

The EXCEL HUSTLER 14-foot Range Wing™ gang mower can cut 115% more turf each pass than 72-inch mowers.

The Range Wing gang mower attachment was developed to groom large maintained acreage, not rough cut highway mowing. The attachment is designed for use on our fuel-efficient 32 hp diesel, HUSTLER 305 D. It's the only front-mounted, fine-cut rotary gang mower available in this horsepower class.

The HUSTLER Range Wing consists of three decks. A total of seven 24-inch blades make up the cutting width. Each deck can be hydraulically raised and lowered. The side wing decks can be raised or lowered separately to easily maneuver around obstacles when mowing. When either or both side wing decks are raised, a clutch automatically disengages the cutting action of the respective wing.

The main deck of the Range Wing mower attachment is an upfront, 72-inch, heavy duty Dual Trim rear discharge deck. It has a 9¾-inch offset trim capability on both sides of the deck. PTO driven, an improved blade action design provides a high-quality cut. It also increases rear discharge efficiency and virtually eliminates the windrowing effect normally associated with rear discharge decks.

Each twin side wing deck is 48 inches wide with rear discharge. Mowing height adjustment is from one inch to four inches in one-eighth-inch increments.

The HUSTLER tractor's dual hydrostatic drive and twin lever steering permit the operator complete control of forward, reverse, turning, speed and braking in the palm of one hand. These features make the Range Wing highly maneuverable and easy to handle. A 10-foot single wing version of the Range Wing mower attachment is also available for the HUSTLER 295 tractor. If desired, it may also be used on the HUSTLER 305 D.



Twin lever steering and dual hydrostatic drive make the Range Wing highly maneuverable.

When cutting grass around lakes and ponds, the tractor drive wheels remain 4-feet up the bank for traction and control. The deck height can be hydraulically controlled so grass can be cut down to the water's edge.

The HUSTLER 305 D tractor with a fuel-efficient, 32-hp diesel engine.

Each side wing is 48 inches wide and floats independently.

Side wings feature a working angle of 20° above and below horizontal ground level so wings float over ground contours.

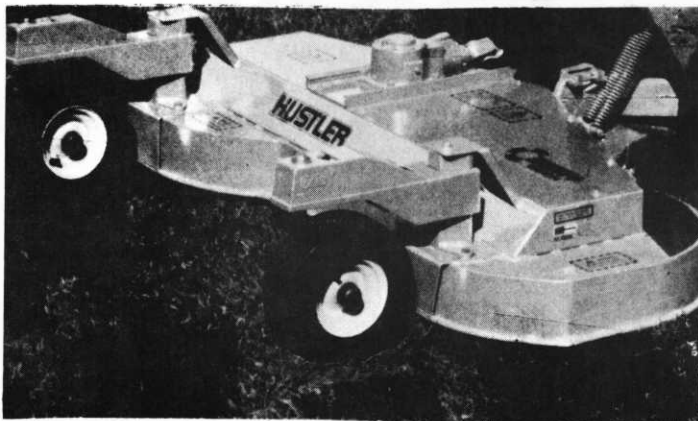


An automatic clutch disengages blade action when side wing is raised.

A direct PTO drive system powers the Dual Trim rear discharge deck.

New 72-inch, heavy-duty Dual Trim Deck has a 9¾-inch offset trim capability on both sides of the deck.

Double-Edge Blades last twice as long because they can be interchanged for right or left rotation.



The HUSTLER 3-Way Mowing Deck is the only deck on the market that lets you discharge cuttings to the side, rear or mulch. It can work within 3 inches of its own width and cut where most 50-inch mowers can't even go. The unique blade offset design and a 9.5-inch offset trim lets you trim closely around low trees and shrubs while providing excellent visibility.

Bryan Equipment Company

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HOLE NOTES

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FROM THE PRESIDENT'S DESK

DON LINDBLAD

First I want to thank Randy for hosting the fine meeting at Owatonna Country Club. Some of the people who attended commented on how good the educational portion was presented. Dr. John Ball of Waseca made an excellent and timely presentation. And what a great job Randy and his crew did to get ready for the Superintendents. No golf scores were reported since it was very windy!

Keith Scott and Mark Smith tell me that Minnesota Green Expo '84 which will be held June 13 will be one of the biggest turf shows to hit Minnesota. The boys tell me to expect 800 to 1,000 people there that day. There are at least ten groups of turf associations sponsoring this event. Our entire membership will receive information in the mail on the event.

In the early going we have had good response from our Associate Members to our request for money for research. I know Dale and Mark will publish a list in HOLE NOTES so we can thank all the right people.

Now is the time for all of us to keep our eyes out for prospective new members. If you hear of someone, give him a call and a personal invitation. That first friendly contact is the best way to get superintendents and assistants thinking about M.G.C.S.A.

With this kind of spring - cold nights and warm days - watch out for localized dry spot That's my little hint of the month.

Hope to see you all at the May meeting with big smiles on your faces!

SUPPORT YOUR ADVERTISERS

SAND GREENS: WARNING! PROCEED WITH CAUTION!



By: Roger Kisch
Southview Country Club

In 1980, after much discussion with the Board of Directors and Greens Committee, Southview Country Club decided to rebuild two of its worst greens. After a great deal of thought, I consulted with local experts and decided to construct these greens out of a high percentage of sand.

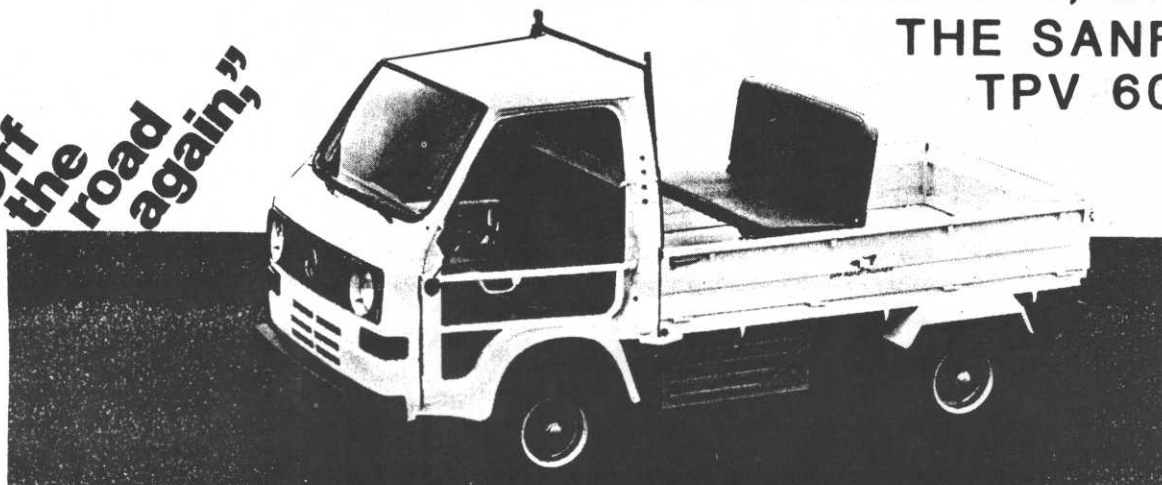
Although we had the soil tested and built according to university specifications, the greens were unmanageable and unplayable the

next three seasons. The following are just some of the difficulties I encountered:

1980...Seeded May with Penneagle
 ..Cut first time May 19
 ..Opened June 20 but turf wasn't ready-too thin, grass didn't have any body.
 ..Played "temporaries" off and on during July and August-turf wouldn't thicken up, very weak. ..September took soil test and found P.H. too high. Calcium and Mg. too high also. Initiated treatment program.
 1981...Started second season on new greens.
 ..Continued to bring P.H. back in line.
 ..Applied all nutrients, etc. "in the book" and nothing seemed to work.
 ..Applied nitrogen-turf got soft and lush.
 ..Did not apply nitrogen-greens didn't grow or fill in.
 ..August obtained professional assistance from University of Minnesota. They believed it was Micro nutrient deficiency. I tried many, but with no response.
 ..Playing temporary greens again and members began losing their patience.
 ..September U.S.G.A. Turf Advisory made a visit and suggested a soil test by Texas A&M. Results: High silt and clay content as
 continued on page 5

NEW FROM CUSHMAN MOTOR COMPANY, INC. THE SANFU TPV 600

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road
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With the Sanfu TPV 600, the work horse for hauling people and cargo off-road. Its 27 h.p., overhead cam, gasoline engine and four-speed, syncromesh transmission give the Sanfu power-plus.

The engine mounted over the rear wheels and turf tires enable the Sanfu to go where you want to go off-road under about any conditions. Its size, just over 10-feet long and 4½-feet wide, give it the agility to get around in tight places.

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well as high fraction of course and very course sand in mixture. Infiltration rate from 0.0 inches to 0.6 inches per hour. (U.S.G.A. Spec. 4 to 10 inches per hour).

..U.S.G.A. suggested rebuilding both greens. Membership would not tolerate any more inconvenience. Therefore, U.S.G.A. advised aerifying, removing cores and topdressing with different sand.

1982..Beginning third season with greens continuing in poor condition.

..Aerified and topdressed 7 times this season. ..Greens improved slightly following each aerification, but turf still not in good shape.

..Played "temporaries" a week or so this season-greens slightly improved by fall.

..P.H. almost okay.

1983..U.S.G.A. persists in their opinion to rebuild the greens but agree they are improving slightly.

..I continued aerifying program 3 times in 1983 because I hoped to build some thatch.

..Fall-greens are almost acceptable state, have changed soil top 2 to 3 inches. Starting to see roots over 1 inch for first time since initial seeding.

SUMMARY: I knew I was gambling when I constructed these greens with high sand content, but I never imagined that it could have been so difficult to grow grass on them.

This article just touches on the problems that Southview Country Club experienced with these greens. So when planning construction, proceed with caution and get more than one expert's opinion and make sure you use the right sand!

TAKE-ALL PATCH INFECTION

by JEFF MARKOW

Jeff is presently a student at Pennsylvania State University in the Turf Management Program and is interning at Minneapolis Golf Club this year. The technical information in this article has been documented by Patricia Sander, a research associate at Penn State.

Last summer several Minneapolis area golf courses were besieged by a new monster on the block -- take-all patch (formerly Ophiobolus patch), causal organism Gaeumannomyces graminis var. avenae (herein GGA). At

continued on page 7


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Generations ago, superintendents drove to the oceans, loaded their lorries with seaweeds that had washed to shore and carried them back to their courses for composting and topdressing. Others drove to local pasture lands and stockyards for natural manures to use as fertilizer.

The pioneers in golf course grooming couldn't have known that seaweeds contain unique hormones that stimulate cell division and delay senescence in turfgrasses. They simply knew that areas treated with sea plant compost seemed healthier and more resistant to stress. Neither could they have known that pasture manures contain unique amino acids that are beneficial to turf. They just observed that turf fertilized with these materials was noticeably heartier, denser and greener.

TODAY'S TECHNOLOGY REFINING THE BASICS

Today, researchers are identifying the key constituents responsible for the many benefits associated with these natural materials. And sophisticated processing technologies have been developed to extract and preserve these beneficial constituents making possible a new generation of safe, natural, highly effective products.

Each of our products has two things in common. They meet the exacting standards of consistent mesh size and gallon-to-gallon consistency demanded by today's turf professionals. And in their natural state they have proven their effectiveness over, literally, centuries of use.



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PanaSeá liquified sea plant extract contains 100 ppm cytokinin (a natural hormone) PLUS 70 chelated trace elements. PanaSeá is used on world class golf courses throughout North America.

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Farmura complements any fertilization program. It's an herbally reodorized, liquified pasture manure that's rich in micronutrients and amino acids. Farmura is ideal for "lean and mean" low N fertility programs. Farmura is used on most of the top courses throughout the British Isles including Birkdale—site of the 1983 British Open.



SAND-AID . . . soil conditioner

- REDUCES COMPACTION
- INCREASES MOISTURE & NUTRIENT RETENTION IN SAND

Sand-Aid granular sea plant meal contains a carbohydrate unique to sea plants. It's electrochemical action neutralizes the negative charge on clay particles helping reduce compaction. In sand, it develops into a porous aggregate which reduces water loss.

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Minneapolis Golf Club yellow-green patches of irregular diameter began appearing on the fairways during the late spring but stopped short of attacking the greens. These patches eventually turned a tan-brown and often contained centers of living grass (frog-eyes) resembling Fusarium blight or wilt. The advent of hot, dry weather caused the patches to enlarge and coalesce creating an unsightly blemish in the affected areas. The application of several contact and systemic fungicides failed to provide any effective control and these factors pointed to the symptoms of take-all patch contamination. This article will review current information on GGA and summarize the symptoms, environmental conditions and possible control of take-all patch.

Take-all patch infection begins during cool wet periods, through roots, stolons and stems, but disease centers become noticeable during the warmer periods of late spring. It can be spread by equipment, wind, water or plant to plant contact through runner hyphae. These yellow-green patches turn from tan to bronze and often resemble Fusarium blight. Under high temperature stress these areas can enlarge and often infected areas will become noticeable that were not previously

recognized in the spring. Diseased roots, stolons, etc. become dark brown to black and the association of thin strands of runner hyphae can be a helpful tool. Accurate diagnosis must be made in the lab to determine the presence of tiny black fruiting bodies in the plant crown, typical of GGA.

These symptoms occur most frequently on Agrostis supp., but have recently been isolated on P. annua and P. pratensis. Research is continuing to determine the susceptibility of various turfgrasses with the eventual hope of resistant cultivars, but let it suffice to say, the bents are presently the most susceptible. Moisture plays a role in the spread of GGA and thus poorly drained areas, slopes and low spots can create conditions favorable for infection. It has been suggested that increased N fertility can initially increase the possibility of infection but it seems the N also provides an escape mechanism for the plant by increasing root production which outweighs the predisposing of the plant to GGA. The most important environmental condition concerning GGA infection seems to be soil pH. Alkaline conditions increase the chance of infection while the addition of acidifying fertilizers can markedly suppress the activity of GGA. Liming can increase the

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Mike Redmond
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MAY



MEETING

HASTINGS COUNTRY CLUB
WESTVIEW DRIVE HASTINGS, MINNESOTA
MONDAY, MAY 14, 1984
HOST SUPERINTENDENT STEVE SCHUMACKER

- 9:30 A.M.....EQUIPMENT DISPLAY - R. L. GOULD & CO.
10:00 A.M.....BUSINESS MEETING
10:45 A.M.....SPEAKER, DR. DAVID FRENCH, DEPT. OF PLANT
PATHOLOGY, UNIVERSITY OF MINNESOTA
11:30 A.M.....LUNCH
12:30 P.M.....GOLF - SHOTGUN START

R.L. GOULD AND CO. WILL BE SHOWING THEIR LINE
OF EQUIPMENT THROUGHOUT THE DAY SO BE SURE TO
COME EARLY.

DIRECTIONS TO HASTINGS: Highway #52 to Highway #55. East to Westview Drive
Highway #61 to Highway #55. West to Westview Drive
South on Westview Drive to the club.

ADVANCE REGISTRATION FORM FOR MAY MEETING AT HASTINGS COUNTRY CLUB

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NUMBER ATTENDING: _____ ENCLOSED IS CHECK FOR \$ _____. COMPLETE COST OF LUNCH \$7.00

MAKE OUT CHECK TO M.G.C.S.A. AND MAIL WITH THIS FORM TO: RUSS ADAMS,
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DEADLINE FOR RESERVATIONS IS WEDNESDAY, MAY 9, 1984. RESERVATIONS AND PAYMENTS
A MUST!

TURF SUPPLY COMPANY

News Update

PHONE (612) 454-3106

Vol. 1 No. 5

Summer 1984

Expect Early Compaction of Soils During Summer of 1984

Have you ever noticed that most years during the heavy rainy season of May and June the soil generally will handle a rainfall of one inch or more without too much standing water on your golf course. But as the summer moves along (usually about late July) the soils begin to become less permeable and a 1/2 inch or even 1/4 inch rain will begin to leave puddles on your course. Drainage is not as effective as it was earlier in the season.

Although deep frosts cause problems with irrigation pipe and cold spring soils, there are some benefits as well.

As you know, the ideal soil is made up of 50% pore spaces, and if 50% of that pore space is filled with water, we have the setting for a "Giant Cultivation" or fluffing of the soil. Imagine also that each particle in the soil has a thin film of water around it. Now if that should be subjected to a deep freeze you can see that each ice particle formed will exert pressure in all directions from the soil particle that it had surrounded.

This causes considerable movement between particles, and the only way they can expand is usually up. Thus a frozen soil, versus one that is protected from frost, will have inches of change in elevation. This change in elevation is more dramatic or visual in peat soils; and, if you should be so unfortunate as to have a peat fairway, you may even have trouble mowing the new contours or hummocks in your fairway come the following spring.

The winter of 1983-84, although very severe, came on with such an onslaught of snow that very little cooling of the soil occurred and, for the most part, very little or no frost existed on the majority of golf courses.

Now "Here" is the gist of this story: Since there was no frost in the soil you have carried many of your compaction problems of last fall into the spring of 1984.

You will not see the 1984 soils taking in heavy rains. There will be less permeability of the soils and compaction may plague you for the entire season.

We look for increased usage of surfactants to alleviate some of the problems. We recommend two "Trade Name" wetting agents, besides being good penetrants and spreaders, they both exhibit very low plant toxicity and very high adsorptive behavior.

"Hydro-Wet" is a single type wetting agent and "Aqua-Gro" is a blend or broad spectrum and active in more types of soils.

We recommend and sell these two types.



Beware D.E.D.

You will be deluged this year by a new product purportedly labeled as the great panacea for Dutch Elm Disease.

The material is called Phyton 27 and is hitting the market with an all-out advertising campaign. It has not been tested by the University of Minnesota so results are inconclusive to this date. This does not stop them, however, and they are proceeding undaunted.

They advertise that the University of Minnesota has been made 20% owner of the corporation merchandising the product and that the EPA has granted them a label. It should be noted, however, that the EPA does grant labels on the basis that the materials are safe to handle and safe to the environment. They, in no way, imply that the labeled materials will do what the labels state they will do.

ARBOTECT is the proven material. Mark Stennes' work will be published this year. The special 3-year rate is an addition to the ARBOTECT label. Developed at the University of Minnesota this technique allows ARBOTECT 20-S to be used at the rate of 12 ounces per 5 inches of DBH. This higher dosage helps protect the tree more effectively and for a longer time (3 years). Professional applicators will guarantee results with ARBOTECT injections.

Paternalistic Legislature At Work

House File 865 had its initial hearing in front of a Joint House Senate Committee composed of members from the House Environment & Natural Resources Committee and Senate Health & Human Services Committee during March.

The proposal would require all Golf Courses using hazardous substances to complete a material safety data sheet containing specific information for each hazardous substance in storage. Once completed, the sheets would be forwarded to the local fire department effective December 31, 1984. The bill also requires business owners to provide an inventory of hazardous substances to the Commissioner of Health effective December 31, 1985.

Now, if you feel you would like to keep records for the State as well as your Greens Committee, don't let your objection be heard. Besides, you will be providing a job for another paper shuffler down at the Capitol.

Sale and Use of Pesticides For Agricultural Vs. Turf Pest Control

The Department of Agriculture, Trade and Consumer Protection has received allegations that some pesticide products registered for use in agriculture have been sold to and used by persons engaged in pest control on turf, such as on golf courses. These allegations involve agricultural pesticides which have the same active ingredients as pesticides registered for use on turf, but which are apparently less expensive. While this situation may have certain economic advantages, in many cases it is also illegal under the state and federal pesticide laws. This is explained below.

SALE: It is illegal to sell, offer for sale, or distribute any pesticide for which claims are made which differ from its label directions. In other words, a pesticide can be sold only for the uses shown on its label. If a customer requests a pesticide for use on turf, the dealer is legally obligated to sell the product which has directions for use on turf on its label. A dealer who would sell such a customer a product without turf uses on its label, or recommend the product for turf uses, is doing so in violation of the Minnesota Pesticide Law.

Finally, it should be remembered that the ingredient statement on a pesticide label does not tell the full story of the product's composition. Most pesticides contain a number of "inert ingredients." These ingredients are "inert" only in the sense that they do not actively provide pest control. Different inert ingredients can have a significant effect on product performance, safety, ease of handling, phytotoxicity, and storage life. Two pesticide products with the same active ingredients may be formulated with different inert ingredients, and therefore have different properties. Product manufacturers, of course, have full knowledge of the composition of the product and its properties, and they devise label directions based on this knowledge. Since the product user has little or no knowledge of the inert ingredients, it makes sense to use a pesticide product only in the manner specified in the label directions.

2 Plus 2. MCPP + 2, 4-D Amine
Packaged mix, postemergence formulation that combines first-rate killing action with economy and convenience.



- Contains more active ingredient, so 2 Plus 2 is more economical to use per 1000 sq. ft. than the leading postemergence herbicide.
- Broad spectrum control of hard-to-kill and common broadleaf weeds.
- 1.9 lbs. 2, 4-D
- 1.8 lbs. MCPP
- Areas around trees can be treated without risk of root injury.
- Tender on grass.

Weeds Controlled	Rate of Application	
	Per 1000 sq. ft. in 1-2 gals. water	Per acre in 20-40 gals. water
Over 20 common and hard-to-kill broadleaf weeds.	2-2 1/2 fl. ozs.	2 1/2 to 3 qts.

Pythium Root Rot

According to an article authored by Dr. Hodges of Iowa State University entitled "Pythium and Sand Topdressing," he points out that when you adopt a sand topdressing program on an established green, there is often an increased incidence of Pythium as well as other diseases. He theorizes that since sand is sterile, it offers no microbiological competition to disease organisms. So it's essentially a defenseless medium. Consequently, a number of researchers are suggesting that turf managers add 2%-5% organic material by volume when they topdress. SAND-AID is ideal for this application. It's 84.6% organic, rich in micronutrients and it will reduce both nutrient leaching and water losses. You can blend it in with your topdressing mix or apply it alone.

It's also a good idea to apply it after you airify in the spring and/or the fall. Put it down with a drop spreader at 10 lbs. per 1,000 ft.² while the holes are open to get it into the soil profile. Then just topdress right over it.

Ask your Turf Supply salesman about it.

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**BLENDED NON-IONIC
SOIL WETTING AGENT**

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soil conditioner
and topdressing
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... soil conditioner

- REDUCES COMPACTION
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Sand-Aid granular sea plant meal contains a carbohydrate unique to sea plants. Its electro-chemical action neutralizes the negative charge on clay particles helping reduce compaction. In sand, it develops into a porous aggregate which reduces water loss.

How Turf Supply Company Got Started

The farsighted little pig was the one who got ahead. He built a brick house, which got panned by the architects, but exhausted the wolf.

Being very analytical, the writer examined this fable in search of a "NUGGET FOR LIFE" in 1970.

The Wolf's Bad breath, it was decided, was to the little pigs of those days exactly what the winds of a flaky economy are to today's creative businessman.

"I need protection for my expertise in the turf field," I told my wife Rajah.

The cost of brick being what it was, she didn't think it was very smart to build another house, especially a brick one.

I decided instead to build a one-man corporation.

That was before I got the news from the State about making unemployment compensation payments.

Turf Supply is without doubt one of the world's smaller corporations. As a former Golf Course Superintendent, I lacked the native shrewdness and guile to deal with most corporate intricacies. "I will be the president, the sole stockholder and the sole employer," I told Rajah. "It's the only way I know how to protect myself against intra-office intrigue."

In 1970 we organized our company called TURF SUPPLY, doing business in golf course fertilizer and chemicals.

To sell fertilizer and chemicals you have to call on clients. This means order books, pads, pencils and a truck. Trucks, pencils and pads mean money!

The company president began spending money, receiving a line of credit from John and Rajah Kolb.

It was decided for tax reasons, Rajah would receive no salary so the company's lone employee then starting analyzing. Those exertions eventually gave rise to the corporation's first Position Paper. It was a very significant day because it meant the purchase of a staple-gun.

Shrewd businessmen had advised me that you could not consider yourself truly corporate until a staple-gun dignified the upper right corner of the corporate desk calendar.

Several clients arrived with their orders. The company president repaid the notes written by John and Rajah Kolb. He paid off the staple-gun in January 1973. With this I telephoned the Department of Economic Security.

"I understand it's right and proper that I should let you know when I begin drawing a salary," I said. "I'm calling as the only employee of Turf Supply Company, Inc. I am about to begin drawing a salary."

By the telephone I got congratulations. In the mail I got forms.

It was required under terms of one of these, to call a corporate board meeting and to pass a resolution opening an account with a broker, who happened to be Rajah. The board, as you know, consisted of Rajah and I. As president I spoke tersely but audibly, because as a non-employee Rajah was coerced into taking notes and minutes of the meeting.

I filled out all the forms and in good time got a reply from the Economic Security Department. For unemployment compensation, the law required me to remit 2.7% of the wages of each employee up to a certain pay level.

So I called the Economic Security Department and told them that I was the only employee, and that I also was the

president and lone stockholder. The lady on the phone conceded that everyone was entitled to certain behavioral quirks. She was nice, but she asked me to understand that it was the law and that it really did apply.

Another one of my qualities as a Golf Course Superintendent and a Christian is "humility, forgiveness and largeness-of-view." I said I "understood". "But if I'm eligible for unemployment compensation as an employee, why couldn't I just close down the corporation during the winter and put my one employee in a position to draw unemployment?"

The lady said this was a benefits question. She transferred me to another voice. The voice agreed it certainly was an interesting concept. But in the situation I had described, I would actually be resigning from the work force and was not being laid off. Therefore I was not eligible.

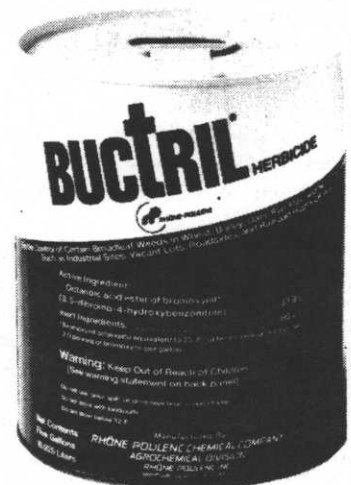
On the other hand... If the economic situation became so bad and the corporation's business was so poor that its one employee had to look elsewhere in the work force, I might be eligible for up to four weeks in unemployment compensation. The result was that I decided to pay the unemployment compensation, because of a very charitable attitude of a number of clients. More clients came to the rescue and we were able to hire Dave Krupp and beyond that Don Belkengren.

We shall always be grateful to those wonderful clients who made all this possible and we hope we will be of help and service to you now and in the years to come.

New Seeding Weed Control With Buctril

Buctril herbicide is a most effective broadleaf herbicide for control of broadleaf weeds in new seedlings.

Keith Auti, former agronomist with Northrup King, used Buctril on seedling plots at the experimental plots in Eden Prairie when the emerged grass seedlings were only two weeks old. There was absolutely no injury to the grasses and the material was very effective against the usual and casual weeds of the Eden Prairie landscape.



RUBIGAN Turfgrass Fungicide

Golf course superintendents can add to their arsenal of products to help fight turfgrass diseases in 1984 a new and unique, locally systemic fungicide—RUBIGAN 50W. RUBIGAN was used on over 35 golf courses in Minnesota in 1983 under an Experimental Use Program. In addition, RUBIGAN was tested by university scientists and golf course superintendents in other areas of the U.S.

Extensive research indicates that RUBIGAN controls five major turf diseases and ongoing testing for other pathogens shows promising results. This highly effective, locally systemic fungicide has both preventive and curative powers, with reach-back effect. Its longer lasting control permits less frequent spraying and its wide margin of safety allows the user peace of mind from damage to perennial turfgrass species.

RUBIGAN provides excellent control of dollar spot (including strains resistant to some fungicides), large brown patch, fusarium blight, stripe smut, and pink and gray snow molds. The product also is compatible with fungicides commonly used to control other diseases such as leaf spot, melting out, and pythium.

Turf managers will find the reach-back features of RUBIGAN, the ability to control the disease after it starts, of value in their operations. If disease is checked promptly, grass will recover rapidly. Also, if spray applications are delayed or missed because of equipment failure or bad weather, the reach-back of RUBIGAN can stop the disease.

The locally systemic action of RUBIGAN will allow turf managers considerable flexibility in their spraying programs. Once the fungicide dries, it cannot be washed off by rain or irrigation since it penetrates the leaf surface rapidly and moves locally through plant tissues to attack fungi from the inside.

Since RUBIGAN is a highly active material, very small amounts provide lasting disease control. Only 0.2 to 0.4 ounces per thousand square feet of turf every 10-28 days will control dollar spot.

Research has shown that there is no adverse effect on perennial turfgrasses from RUBIGAN if applied at twice the recommended rate for dollar spot for the entire application season. RUBIGAN used at application rates and spray intervals that reach cumulative rates of approximately 2 ounces per thousand square feet during a single season may help the turfgrass manager to gradually reduce the amount of *Poa annua* in his turfgrass area. RUBIGAN acts in green plants by reducing the biosynthesis of gibberellic acid, the cell elongation hormone in green plants. This results in a reduction in normal internodal elongation and a concurrent reduction in overall plant growth. *Poa annua* is much more sensitive to this growth effect than perennial grass species, resulting in a slower growth of the *Poa annua*, allowing the perennial species to become more competitive and gradually take over the *Poa annua* stand. The proper use of this management technique can assist the golf course superintendent in managing the *Poa annua* on greens and other intensively maintained areas.

If the golf course superintendent's objective is to reduce his *Poa* population he must manage the area for his perennial species. *Poa* reduction is a gradual process that will become more apparent over time. RUBIGAN is not a her-

bicide, therefore, single applications at a given rate should not be expected to succeed in controlling *Poa*. As signs of *Poa* reduction become apparent and progress to where the perennial turf is encroaching into the *Poa annua*, the superintendent must determine whether this achieves his personal goals for the season or if additional applications are appropriate. There is no single quantity of RUBIGAN that will achieve the desired effect for each superintendent.

Remember, RUBIGAN is a systemic fungicide labelled for the control of a number of major diseases of turfgrass. RUBIGAN can also be used to enable the superintendent to manage the *Poa annua* content of his intensively maintained turfgrass areas (Users should refer to the label and *Poa* Information Bulletin and understand all aspects of the product before its use).

RUBIGAN is available as a concentrated 50 percent wettable powder, packaged in one-pound plastic bottles, four bottles to a case.

**Wipe out dollar spot
before dollar spot
wipes out your greens.
Daconil 2787® fungicide.**



Nostalgia

The writer was pleased and very surprised to see the article "Bird Hazards on Midway's Golf Courses" [*Golf Course Management*; April, 1984: pages 43-45.]

It's an interesting article, but probably more so to someone like myself who spent one and one half years on Midway 40 years ago. Reading the article and looking at the pictures of lush greenery just doesn't seem like they were writing about the same barren place that I had seen. Of course, they probably are using IBDU to get the grass to grow in that pure coral sand. Removing thousands of people might have helped also.

We had arrived shortly after the Japanese were rebuffed in what was referred to as the "Battle of Midway". The only trees we saw were a few planted around the old Pan American Airways office. There were no signs of turf anywhere and the only native vegetation was a low shrub called *Scaviola sp.* The article implies that there might be more than one golf course. One could walk the entire perimeter of the island in less than two hours, so I'm sure they might be talking about less than 9-hole courses.

My curiosity is heightened by the referral to irrigation and water. Top elevation of the island was about 12 to 18 feet above sea level and was formed by an old volcano cone. Thus no fresh water existed and the water from below ground was pure sea water. It never rained the entire 18 months that I was there! I watched two generations of "gooney birds" mate, nest and learn to fly during that 18-month period. There were two types of Layson Albatross, plus numerous terns, petrels, bosin birds, frigate's, etc. The ground would be so thickly covered with birds that you could not walk through them. We were not allowed to kill or injure a single bird, although the corsairs and Navy pilots did a pretty good job of chopping them up!

possibility of infection, especially when fine particles are used. The smaller particles create a more rapid rise in the pH, but the effects are often not seen for 1-3 years after liming.

The control of take-all patch can be difficult and frustrating. None of the commercially available fungicides have proven effective either in preventative or curative applications. The only proven effective control has been the application of some form of sulfur, predominantly ammonium sulfate. Studies in Washington state where GGA has been prevalent have shown suppression of take-all patch using 4 appl. of $(NH_4)_2SO_4$ at 6 lbs./M for home lawns. These rates must be modified for the area being managed, i.e. putting greens - 3 lbs./M in 6- 8 appl./season. Maintaining proper fertility levels and a balanced irrigation program will create the least favorable environment for GGA. Promising new systemics are currently being developed but as of yet none have been registered for use and, therefore, the best recourse is an attempt at control through acidifying fertilizers.

In light of this information, it seems the infections at Minneapolis Golf Club were the handiwork of GGA. As mentioned earlier the

infections stopped short of the greens, possibly due to the higher maintenance program they receive. This program includes increased fungicide applications, but more importantly the application of sulfur (granular) and sul-po-mag after aerification. Since the soil and irrigation water are slightly alkaline, this would create favorable conditions for GGA infection, and coupled with lower maintenance could explain why the disease was confined to the fairways. The infections occurred in low areas and on slopes (correlating to the moisture factor) but was not universal. More research is needed into this new dilemma and the conditions surrounding its incidence. Until effective chemical can be developed, the best recourse to prevent infection seems to be sound cultural practices and experimental applications of acidifying fertilizers. Otherwise dust off the Ouija board and practice, practice, practice.

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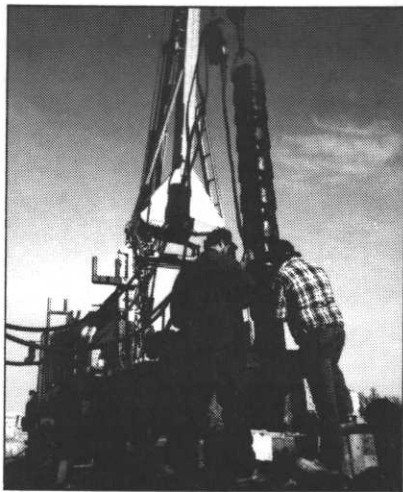
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ONE HUNDRED YEARS OF EXPERIENCE AND GROWTH

by JOHN R. HOPKO
Turfgrass Specialist
Northrup King Company

Northrup King Company celebrated its 100th Anniversary in January of 1984. Two young men, Jessie E. Northrup and Charles P. Broslan, started a small seed store in the autumn of 1884. On November 4, 1896 a new company was formed when Preston King joined Mr. Northrup. This established the name Northrup King replacing the name of "Polar Seeds".

In 1916 after several years of considerable growth, the present plant and international headquarters was constructed at 15th Avenue and Jackson Street Northeast. This plant still serves as the center of distribution.

The company employs over 2,000 people and markets seeds in over 60 countries.

Turf research began with trial grounds established in 1948 at the Eden Prairie Research Station. In 1953 Howard Kaerwer was given the responsibility of Manager, Research-Service Department. His efforts along with others produced many of the improved varieties that we have used and continue to use today.

During the 1960's N.K. released NK100. This was the first improved turf-type perennial ryegrass made available to market.

In 1972 NK200 was released followed by several improved varieties of bluegrass, ryegrass and fescue.

continued on Page 13

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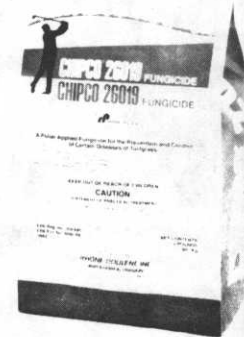
It protects turf from the major diseases: Helminthosporium Leaf Spot and Melting Out, Dollar Spot, Brown Patch, Fusarium Patch and Blight, and Pink and Grey Snow Mold.

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