can't de determined from these trials whether the effect is pre- or post-emergent, it should be mentioned that the herbicidal activity of these materials on moss was chronic. It was several weeks before we noticed any significant decrease in moss populations.

Cultural Control

Chemicals only offer a partial solution to the moss problem. Unless cultural steps are taken to increase turfgrass vigor, chemical control of moss will be ongoing battle. We designed studies to look at the effects of cultivation techniques and fertility on moss eradication. The results clearly demonstrated that culture can be changed to the detriment of moss.

While silvery thread moss will tolerate dry conditions, it is favored by an abundance of free water. Core cultivation immediately followed by sand topdressing would create a system of "vertical drains" that would facilitate a rapid water removal of the surface. We found that moss removal was hastened where this practice was followed compared to core cultivation alone. Deep spiking was also beneficial compared to core cultivation alone.

Nitrogen and iron are the most important tools in a moss eradication program. Moss control improved as the rate of nitrogen was increased. Moss was eliminated over two growing seasons from plots that were intitially 40% moss by increasing nitrogen rates to about 0.8 lbs. per 1000 square feet per growing month (6 lbs. N/year). Iron applications at a rate of 6 ounces per 100 sq. ft. per month were beneficial during the first year, especially at the higher rates of nitrogen. Iron had no effect on moss in the second year.

While we didn't measure greens' speeds, these high nitrogen treatments no doubt resulted in slower speeds. The bottom line though, is if you have moss, you are going to have to at least temporarily increase nitrogen rates. Effects on greens' speeds can be minimized by careful control of water, double cutting, or increasing potassium levels.

Moss control research has until now looked at fertility and herbicides independently. Studies will be conducted this year to look at combinations and nitrogen fertility in moss eradication "programs". Perhaps this research will identify more reasonable nitrogen rates to use in conjunction with a herbicide program to eliminate moss from greens.

In summary, enough information is known for a superintendent to develop a legal moss control program. Early spring applications of hydrated lime, followed about a month later and in the early fall with a herbicide are the first steps in controlling moss. Increasing your nitrogen levels during this period will no doubt improve the competitive advantage of desireable grasses at the expense of moss. Furthermore, control your soil moisture levels through careful irrigation and by providing good drainage throughout the soil profile.

Credit: **Our Collaborator,**
Northeastern GCSA, Sep. 1990

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The following was submitted by Kevin Dushane, Bloomfield Hills Country Club

A class act at Oakland Hills

By Rob Schultz

Ted Woehrle stood on fabled Oakland Hills Country Club's 10th green, pointed back toward the tee and told a grand, old story.

It was a cool, crisp autumn day in Birmingham, Michigan. The air was clear and, as Woehrle spoke, the characters in the Oakland Hills golf course superintendent's story almost seemed to come to life.

In the backdrop of the 10th tee that Woehrle pointed to was the magnificent clubhouse. It almost seemed as much history as Oakland Hills' grand south course, which Ben Hogan labeled "The Monster" during the 1951 U.S. Open.

But Hogan wasn't the main character in Woehrle's story. Instead, it was the great Walter Hagen, who served as the pro at Oakland Hills about 60 years ago and once said, "I don't want to be a millionaire, I just want to live like one."

Hagen did just about anything to live like a millionaire and that included gambling on the golf course, even at midnight. Woehrle said Hagen would sit at the Oakland Hills bar and bet anybody that he could par the brutal par-4 10th hole in total darkness. Even though he was one of the greatest golfers in the world at the time, such a feat still seemed so improbable that it wasn't difficult to find some takers.

Woehrle said that Hagen stood on the 10th tee and said he'd hit his drive just a few yards short of the fairway bunker. The small gallery then ran up to that spot and, sure enough, they found his ball. Hagen then said he'd hit his second shot on the green about 10 feet short of the pin. Once again the gallery ran to the green and found his ball precisely where he said it would be.

Hagen, meanwhile, putted out for par and collected his money. "And nobody ever knew," said Woehrle, "that Hagen had a clubhouse boy place those balls on the fairway and green long before he made the bet. All Hagen had to do was make sure he didn't hit the

CONTINUED NEXT PAGE

ball anywhere close to where he said it was going."

A great story. And there were more. Each hole on this wonderful old track seemed to have a story. As I trudged along with Woehrle and listened to him spin tale after tale, it was hard to stifle the shiver that kept going up and down my spine.

Oakland Hills has an ambience carved out by the world's greatest golfers in the world's greatest tournaments over a period of nearly 100 years. Hagen, Hogan, Bobby Jones, Gene Littler, Sam Snead, Gary Player and architects Donald Ross and Robert Trent Jones, Sr. are just some of the great faces that are part of Oakland Hills' pictorial Hall of Fame in the clubhouse's main upstairs hallway.

But none deserve a spot on that wall more than Woehrle, who is as much a part of Oakland Hills' story as the stories he tell so well. Oakland Hills and Woehrle are a perfect match; a superb golf course that needs a great deal of care and a savvy superintendent who has all the answers for all the course's needs.

Woehrle, only the third superintendent in the course's illustrious 73-year history, has preserved and protected Oakland Hills as if it were one of his own children or grandchildren of which he is so proud.

And, like Hagen, Hogan or Player, Woehrle does his job with grace and class. Spend a few hours with Woehrle and it's easy to understand why he is one of the world's most respected golf course superintendents.

First, Woehrle pays attention to detail. As we stood on the first tee he pointed out the new tees that have been built, in part, for next year's Senior U.S. Open. New tees were also built for the women members, who, in the past, were forced to tee off from the front of the men's tees. It was a major undertaking that came out magnificently. But in the same breath Woehrle also pointed out the new flagpole that was installed the day before our round. He took just as much pride that that project was pulled off just as well.

Second, Woehrle is at the top of his class as far as understanding and successfully completing even bigger jobs than building new tees.

After we completed our round, Woehrle took us into the men's club room and pulled out about 50 before-and-after photos of his latest project. It was a dandy. His crew painstakingly restored Oakland Hills' 100-plus sand traps — most of them designed and added to the Donald Ross course by Robert Trent Jones in 1950 — back to their original shape.

Some had been finished just a few days prior to my arrival at the course. But nobody would have known it. I stared at the ground looking for marks where the sod was placed. For that matter, I stared at the entire course wondering if there was a flaw someplace. I couldn't find one.

Third, Woehrle has heart; a special gift that completes a very special package. He understands the history of his course, how its subtleties and nuances make it so great and he has made sure nothing occurs

CONTINUED PAGE 23

WILDFLOWER SOD EXCITES GARDENERS

Wildflower sod is a new product that is bringing excitement to the home gardening scene because it provides an instant, natural landscape. The sod is affordable, weed free, and as easy to install as grass sod. Grown and sold by King Ranch in Belle Glade, Florida, wildflower sod consists of dense, 5-foot-square mats of perennial wildflower plants that are at least three months old and have well developed root systems. The roots quickly take hold on bare soil that has been prepared like a typical garden.

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Applewood Seed Company, a Colorado firm known for pioneering the usage of wildflowers, developed and patented the process which is marketed under the brand name Wildflower Carpet®. The flowers are suited to climates throughout the United States and Canada, with the exception of southern Florida and southern Texas.

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For more information contact King Ranch, P.O. Box 1210, Belle Glade, Florida 33430, (407) 996-7257

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MADISON HGTS., MI — Century Rain Aid's new 1991 catalog focuses on water conservation products and the latest in low cost, low gallonage and low operating pressure irrigation equipment.

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The catalog is available through any one of Century's 19 fully-stocked branches located in Michigan, Illinois, Indiana, Kentucky, Wisconsin, Georgia and Florida. Complimentary copies can be obtained by calling 1-800-347-4272.

WILKIE TURF ACCEPTS AWARD FROM TORO

Wilkie Turf Equipment Division was recently named as a **SILVER** level winner of the Partners in Excellence award given by Toro. The award was given for the year of 1990.

Every year, The Toro Company measures the performance of their distributors in areas such as market share, customer satisfaction and sales coverage. For the companies who excel in those areas, Toro then awards them with either a gold, silver or bronze award.

Wilkie Turf has been awarded the bronze Partners in Excellence award many times in the past. "By receiving this silver award, it shows that we are constantly working to make Wilkie Turf the best," explained Walter J. Wilkie, president.

Toro held an Awards Ceremony at the Mirage Hotel in Las Vegas, Nevada.

LEBANON INTRODUCES HOMOGENEOUS FERTILIZER/CONTROL PRODUCT WITH TEAM®

LEBANON, PA — Lebanon Turf Products has introduced Country Club 7-3-22 with TEAM for use on fairways, tees and other professionally maintained turf areas. This premium homogeneous fertilizer with 100% sulfate potash is impregnated with 1.155% TEAM herbicide — a unique combination of Benefin (Balan) and Trifluralin (Treflan) — and is designed to save golf course superintendents and grounds maintenance personnel both time and money.

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TEAM® is the registered trademark of Dow-Elanco's combination of benefin and trifluralin.

JACOBSEN GIVES W.F. MILLER TOP SERVICE AWARD

LAS VEGAS, Nevada — Jacobsen Division of Textron honored W.F. Miller Turf and Industrial Equipment Company with its Professor Jake Service Award. The award, the highest given by the company for service, was presented to W.F. Miller president Hal Vogler at the International Golf Course Conference and Show in Las Vegas.

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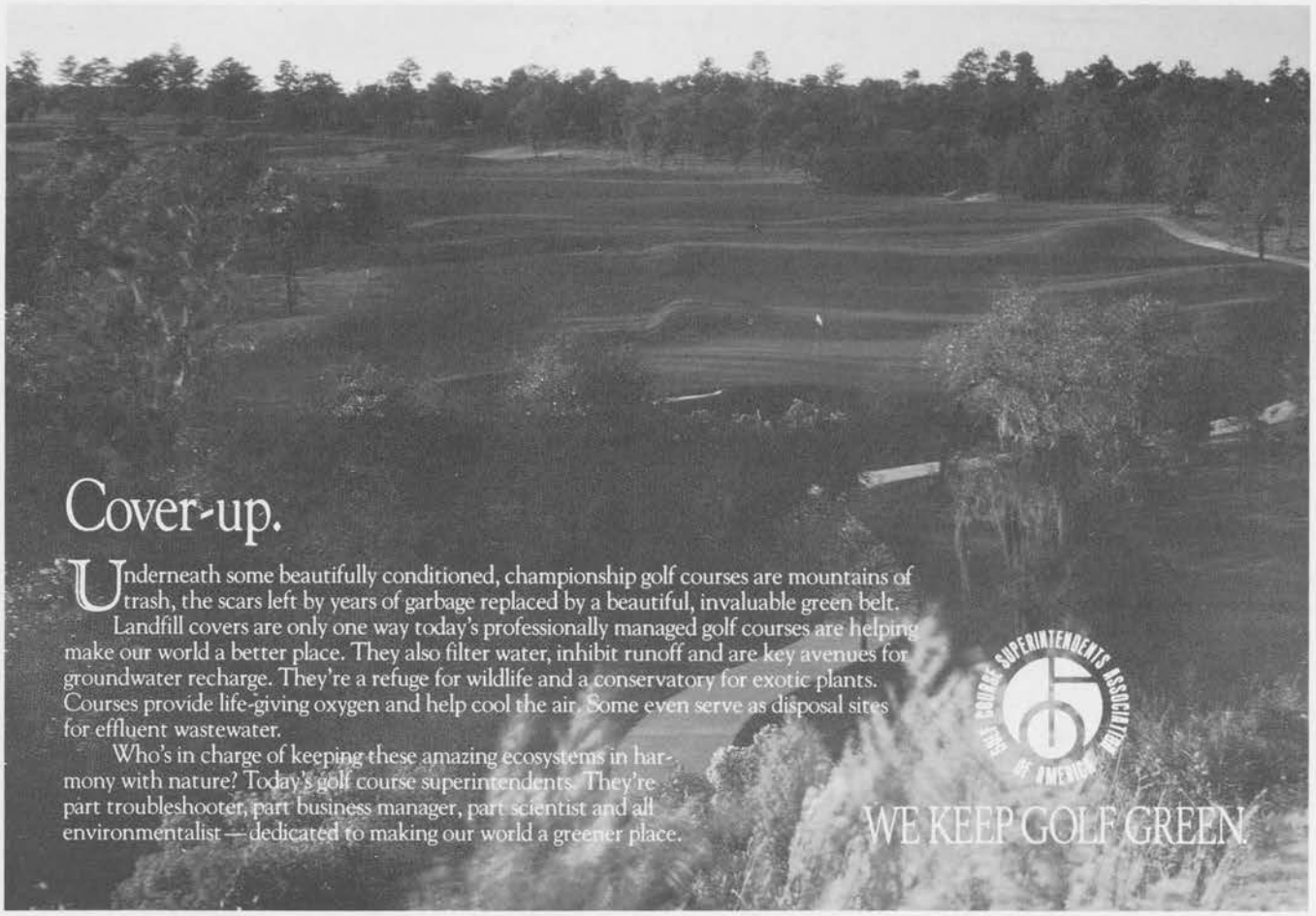

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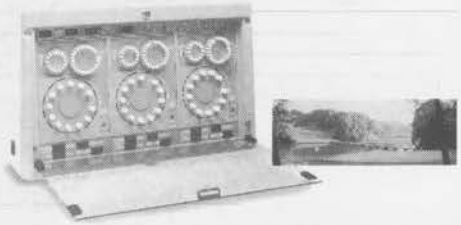

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The Process Behind the Results

Here we go again; what comes around, goes around; and what goes around, comes around. It appears that the process of unending change has come full circle, returning to use of "natural organic" fertilizers once again. Environmentalists and ecologists assert that we can reduce groundwater contamination by replacing modern fertilizers with natural organic materials. Unfortunately, such a retreat would have harmful results, and would fail to accomlish its objectives.

Natural organic fertilizers were used early in our nation's history. For example, Pilgrims used natural organic fertilizers — a fish dropped in a hole, with corn seed on top. The fish, through microbial action in the soil, decomposed and fertilized the corn plant. This worked, but can you imagine fertilization being done like that today? Is this what some groups view as environmental progress? A better approach would be for us to evaluate where we've been and where we need to go, and then to do a better and more efficient job of using the right kinds of fertilizers.

Commercial fertilizer manufacturing began in this country almost 150 years ago. The first fertilizers were simple blends of N-P-K. The elements were too disperse in these early blends. Pulverization proved to be an adequate solution, because the resulting product did not handle well. Eventually, development of the process known as continuous ammoniation was begun, and homogenized fertilizers were born.

When I started in the fertilizer business with the American Agricultural Chemical Company in 1965, only homogenized fertilizers were available for agricultural, turf, and ornamental uses. This was for good reason, because homogenized fertilizers could be manufactured to address the consumer's specific needs. The American Agricultural Chemical Company was one of the first to produce fertilizers designed for turf use, 10-6-4 and 12-4-8. Natural organic fertilizers were also available, including blood meal, cotton seed meal, sludge, tankage, and others. However, these organics could not meet the expanding need for fertilizers, and were very expensive to use compared to manufactured homogenized fertilizers.

The next major development in commercial fertilizer manufacturing came in response to demands for greater safety and efficiency. If the release of nitrogen could be slowed, then it would be possible to have both quick green-up and long-lasting color and growth. Through the development of synthetic organic nitrogen, these goals were met. With the combination of urea and formaldehyde, a nitrogen was produced that fertilizes through a process identical to the decomposition of natural organics; microbial action in the soil, along with moisture and temperature, gradually releases nitrogen to meet the growing plant's need for fertilization.

Urea-formaldehyde products (commonly referred to as methylene ureas) comprise a family of synthetic organic nitrogens. Using these nitrogens is only a part of a good fertilization program. The correct ratio and balance of N-P-K with secondary elements such as Fe, S, Mg, and Mn are very important for total turf feeding.

University researchers have shown that the grass plant assimilates N-P-K in a 3-1-2 to 5-1-2 ratio. However, it is not merely the N-P-K in a bag of fertilizer that is important, but how the product is made. When fertilizer is manufactured using continuous ammoniation, all of the major and minor elements are put into slurry, methylene urea is injected that is agronomically sound.

This process provides maximum availability of all plant food nutrients, without leaving excessive elements that can find their way into ground water. Therefore, environmentalists and ecologists who are looking for fertilizers that are environmentally sound should look favorably at modern manufactured fertilizer products.

Yes, that circle of unending change has stopped once more. Rather than returning to the methods of the Pilgrim, though, we have available a time-proven process that satisfies the agronomic needs of growing plants while protecting the enviroment for current and future generations.

Art Mondak,
Lebanon Chemical Corporation

From: **FIELD NOTES, Vol. IV, No. 4, Jan/Feb, 1991 — Published by New York Audubon Society —**

PRESIDENT'S REPORT

By: Ron Dodson

1991 is going to be an exciting year for New York Audubon. We have just established a partnership with the United States Golf Association, based in Far Hills, New Jersey, to launch the Audubon Cooperative Sanctuary System for Golf Courses. This effort recognizes that **all** green spaces are important. They provide wildlife places to rest, nest and feed. It also recognizes that positive partnerships are the way to make a difference for environmental quality. The USGA is a not-for-profit organization dedicated to the game of golf — the New York Audubon Society is dedicated to wildlife conservation and environmental protection; by coming together in this venture, we have the opportunity to work directly with the more than 7,000 USGA member clubs around the country. We get the opportunity to pass along information concerning wildlife conservation and habitat enhancement, while learning about the intricacies of golf course management. The USGA also works directly, (through their member clubs and publications) with millions of golfers. New York Audubon will have an opportunity to work directly with many people that we have not worked with in the past. From our point of view, that is what New York Audubon is all about.

Another organization, the GCSAA has also decided to "adopt" our Cooperative Sanctuary Program. The GCSAA is based in Lawrence, Kansas and serves as the fraternal and training organization for golf course superintendents. This relationship gives us a chance to work directly with course managers, and offer our thoughts relative to wildlife management for golf courses, that may become part of a certification program for Superintendents.

The Cooperative Sanctuary Program for Golf Courses, and the partnerships with the USGA and GCSAA are a tremendous way to fill the year.

GCSAA'S 65th ANNIVERSARY CELEBRATION TO INCLUDE FORMAL DEDICATION OF NEW HEADQUARTERS BUILDING

GCSAA will celebrate the association's 65th anniversary with the official dedication of its new headquarters building in Lawrence, Kansas, on September 6-7, 1991. All GCSAA members are invited.

The celebration kicks off with a golf event and barbecue on Friday, September 6. Formal dedication ceremonies will take place Saturday, September 7.

Several hundred visiting superintendents, political and industry VIPs, local Chamber of Commerce dignitaries, media and other guests are expected to attend. Orientation presentations and building tours will be part of the dedication ceremony.

Complete information on the dedication weekend and a registration form for the weekend's activities were included in the Feb./March issue of **Newsline**. The golf event field is limited and entries must be received by May, 1991. The other activities, such as the breakfast, barbecue or dedication ceremonies, require an RSVP by August 9, 1991.

The headquarters building is located one mile west of GCSAA's old headquarters. The new address is 1421 Research Park Drive, Lawrence, Kansas 66049-3859.

For further information, contact the GCSAA communications department at (913) 841-2240.

THE SUN AND YOU

Allergies

Some people develop allergic reactions to sun exposure. These reactions occur after only short periods of exposure. Bumps, hives, blisters, or red blotchy areas may occur repeatedly in the same place after each sun exposure. Researchers say these reactions are due to a person's previous sensitization to sunlight or to contact with certain cosmetics, perfumes, plants, topical medications, or sun preparations. Some drugs, including birth control pills, antibiotics, antibacterial ingredients in medicated soaps and creams, and tranquilizers can make some individuals more sensitive to the sun, causing a skin eruption. The allergic reaction is called a photosensitivity reaction. If this occurs, see a dermatologist and avoid the offending product in the future.

Diseases

Some diseases become worse or begin upon exposure to the sun. These include herpes simplex (cold sores), chickenpox, a number of less common disorders, serious skin diseases, coditions that affect the body's metabolism, and genetic problems. In lupus erythematosus, overexposure to the sun may lead to a very serious attack and even death if unrecognized or inappropriately treated.

Who is affected?

Whether individuals burn or tan depends on a number of factors, including their skin type, the time of year, and the amount of sun exposure they have received recently. The skin's susceptibility to burning has been classified on a five-point scale as follows:

Type I (extremely sensitive), always burns, never tans
Type II (very sensitive), burns easily, tans minimally
Type III (sensitive), burns moderately, tans gradually to a light brown
Type IV (minimally sensitive), burns rarely, tans well to a dark brown
Type V (not sensitive), never burns.

Individuals should select a sunscreen to provide protection according to their particular skin type, the time of year, their location, and the activities they plan to do, but always should use a product with an SPF value of 15 or greater.

People who are out in the sun a lot, like lifeguards, and people with extreme sun sensitivity should apply an opaque sunscreen — such as zinc oxide, a thick white ointment — to completely cover vulnerable spots like noses and lips.

From "THE SUN AND YOUR SKIN," American Academy of Dermatology.

TIME MANAGEMENT

Can't really remember who made this statement, but it says so much that it bears repeating here. "Today is the first day of the rest of our lives." Yes, if only we would practice this, "Today being the first day of our lifetime," then maybe our use of time would be more meaningful.

Yet, how do we treat this precious commodity. . . time. We constantly hear, "What time is it? or, do we have enough time to do it? better still, "where has all the time gone?" But, make sure to be on time because we all know that time waits for no man, since time marches on. Especially if our timing is off, and there are no time outs left to save time. Needless to say, this play on words points out the fact that managing our time efficiently is most important.

Let's look at this "elusive thing" called time. Remember one of the first things we tried to learn as a youngster was to tell time. That is, of course, after learning to tie our shoes and button our coats. Now, I know there are zippers, clasps and zip strips, but believe me, when I was a kid, it was buttons and bows. And then, time seemed endless. However, whether we try to measure it in seconds, minutes, hours, days, months or years, with stopwatches, clocks, sundials or calendars, we have just got to get a handle on our time.

How do we try do this? Probably not any better than in any other part of the country, but our short story will cover time management as it works for us. Sure, short interval scheduling, time and motion studies, flow-charts and projected productivity are time consuming, but more importantly, they are tools to help manage our time more effectively. How many times have you heard the expression, "You've got to play it loose?" And what do we usually have? An uncontrollable situation. What we do is just tighten it up a little, not until it hurts, but enough so that the pressure is there — a balancing act of subtle time control in coordinating our various activities.

Therefore, we feel time, like space, is a dimension; a measurement rather than a force. That is why we accept time as a dimension in which things change and manage our activities with respect to time. Actually, the science of good management deals with the way we distribute/control our time. Should this be so startling? Note the similarity in the complaints about our time. There just doesn't seem to be enough of it. More precisely, we try to do too much in the

time we have available. Remember we have, and always have had, all the time there is. We cannot delay the clock or hasten it. We cannot buy time or even give it away (waste it, yes) and must accept the fact that the problem is, has been and will be, not time, but ourselves. And, fortunately, we can do something about this.

Consequently, in the final analysis, time management really "boils down" to managing ourselves. Why not start with taking a personal inventory of our time and just what we would like to accomplish, whether it be at work or at home. Now, let us write down everything we have to do tomorrow, then number these items in order of their real importance. The next morning, start working on number one and stick with it until it is completed. Then take number two and do not go any further until it is finished. Then proceed to number three and so on. If we can't complete everything on our schedule, don't worry. At least we will have taken care of the most important ones before getting distracted by incidental items. Sounds too simple, right? But it really works. The secret is to do it daily, constantly evaluating the relative importance of the things you have to get done, establishing their priorities and then recording the plan of action taken. What is most surprising about this approach, is the little time required in setting it up.

Of course; we have an established formal management philosophy in handling our diversified responsibilities at our company, categorizing them into four major functions: planning, organizing, leading and controlling. In the planning stage, we predetermine a course of action, setting priorities and a time sequence to be followed in reaching our objectives. We readily recognize that planning our work is not enough. But working our plan by eliminating non-essential tasks is a must.

The next step is organization, which is necessary in order that we may develop and identify the work to be accomplished, so that it can be performed by the people. At this point the delegation of authority is most important. Great emphasis must be placed on this entrust of responsibility to others, creating an accountability for results to those selected individuals — a relationship that must exist in successfully developing organizational structure.

Motivating people to take effective action is sound leadership and we try to create this understanding through proper communications (a profound subject all its own). At this point, we encourage recommendations and personal opinions, subtly helping them improve their attitude, knowledge and skills.

Finally, controlling the work in progress is required to maintain the quality in job performance as well as completing them on time.

Our continued evaluation of our priorities, along with the time element involved, prior to initiating our work schedules, normally results in the high standards we are all proud of most of the time. Again, time can be our best friend — or enemy. Only we can decide on its relationship.

TIME

A POEM BY MARJORY GRIMM

Time, you've been an enemy
You took my youth away,
You robbed me of hopes and dreams
And turned my hair to gray.

You've taken all the laughter
And you gave only tears,
You left me only memories
Of all those happy years.

Yet, Time, you've been a friend to me
I know you must have cared
You gave me friends and family
And the good times that we shared,
I've heard the laughter of a child
The sweet song of the bird
I've known the joy that love can bring
Found peace in the Master's word
And I could ask for nothing more
Than this to have and hold.

The memories you've given me,
More precious far than gold,
Yes, Time, I think I understand
You're only what I make of you
Each hour of every day
Yesterday has passed me by,
Tomorrow's not far away
Thank You for your precious gift
OF JUST ONE MORE TODAY!

that could change it. It's not just a job. He has let the course envelop him. Subtly. Like the course itself.

Woehrle spent a beautiful Saturday afternoon with an out-of-state newspaper guy, a complete stranger. Yet he treated me like a long lost friend because he knew I loved the course. Quietly, he pointed out some of the wonders of his course. The other wonders he let me find out for myself.

And then Woehrle watched the course envelop me for the duration of the round. He smiled when I birdied the No. 1 handicap hole, the infamous par-4 No. 5 where T.C. Chen two-chipped and lost the '85 U.S. Open to Andy North. And he smiled when I dropped a 10-foot downhill slider to save par at the equally infamous dog-leg par-4 No. 16, the course's only real water hole.

Hopefully the afternoon made him feel good, worth the time away from home to spend time with this stranger. As I waved good-bye to Woehrle later that night, I wondered how many others of Woehrle's stature would do the same for such a stranger.

Woehrle talked of Hogan and Hagen and Player and Littler with respect. They are all great stories at Oakland Hills. But Woehrle is their equal; a true, great story himself.

From **The Grass Roots, Nov./Dec., 1990**

LaFontaine, Executive Secretary of the MTF recalls Jim's hard work and tenacity in completing many of the projects necessary to continue the success of the Foundation.

In 1980 Jim was elected to the Board of Directors of the Golf Course Superintendents Association of America. Then in 1984 Jim attained one of the highest honors a golf course superintendent can reach, he was elected President, where his dignity, calmness and leadership abilities helped carry the Association through some turbulent times.

Since 1985 Jim served another three-year stint on the Board of our local Association and is currently serving on the USGA Green Committee.

Since 1970 Jim has had six Assistants working under his supervision who have moved on to become golf course managers. These six fortunate individuals include myself and my brother, Paul. We are both grateful for Jim's involvement in the advancement of our professional careers and my mother and father also want to thank you Jim.

Jim, perhaps the finest accolade comes from a member of Orchard Lake Country Club, your former Green Chairman, Pete Green. Knowing Jim's love for the golf course and the highest regards he holds for the membership at Orchard Lake, this will have special meaning to him. Pete stated that working with Jim over the years has been a wonderful learning experience and a real pleasure working with such a fine individual. Pete knows you well Jim. He goes on to say, "Your countless hours spent at the golf course do not go unnoticed. You babysit the golf course. It is not a job to you but more a labor of love. It is a tribute to you that Orchard Lake Country Club is always in top condition despite the considerable amount of play the course receives."

After working for Jim and knowing him for the last 18 years I can attest to the fact that Jim loves his work and the golf course. The quality of the turf at Orchard Lake is a reflection of that affection.

All of your colleagues know you as a quiet, unassuming individual, who's low-key demeanor sometimes gives you that laid back appearance. But behind this facade is a person who has a masterful wit, always thinking, continually developing new ideas. You remind me of the Rodin sculpture, The Thinker.

Jim, your success as a golf course superintendent was not by accident. You achieved your goals through hard work and dedication. And as you always do when you present an award, you include a quote that best reflects that individual's character. Quoting Dr. William Menninger, an early leader in the Boy Scout movement and a world-reknown psychiatrist in the early 1900's, he states, "There are six essential qualities that are a key to success; sincerity, personal integrity, humility, courtesy, wisdom, charity."

Jim, these six qualities exemplify your characteristics. So in closing, I would like to offer you congratulations and thank you for all of your significant contributions to the golf course industry.

JUCHARTZ, CONT.

reviewers have expressed serious reservations about the reliability of this original Swedish work and Sir Richard Doll, Emeritus Professor of Medicine at the University of Oxford, has stated that the original conclusions (109 case studies) cannot be sustained and that this "work should no longer be cited as scientific evidence."

The next controversial study, cited by Dr. Swanson, was a study done by researchers for the National Cancer Institute on Kansas farm workers, where 2,4-D had been the most commonly used herbicide. The researchers were attempting to replicate the Swedish study findings. This study concluded there was a significant increase in the risk of non-Hodgkin's lymphoma among herbicide users, particularly among farmers with more than 20 days of exposure per year. On this basis the researchers concluded the Swedish study had been confirmed. However, again the scientific community has serious reservations and a lack of confidence in the findings of the Kansas study. They found that no separation had been made between the use of any type of herbicide and 2,4-D, leading to the conclusion that 2,4-D could and should not be singled out as causing cancer. In fact, even farmers who had not used herbicides at all had an increased incidence among users of non-Hodgkin's lymphoma. Also, the study showed the highest cancer incidence among users of pesticides prior to 1946, before widespread commercial availability of 2,4-D. Probably the most damaging of all to the scientific validity of the findings is that the results depended upon the recall of the farmers, or their next of kin where the farmer was deceased, about just what had been used, how much, when and over how many acres. This recall period extended over a 20-year herbicide use period. The concensus scientific opinion was that this study did not confirm the Swedish study and furthermore only represented a hypothesis to be tested.

In an effort to shore up the discrepancies of the Kansas work, another study was conducted in a controlled study of 385 Nebraska farm workers who had non-Hodgkin's lymphoma. This study showed a threefold risk increase associated with farmers using 2,4-D more than 20 days per year. However, this study was conducted using virtually the same "recall" methodology of the Kansas work and suggested a lower risk level than previously reported. One of the Nebraska study's authors has now called for further studies to find out just how accurately subjects can recall details of past herbicide use.

An Iowa/Minnesota farm worker study, again conducted by the National Cancer Institute on farm workers with non-Hodgkin's lymphoma (690 cases) has been characterized by the authors as "inconsistent" with the Kansas study and showed little or no association between that form of cancer and 2,4-D.

Washington State research, funded by the National Cancer Institute, of 576 residents of western Washington with non-Hodgkin's lymphoma were interviewed and the study found little or no increased risk of the disease from occupational exposures to

phenoxy herbicides in general and no increased risk of the disease among farm workers who "regularly worked with 2,4-D." The authors stated their results "are not consistent with results of studies conducted in Sweden and other populations." In fact, the greatest risk of non-Hodgkin's lymphoma suggested by this study was not even related to pesticides — namely a tenfold increase associated with immunosuppressant drug therapy!

New Zealand research, done at the same time as the Kansas study found little or no increased risk of the disease from exposure to phenoxy herbicides and no cases of the disease among former commercial chemical applicators. Subsequent additional research by the authors confirms these findings.

Saskatchewan farm workers were studied by Health and Welfare Canada, using 70,000 wheat farmers in an area where 2,4-D is commonly applied, and the author found an increased association of the disease, but reported that 2,4-D cannot be singled out as the cause of the increased risk and that he cannot determine which pesticide or pesticide combination might cause the condition. The author stated, in the Saskatchewan press, that the risk posed by herbicides appears to be small and that "farmers can reduce their risk to almost nil by wearing safety equipment." A subsequent Canadian review pointed out that the surrounding population has the same mortality rate from the disease as farmers, despite the frequency of agricultural use of phenoxy herbicides.

A study of 1,962 Finnish workers exposed to phenoxy herbicides showed no cases of non-Hodgkin's lymphoma, Hodgkin's disease, or of soft tissue sarcoma.

Dr. Swanson has stated that "there is an interesting paradox that human studies demonstrate excess risk of cancer among those who use 2,4-D, while laboratory studies have not been able to demonstrate carcinogenicity of this chemical." It must have been obvious to all that studies done on animal populations are much more "attractive" than studies done on humans, particularly if we are attempting to establish limits of toxicity. In this connection the Environmental Protection Agency (EPA) has increased the total dosages to be used in toxicity tests. A number of studies, conducted on people exposed to 2,4-D, including lawn care specialists, aerial applicators, forestry workers and casual observers have shown that even the greatest human exposures are well below the levels that caused no observed effects in laboratory animals.

Actual human exposure to 2,4-D is very small. Dr. Swanson lists turf application as only 5% of the total 2,4-D usage. Skin contact is the most important route of exposure and inhalation is minimal. Only about 6% of the 2,4-D that contacts the skin is absorbed into the body. Hand and mouth contamination are of primary consideration.

In summary, the EPA has written that "taking into consideration all the evidence now available, EPA

CONTINUED PAGE 30

have been conducted to assess its relationship to immune dysfunction, adverse reproductive outcomes, liver toxicity, and cancer. In humans, only the liver and kidney have been found to have high levels of 2,4-D after exposure. About 95% of 2,4-D is excreted through the urine within 4 days after exposure.

A large number of studies have been conducted on the reproductive effects of 2,4-D. None of these have shown an excess of birth defects or stillborns. Likewise, studies of immune dysfunction and liver toxicity resulting from 2,4-D did not reveal any excess of these health effects.

Investigations of the human carcinogenecity of 2,4-D have evaluated excess risks of soft tissue sarcomas, liver cancer, and non-Hodgkin's lymphoma in relationship to the use of 2,4-D.

As described in the discussion that follows, the only substantiated health effect associated with the use of 2,4-D as an herbicide is an elevated risk of non-Hodgkin's lymphoma. The term non-Hodgkin's lymphoma is used to refer to a group of cancers that occur primarily in the lymph nodes. Non-Hodgkin's lymphoma is a relatively rare form of cancer, occurring at a rate of about 11 per 100,000 among women and 17 per 100,000 among men. The five-year survival among persons with non-Hodgkin's lymphoma averages 68%.

Studies of the cancer risk of 2,4-D have ranged from general investigations of herbicides, with no specific measures of 2,4-D, to studies assessing direct exposure to 2,4-D or to herbicides containing 2,4-D. Some of these studies also have looked at whether the excess in non-Hodgkin's lymphoma was associated with herbicides containing 2,4-D or whether it could be attributed to other types of herbicides, pesticides or agricultural chemicals. These studies are world-wide, having been conducted in the United States, Canada, Sweden, Finland and New Zealand. They have included various occupational groups: farmers, herbicide applicators (forestry workers, railroad workers, agricultural workers) and chemical plant workers who manufacture these herbicides. The consistency of the association between 2,4-D and non-Hodgkin's lymphoma across geographical areas, in different work groups, and utilizing various methods of assessing exposure strenghtens the conclusion that 2,4-D is probably a human carcinogen.

There is an interesting paradox that the human studies demonstrate excess risk of cancer among those who use 2,4-D, while laboratory studies have not been able to demonstrate carcinogenecity of this chemical. In this regard, it is like arsenic, which is a classic case in which human studies clearly indicate carcinogenecity of arsenic in a variety of occupational settings, yet laboratory experiments have not been able to demonstrate any carcinogenecity effects upon animals.

Two recent studies of the relationship between use of 2,4-D and its association with non-Hodgkin's lymphoma will illustrate the excess risk of cancer

among persons directly involved in the application of the herbicide. Both studies involved farmers. One was conducted in Canada, the other in the United States. These studies are not only the most recent to report elevated levels of non-Hodgkin's lymphoma among persons using 2,4-D, they provide the strongest evidence of the human carcinogenecity of this herbicide.

The Canadian study was conducted in Saskatchewan. It included a cohort of more than 69,000 farmers and found an increase in non-Hodgkin's lymphoma. This study demonstrated several specific effects: deaths from non-Hodgkin's lymphoma doubled among farmers who sprayed herbicides on larger farms — over 250 acres — and was highest among those using herbicides on farms between 250 and 1,000 acres. On farms of this size, the farmers were more than likely to have applied the herbicides themselves. Although a wide variety of causes of death were studied in this investigation, the only association with herbicide use was with non-Hodgkin's lymphoma. Use of other fertilizers or insecticides did not reduce the elevated levels of risk observed in relationship to herbicide use. Although no information was collected on the specific herbicide used by these farmers, it is known that during the primary years of herbicide use included in the study, about 75% of the herbicide-active ingrdients used in Saskatchewan was 2,4-D.

The study undertaken in the United States included farmers from 66 counties in eastern Nebraska. This was a study which compared the work histories of men diagnosed with non-Hodgkin's lymphoma with the occupational histories of a group of men from the same geographic area and in the same age group, but who did not have non-Hodgkin's lymphoma. In this study, excess risk ranged from 50% to 300%, depending upon the type of exposure and the number of days per year of exposure. Several important observations are made by this study that add to our knowledge of the relationship between 2,4-D and non-Hodgkin's lymphoma. First, the highest elevation in risk was seen among farmers who used 2,4-D for 21 days or more per year. Second, risk was higher among farmers that had direct skin contact with 2,4-D. Third, this study found no elevated risk among farmers who changed into clean work clothes immediately after handling 2,4-D compared to a five-fold elevated risk of non-Hodgkin's lymphoma among farmers who did not change into clean work clothes until the next day or later.

The evidence from human studies leaves little doubt that exposure to 2,4-D results in elevated risk of non-Hodgin's lymphoma among persons directly involved in the application of these herbicides. Risk is especially high among those who have direct skin contact, who use 2,4-D for more than 20 days per year, and fail to change into clean work clothes immediately after application of 2,4-D.

There are several actions that can be taken to reduce the risk of non-Hodgkin's lymphoma among persons who must have direct contact with 2,4-D when applying this herbicide:

CONTINUED PAGE 30

UNIVERSITY RECEIVES TURFGRASS FOUNDATION GRANT

FORT COLLINS, Colorado, April 29 — The turfgrass industry is a major contributor to Colorado's economy. To support the industry, the Rocky Mountain Turfgrass Research Foundation awarded $23,000 to Colorado State University for turfgrass research.

The grant was the result of fundraising efforts by the Rocky Mountain Regional Turfgrass Association and the Rocky Mountain Golf Course Superintendents Association. Both associations, along with the Colorado Association of Lawn Care Professionals and the Colorado Sod Growers Association, for the turfgrass foundation.

The foundation was created in 1989 to collect research funds for Colorado State, and thus far has awarded over $88,000 in scholarship and research grants. Through the foundation, members can pool their money to make larger research grants. Pooling funds for larger grants enables researchers to begin and continue projects that might otherwise be interrupted due to lack of funds.

Ken Brink, Colorado State horticulture department chair said, "This grant represents a major step forward in the university's turfgrass research and instruction program."

ENGLERTH GARDENS will be celebrating 60 years of growing quality perennials. It will mark this milestone by opening its fields to the public. This will enable everyone to view the farm firsthand. Also, refreshments, lectures and hayrides through the acres ablaze with color. There is also a beautiful wild flower patch that is well worth visiting.

Englerth Gardens was founded by Lawrence D. and Winifred L. Englerth in Grand Rapids, Michigan. The business has always featured perennials, specializing in rare and unusual Daylilies, Hosta and Iris. With the growth of Grand Rapids, the farm became landlocked. Consequently, in 1965, the Englerths moved to a 100-acre farm in Hopkins, Michigan where they are still located at the present. Here Winifred successfully introduced several new varieties of Daylillies. Lawrence's interest in Hosta won him awards on a national level.

Ken and Mary Englerth Herrema, with the help of three of their children, continue the family tradition of growing quality perennials. Their years of experience and knowledge have been helpful to many caretakers, landscape architects and homeowners. The Herrema family are truly grass roots growers of perennials in Michigan.

Come join in the excitement each Saturday in July, 1991 10 a.m. to 3 p.m.

JUCHARTZ, CONT.

believes that continued use (of 2,4-D) while waiting for other data will not pose a significant hazard to the environment or public health." The Ontario Pesticides Advisory Committee of the Ontario Ministry of the Environment reported that: "Overall, the Panel concludes that the existing animal and human data are insufficient to support the finding that 2,4-D is a carcinogen and, consequently, finds insufficient evidence that existing uses in Ontario pose a significant human health risk." The Council on Agriculture Science and Technology (CAST) has concluded that "persons are not exposed to hazardous amounts of 2,4-D when label recommendations and prescribed methods of application are used." Agriculture Canada's Pesticides Directorate has issued a bulletin that states "Based on recent studies and findings described in this report, Agriculture Canada believes that the safety associated with 2,4-D remains acceptable."

Based on all of the above, and other studies not cited, I firmly believe that the comments and conclusions given by Dr. Swanson are not supported by scientific evidence or fact and that her final conclusion that we should "when possible, avoid the use of 2,4-D" is not warranted. I recognize that Dr. Swanson was a substitute for a substitute speaker, but this does not mitigate the necessity for our MSU faculty to be objective, thorough and factual. I know — I was an MSU faculty member myself for more than 30 years.

SWANSON, CONT.

1. Limit exposure to 2,4-D
2. Eliminate skin contact by 2,4-D
3. Wear protective gear
4. Change clothing immediately after use of 2,4-D
5. Wash clothing contaminated with 2,4-D separately from other clothing
6. Use tractor application, rather than hand applicators, and
7. When possible, avoid use of 2,4-D.

Suggested Readings

G.M. Swanson, **Cancer Prevention in the Workplace and Natural Environment**. Cancer. 62: 1725-1746, 1988.

D.E. Lilienfeld and M.A. Gallo, **2,4-D, 2,4,5-T, and 2,3,7,8-TCDD: An Overview**. Epidemiology Reviews. 11: 28-58, 1989.

J.A. Dosman and D.W. Cockcroft, **Principles of Health and Safety in Agriculture**. Boca Raton: CRC Press, 1989.

D.T. Wigle, R.M. Semenciw, K. Wilkins, et. al., **Mortality Study of Canadian male farm operators: Non-Hodgkin's lymphoma mortality and agricultural practices in Saskatchewan**. Journal of the National Cancer Institute. 82: 575-582, 1990.

S.H. Zahm, D.D. Weiseburger, P.A. Babbitt, et. al., **A Case-Control Study of Non-Hogkin's Lymphoma and the Herbicide 2,4-Dichlorophenoxyacetic Acid (2,4-D)** in Eastern Nebraska. Epidemiology. 1: 349-356, 1990.

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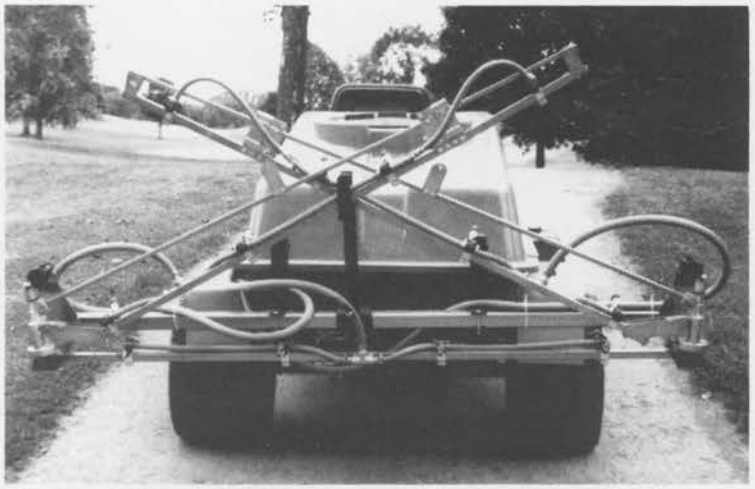

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