

Off the Market

*Last mercury-based pesticide,
Calo-Clor, now is obsolete*

By Hal Phillips

Whether or not you agree that mercury-based pesticides pose tangible threats to the environment and their applicators, the last of this chemical breed disappeared from the market place.

The federal Environmental Protection Agency (EPA) has canceled the registration of the mercury-based pesticides Calo-Clor and Calo-Gran, as voluntarily requested by Grace-Sierra Crop Protection Co. (The request was made last year and Grace-Sierra has since been purchased by The Scott Company.)

Reactions in the golf course industry vary widely, as some applaud the move and some decry it. Either way, superintendents in Northern climes are searching for new ways to treat pink and grey snow mold.

"A lot of guys use (Calo-Clor), and I imagine a lot of guys are stockpiling right now," said Kevin Ross, superintendent at Falmouth (Maine) Country Club. "I don't use it and I'll tell you why: For any sort of disease management, I like to use the least toxic product available. This stuff (Calo-Clor) comes with a skull and crossbones on it."

"It does carry the danger label," confirmed Greg Wahl, national accounts manager for Scotts. "Mercury is a carcinogen, and you have to remember that mercury has been eliminated from most everything. Batteries may have a little mercury in them, but that's it."

Calo-Clor and its granular cousin Calo-Gran were the last mercury-based pesticides still registered for use in the United States. They contain the active ingredients mercuric chloride and mercurous chloride. Approximately 21,000 combined pounds of these two pesticides were used annually, according to EPA.

Under terms of the cancellation action, Scott could sell and distribute products labeled for release or shipment on or before June 25 of last year until June 24, 1994. Retailers and other distributors may sell these products until their stocks are exhausted and users may use them until their supplies are depleted.

Dr. Noel Jackson, the renowned University of Rhode Island agronomist, isn't convinced that mercury-based products are harmful when applied on golf courses.

"The amount used on golf courses is extremely limited," Jackson explained. "And most of the mercury is tied up in the soil profile. It doesn't move laterally. It doesn't leech. Whether you think of that as an environmental danger, that's up to you."

"I don't."

Patty Knaggs, head superintendent at Hazeltine

National Golf Club in Chaska, can't argue with the product's effectiveness.

"It's superb," she said. "But I won't stockpile it, though I had the opportunity to do so. I'm just as happy to face the real world."

Regardless of where you stand on the mercury issue, superintendents who used Calo-Clor and Calo-Gran are searching for alternatives. Wahl said Scott is "currently working on a couple of compounds to replace them."

Ross endorses a combination of Daconil and Chipco 26019, as well as a combination of Daconil and Curalan.

Knaggs said she has also found success using the Daconil-Chipco combination, though it's significantly more expensive than Calo-Clor and about "80 to 90 percent as effective."

On another front, Ross made an interesting discovery this year.

"This past winter I tested Banner, which has looked real good," said Ross. "The spots where I used it are spotless this spring, and this was one helluva year for snow mold."

"Daconil, on the other hand, has been around forever. But no one's ever used it for snow mold. It works great."

The problem with systemic fungicides like Banner — not to mention Bayleton, Rubigan and Turemec SP — is overuse. Both Ross and Jackson agreed that excessive spring dollar spot application might build a tolerance to the fungicide, precluding its use when you really need it — in the summer.

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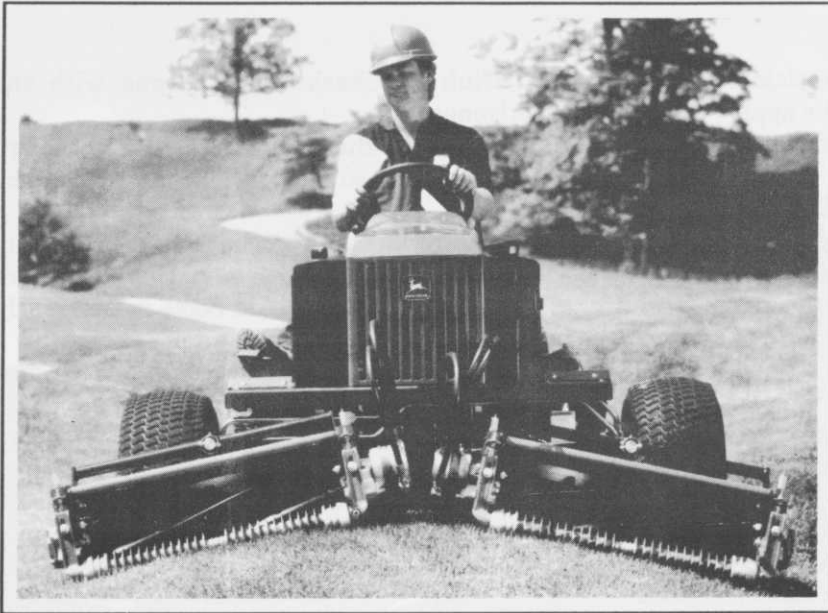
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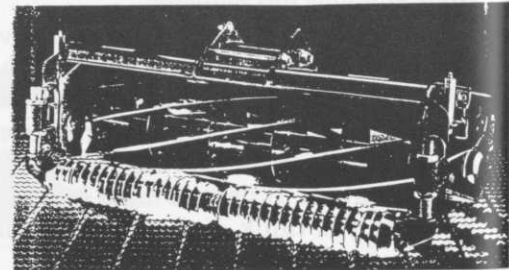
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TEE TALK

By
Scott Turtinen
Executive Director, MGCSA



Coming up *very* soon is the Third Annual Garske Scholarship Scramble on Monday, July 18, at Rochester Golf & Country Club.

The afternoon shotgun is full. All future entrants will have to play in the morning shotgun, which starts at 7:30.

Remember, there is dinner after golf, but you *must* be registered in advance. There will be no dinner tickets available at Rochester.

However, if you haven't signed up as yet, there is still time to do so.

* * * *

Congratulations to James Johnson, Rich Springs Golf Club, who now can add CGCS to his title. Jim has been designated a Certified Golf Course Superintendent by the Golf Course Superintendents of America.

* * * *

The 1994 Dues Statements have been mailed. If you did not receive one, please call the MGCSA office (612/475-0557 or 800-642-7227).

In addition, please check your pesticide number. They have been changed to a 10-digit number. Some superintendents have paid their dues, but they put their old pesticide numbers.

* * * *

The MGCSA's 8th Annual Turf Tourney attracted 32 teams. Although this competition on June 17 was interrupted by some heavy rains, blue sky returned, and everyone was able to finish their rounds.

The team of Bill Priebe, Mike Duffey, Jim Beyl and Tom Dorn playing at North Oaks Country Club won the event with a score of 117.

* * * *

If you want to see some of the top amateurs in the country, go to Minikahda and Somerset for the 91st annual Trans-Mississippi Mid-Amateur Championship.

This prestigious tournament, one of the oldest in the United States, starts with 18 holes of qualifying on Monday and Tuesday, July 11, at both clubs.

The full field of 172 players will be trimmed to 96 following the 36 holes of medal play. Then the low 63 players will join defending champion David Ojala, a former University of Minnesota golfer, in Championship Flight match play at Minikahda. Born in Two Harbors, Ojala has lived in the Houston, Texas area for the past 25 years and plans to try out for the PGA Senior Tour this fall.

The next 32 qualifiers will compete in President's Flight match play at Somerset. The Championship match gets underway at 8:30 a.m. Saturday, July 16, at Minikahda.

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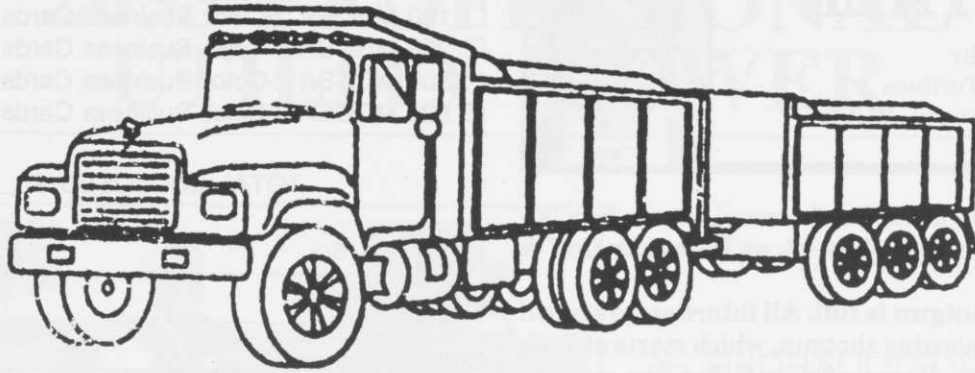
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Rochester Golf & Country Club: A Unique History

By Yvonne Hubmayr

Until 1915, the only golf facility in Rochester was a six-hole course called "Silver Creek Golf Club." The Silver Creek greens, according to Golf Course Superintendent and local golf historian, Jim Gardner, were "hand-trimmed circles" and "the groundscrew consisted of a flock of sheep and a few goats." Avid golfers, no doubt, longed for a more substantial yet consistent challenge.

Their longing was somewhat appeased in the fall of that year when Doctors E. S. Judd and D. C. Balfour bought 100 acres of farmland on the present site of Rochester Golf & Country Club to lease it for use as a golf course. The site was ideal for the purpose because it was close the city and it offered unusual elevations in a relatively flat landscape.

A group of those avid golfers took up the lease and formed an association. In September, 1915, Red Wing course professional, Harry Turple, came to Rochester to lay out a nine-hole golf course at the new site and the Rochester Golf Club was born. A. H. Andrews was hired as the club's first professional. In 1921, James Alves held that position and remained with the club throughout most of the twenties and into the thirties.

A windmill served as the clubhouse until a more substantial building could be erected. Improvements were made, over the years, with the voluntary labor of club members. In the April 27, 1920 edition of Mayo's *The Clinic Bulletin* for example, it was reported that about fifty men put in an eight-hour day leveling ground around the clubhouse, laying a stone driveway, constructing a 15 foot bunker and sodding teeing grounds. It was hard work but not hard enough to suppress the witticisms of certain members. *The Bulletin* reports, "Dr. Lyons is said to have had very good form with the shovel, but Dr. Judd

claims that Dr. Lyons has an advantage in coming from Joliet, Illinois where he must have received excellent training. The latest news says that most of the men have temporarily lost their interest in golf."

The Rochester Golf Club carried on the British tradition of naming each hole. The 9-hole course had names such as "Panorama," "Misery," "Pit-fall," and the 135-yard "Inspiration" which it certainly was to Doctor R. D. Mussey who hit the first hole-in-one of the course on that hole in September, 1922.

By 1926, a ballroom and kitchen had been added to the clubhouse but the members looked toward a more challenging golf facility. Around that time, the club had an incredible stroke of good luck when a Mayo Clinic physician married the daughter of noted golf architect, Albert Warren Tillinghast.

It was good luck for two reasons. Firstly, "Tillie" agreed to design the new 18-hole course for the fee of lifetime memberships for his daughter and son-in-law and, more importantly, he was one of the best golf architects of his era. He had already designed such prestigious courses as the San Francisco Golf Club (1915), the Hermitage C.C. (1916), Richmond, Va., Baltimore C.C. at Five Farms (1921), Baltusrol Golf Club (Upper and Lower, 1922), and Winged Foot Golf Club (1923). Other architects of his era may have designed more courses than he, but his have stood the test of time. At last count, in 1985, his courses had hosted 35 major championships—far more than his contemporary colleagues.

At Tillinghast's recommendation, an additional 35 acres on the east side of the course (the area which is now occupied by the fifteenth and sixteenth holes) was purchased. In the summer of 1926, Rochester Golf Club

became incorporated and changed its name to "Rochester Country Club." Construction began that fall and the course was opened the following summer.

Besides Tillinghast, there was another man who left his indelible stamp on the Rochester Golf & Country Club. Walter D. "Pop" Shelden, M.D. was one of the golf enthusiasts who took out the lease which began the club back in 1915. He became a club champion, winning the state seniors championship several times as well as the American Medical Association's tournament. But it was in Texas that he got the idea which left his mark on the club.

The Rochester course held some oaks and elms but was mostly open, so, when Pop Shelden played on a course near Texarkana which had been virtually cut out of a dense pine forest, he was highly impressed and the light bulb went on. As soon as you tee off at Rochester Golf & Country Club you will recognize Pop Shelden's indelible stamp!

In the early thirties, Pop Shelden bought 5,000 pine seedlings from the University of Minnesota for ten dollars, and started a nursery at the southwest corner of the course. It is estimated that his project grew in number to include 65,000 trees of which about 30,000 were transplanted to the course. Varieties also grew to include spruce, ash, birch, oak, walnut, poplar, flowering crab and flowering plum.

Pop Shelden drew up plans for the proper distribution of the trees and planted many of them with his own hands. Unfortunately, he died in 1946 (age 76) before he could see his project completed. If he could have heard U.S. Open Champion Ken Venturi's comment years later, he would have known his dream had been realized.

(Continued on Page 21)

Math Quiz

Below is a math quiz that was recently given to students in turfgrass management at the University of Illinois that you may want to try. It was a closed book quiz. The GCSAA has indicated that the math section of the certification exam is usually the one that causes the most problems for superintendents. This quiz has problems similar to those covered in the GCSAA booklet "The Mathematics of Turfgrass Management." The pesticide problems are similar to those that are covered on the State of Illinois applicator and operator certification exams.

1. How much 16-3-8 should be purchased to fertilize 2.5 acres of greens at a rate of 0.75 pounds of N per 1000 square feet. (5 points)

2. A superintendent with 20 acres of fairways is going to use a N fertilization program at a rate of 3 pounds of N per 1000 for the season. Half of the nitrogen will come from a slow release (SCU, 22-5-10) N source while the other half will come from urea. How much elemental K will be applied per 1000 square feet? (7 points)

3. The herbicide 2,4-D is frequently used at a rate of 1 pound active ingredient per acre to control dandelion. How much of a 4EC formulation of 2,4-D should a superintendent dump in to a 200 gallon spray tank if the sprayer is delivering 35 gallons of spray per acre? (6 points)

4. Your golf course, with 20 acres of fairways and 5 acres of greens and tees, has been placed on a restricted watering schedule by the local municipality. The allotment for June 1 to June 28 for the course is 275,000 cubic feet of water. You plan to apply 1 inch of water per week to the greens and tees. How much water, expressed in inches, can you apply to the fairways? (1 cubic ft = 7.48 gallons, 1 acre inch = 27,154 gallons) (10 points)

5. The Turf Products catalog lists several formulations of Dursban, an insecticide. The 4E formulation sells for \$540.75 for a 5 gallon container. The 50WP formulation sells for \$192.50 per case (12 pounds). Which is the more cost effective and what is the difference in price? (8 points)

(Continued on Page 31)

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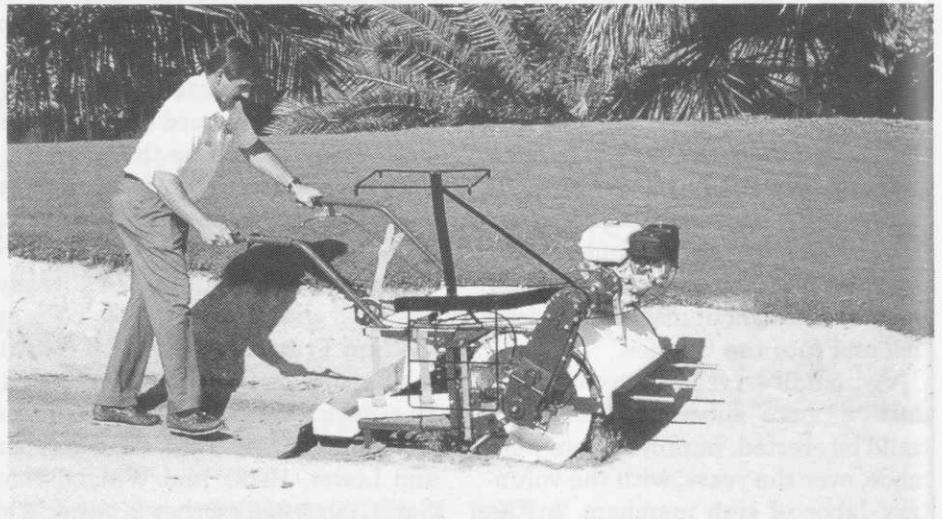
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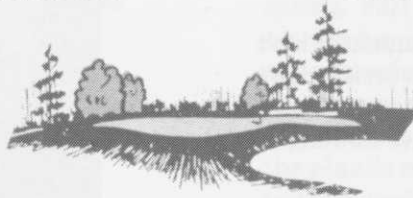
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U of M Update

By
Bradley Pedersen
University of Minnesota



Ornamental Grasses for Golf Courses

Mary Hockenberry Meyer
University of Minnesota

This month's feature article was contributed by Mary Hockenberry Meyer. Mary has just completed her Ph.D. at the University of Minnesota and has accepted a position as Assistant Professor and Extension Horticulturist at the University Landscape Arboretum. Mary's specialties are ornamental grasses, native grasses, and alternative grasses for lawn and commercial turf.

All of the grass on your golf course is ornamental isn't it? Of course, but the grasses referred to in this article don't require mowing, vary in height from 6" to 10" at maturity and are grown for their overall form, attractive flowers, or foliage.

There are hundreds of grasses to choose from; some can offer an exotic look to a water hazard, others can turn the edge of a rough into a natural prairie, and still others combine well with perennials in flower beds.

The most common concern for our area is, will these grasses survive the winter? Eighty-five grasses and hedges survived for six winters, from 1987-1993 at the Minnesota Landscape Arboretum in a collection of 165 species and cultivars. Some of these are native to the Midwest or Minnesota, others are exotics from Asia, Europe or Australia, etc. The grasses highlighted in this article are hardy perennials for Minnesota that have these attractive features:

- Very few insect or disease problems
- Low nutrient requirement
- Low maintenance (except spring cutback)
- Provide more than one season of interest; flowering in spring, summer or fall, with beauty and color lasting into winter
- Fast growing; almost all species reach their mature size by the second year for large plants this means a 5-8' plant
- Provide texture variation, from fine fescues to coarse giant miscanthus
- Offer foliage colors of blue, yellow, bronze, red as well as variegated white and yellow
- Movement with the wind provides sound and motion as well as interest and beauty

Although there are many possible uses for these ornamentals on your golf course, three areas will be covered in this article 1) grasses for use near water 2) native grasses which can be grown as a naturalized area or prairie and 3) grasses for use with other bedding plants.

GRASSES FOR USE NEAR WATER

On a golf course, ornamental grasses near a water hazard, pond or stream can add an exotic or naturalized look, depending on which species you select. **Miscanthus** gives the exotic look of Asia, with its large, silvery white plumes in September, while **Spartina** is a less conspicuous grass with long sword-like leaves that is native to the wet soils of the tallgrass prairie.

Listed in Table 1 are grasses that can be planted along the edge of water. **Spartina** will tolerate some standing water; all tolerate wet and poorly drained soil. An attractive grouping near water would be giant miscanthus in the background with red flame miscanthus in the center and Feeseys form ribbongrass in the foreground.

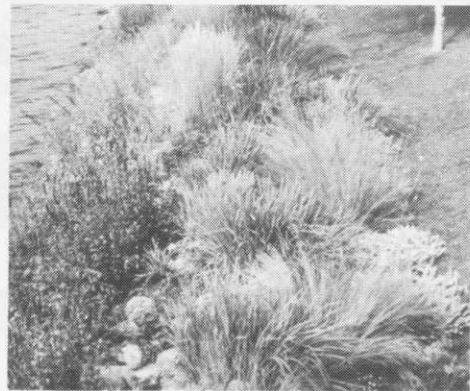


Table 1. Grasses for use near water.

Botanical Name	Common Name	Height	Origin
<u>Miscanthus floridulus</u>	giant miscanthus	8-10'	Asia
<u>Miscanthus 'Purpurascens'</u>	red flame miscanthus	4-5'	East Asia
<u>Miscanthus sacchariflorus</u>	Chinese silvergrass	6-8'	Asia
	northern pampas grass		
<u>Panicum virgatum</u>	switchgrass	3-8'	North America
<u>Phalaris arundinacea 'Picta'</u>	ribbongrass	2-4'	Europe
<u>Phalaris arundinacea luteo-picta</u>	yellow ribbongrass	2-4'	Europe
"	'Feeseys Form' Feeseys form	2-4'	
	ribbongrass		
<u>Spartina pectinata</u>	cordgrass	6-7'	North America
"	'Aureo-Marginata'	6-7'	North America

NATIVE ORNAMENTAL GRASSES

Several attractive grasses are native to the tallgrass prairie that once covered western Minnesota. Shorter grasses usually prefer dry sandy soils, while the taller species favor wet sites, Table 2. After establishment they need only an annual mowing (or burning, with a permit from your local municipality) for maintenance. these may be appropriate for out of bounds areas beyond the rough, at the edge of a woods or natural area. All prefer full sun and can be planted with other native wildflowers to create a replica of the original prairie. Little bluestem can be grown with two shorter natives such as mosquito grass and side oats grama on dry, sunny sites and will only require an annual mowing after establishment. Little bluestem has attractive white flowers in September, followed by orange fall color, both of which last until early spring.



Table 2. Native ornamental grasses for use in naturalized or prairie areas.

Botanical Name	Common Name	Height	Soil Preference
<i>Andropogon gerardii</i>	big bluestem	3-8'	mesic-wet
<i>Routeloua curtispindula</i>	side oats grama	12-30"	dry
<i>Routeloua gracilis</i>	mosquito grass	8-20"	dry
<i>Koeleria cristata</i>	June grass	1-2'	dry
<i>Panicum virgatum</i>	switchgrass	3-8'	mesic-wet
<i>Schizachyrium scoparium</i> (<i>Andropogon scoparius</i>)	little bluestem	2-4'	mesic-dry
<i>Spartina pectinata</i>	cordgrass	6-7'	wet
<i>Sporobolus heterolepis</i>	prairie dropseed	3-3½'	mesic
<i>Sorghastrum nutans</i>	Indian grass	4-6'	mesic

GRASSES FOR PERENNIAL PLANTINGS OR AS SPECIMENS

The most common use of ornamental grasses is in conjunction with other flowering annuals and perennials. Just as you would use peonies or iris, ornamental grasses when planted in beds or borders add beautiful flowering plumes, colorful foliage or attractive fall color. Several good selections for our area are listed in Table 3, with their noted features. Remember that much of the overall beauty of grasses is seen in the fall and winter; planting them where they are visible from the clubhouse dining room can add interest to the golf course year round.

There are many combinations of grasses that look good; feather reedgrass behind blueoat grass is attractive. Blueoat grass is often highlighted with pink and white begonias or petunias. *Miscanthus* can be grown in the background of a planting with silver spikegrass and chrysanthemums in the mid and foreground, respectively. All of these look especially good in the fall.



Table 3. Grasses for perennial borders, flower beds or as specimen plants.

Botanical Name Common Name	Height	Features
<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	4 ½'	Stiff, upright form; pink flowers in July, turning beige by August. Wheat-like appearance.
<i>Calamagrostis x acutiflora</i> 'Stricta') feather reedgrass		
<i>Calamagrostis brachytricha</i> fall blooming feather reedgrass	4'	Pink-purple flowers in Sept
<i>Carex flava</i> yellow sedge	24"	Beautiful yellow and green striped foliage; requires shade.
<i>Deschampsia caespitosa</i> hairgrass	3 ½-4'	Large beige flowers make a soft mound of "hair" above almost evergreen foliage. Prefers moist and shady sites; can be difficult to establish in sun.
<i>Helictotrichon sempervirens</i> blue oatgrass	2-3'	Forms a blue mound of foliage larger than dwarf blue fescue; more tolerant of heavy soil, but still prefers sun and good drainage.
<i>Miscanthus floridulus</i> miscanthus	8-10'	Huge bamboo-stems with long coarse giant leaves; rarely flowers, slightly spreading clump.
<i>Miscanthus</i> 'Purpurascens' red flame miscanthus	4-5'	An excellent grass for MN; forms clumps; orange fall color.

CULTURE AND MAINTENANCE

In Minnesota, ornamental grasses are best planted in spring. Fall planting may be successful with container plants; however, winter protection may be necessary. Local nurseries and garden centers sell the most popular grasses; many mail order nurseries handle a large number.

Spacing is determined by the desired landscape effect and the plant's setting. A 'rule of thumb' to space plants equal to their mature height, (thus plants 4' tall are spaced 4' apart) can be followed, but is usually adjusted according to the end result desired. Grasses used as a hedge or screen are usually planted closer together, while a group of three or four specimens should be spaced farther apart.

Propagation is usually by division, especially for cultivars. Large, mature grasses may benefit from spring division, especially if the center of the plant is dead. This can be a major job requiring a sharp axe and a strong back.

Ornamental grasses should be cut back to the ground to remove the previous year's growth each year in early spring, about the first week in April in Minnesota. If this is done in the fall, winter injury may result, and the winter beauty of the plant is lost. If ornamental grasses are not cut back,

<i>Miscanthus sacchariflorus</i> Chinese silvergrass northern pampas grass	6-8'	Invasive rhizomes, hardy in northern Minnesota; naturalized in ditches and places.
<i>Miscanthus sinensis</i> 'Siberfeder' silver feather miscanthus	6-8'	Clump-forming, large silvery-white flowers in Sept.
<i>Miscanthus oligostachyus</i> Japanese silvergrass	4½'	Short, bamboo-like leaves; flowers in July; forms a dense clump.
<i>Molinia caerulea</i> ssp. <i>arundinacea</i> 'Windspiel' windplay tall moorgrass	6-8'	Tall, open-spreading form; pencil thin stems atop basal foliage gives this grass a unique look; Beautiful yellow fall color.
<i>Sporiopogon sibiricus</i> silver spikegrass	4-4½'	Thick clump of bamboo-like foliage; bronze fall color.
<i>Sporobolus heterolepis</i> prairie dropseed	3-3½'	Mound of fine foliage with airy, cloud-like flowers; reddish fall color. texture with airy cloud-like flowers.

Table 4. GRASSES WITH INVASIVE RHIZOMES

Botanical Name	Common Name
<i>Leymus racemosus</i> (synonym <i>Elymus giganteus</i>)	giant blue rye
<i>Leymus arenarius</i> (synonym <i>Elymus arenarius</i>)	blue lymegrass
<i>Miscanthus sacchariflorus</i>	Chinese silvergrass
<i>Phalaris arundinacea</i> 'Picta'	ribbongrass
<i>Phalaris arundinacea luteo-picta</i>	yellow ribbongrass
" " 'Feeseys Form'	Feeseys form
<i>Spartina pectinata</i>	ribbongrass
" " 'Aureo-Marginata'	prairie cordgrass
	variegated cordgrass

(Continued on Page 25)

New Weapons Available in the Battle Against Summer Bentgrass Decline

Summer bentgrass decline complex. Long considered the single greatest summer threat to cool-season turf, this disease complex causes severe damage on golf courses throughout much of the U.S. each year. But now that's changing.

Until recently, there was little that superintendents could do to stop this devastating root-and-crown rot disease complex. However, new research conducted at North Carolina State University has shown that the complex can be effectively controlled.

Understanding Bentgrass Summer Decline

Summer decline complex commonly occurs on bentgrass and other cool-season turf during the peak of summer, when temperatures and humidity remain very high. The very steady, widespread turf decline associated with this complex is the result of root and crown rots caused by various species of *Pythium* and *Rhizoctonia* (borwn patch) as well as environmental stresses.

Various stresses such as traffic, com-

paction, and poor air movement, coupled with high heat and humidity make bentgrass particularly vulnerable to damage from these diseases. As summertime temperatures and humidity increase, the already stressed turf is subjected to even more stress as root systems are destroyed by disease infestation

The result is a vicious stress-disease-stress cycle which causes very severe turfgrass damage and a decline in turf quality, according to Leon Lucas, Ph.D., Extension Turf Pathologist at North Carolina State University. Slow growth and recovery in the fall when growing conditions are favorable is another symptom of the decline.

"Cool-season grasses such as bentgrass are not well suited to the summertime heat and humidity that you encounter throughout the transition zone and in northern states during some years," says Lucas. "Therefore, bentgrass is more susceptible to damage from *Pythium* and *Rhizoctonia*. But we have found that summer decline complex can be effectively controlled if you use the right management techniques and the right combination of fungicides."

New Combination Provides Unprecedented Control

While searching for ways to control fungi associated with summer decline, Lucas and his staff experimented with various fungicide combinations. What they found in 1992 has already begun changing the way superintendents view summer disease control.

"We tested a large number of fungicides, alone and in combination for control of the *Pythium* and *Rhizoctonia* species that cause bentgrass decline," says Lucas. "What we found was that the combination of CHIPCO ALIETTE brand WDG fosetyl-Al plus Fore brand WP mancozeb fungicides provided virtually complete control. the result was dramatically higher quality turf"

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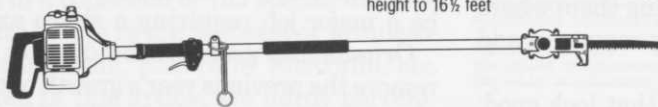
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