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3336 Turf Fungicide

A broad spectrum systemic fungicide that prevents and controls all 6 major turf diseases. Non-toxic, non-mercurial.

BROMOSAN Turf Fungicide

The newest broad spectrum systemic fungicide for those persistent problem areas or areas that have gotten out of hand.

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CADDY

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A dual purpose herbicide/fungicide. Safe for the finest turf.

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75% Thiram Fungicide can be mixed with PMAS or CADDY. Controls brown patch, dollar spot and snow mold.

CLEARY'S GRANULAR TURF FUNGICIDE

A granular - spreadable broad spectrum containing Thiram and Cadmium Chloride. Excellent for SNOWMOLD and for Spring and Summer diseases as well.

CAD-TRETE

A broad spectrum fungicide containing Thiram and Cadmium.

BROMOSAN

Contains Thiram and Cleary's 3336.

3336 TURF FUNGICIDE

A systemic wettable powder that controls all 6 major turf diseases.

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For selective control of chickweed, knotweed and clover on Bentgrass greens and fairways, Bluegrass and Fescues.

MCPP-2,4-D

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METHAR 30

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for a year and
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"Funny, I was thinking the same thing!"



Compliments on the quality of your turf management are always nice to hear. They make all those long hours of challenging work seem even more rewarding.

Speaking of compliments, we have a way that can help you earn more of them: the Du Pont TERSAN® 1-2-3 Disease Control Program.

Kudos from the greens committee.

With TERSAN LSR applied in the spring, TERSAN 1991 in the summer and TERSAN SP in the fall, you control all major turf diseases on all common turf grasses all season long. Helps keep your turf lush, green and resilient from the day the course opens till the day it closes.



Applause from the finance committee.

Read the label on each bag of TERSAN and you'll be surprised at how little you have to use and how long the protection lasts. Take TERSAN 1991, for example: a systemic, curative (eradicant) and protective fungicide. Just 1 ounce per 1000 sq. ft. applied every 10 to 14 days controls dollar spot on tees.

The TERSAN 1-2-3 Program is also designed to stop costly disease problems before they have a chance to cause trouble. So you get fewer tie-ups of men and equipment, more budget dollars saved.

Praise from your toughest critic.

As a turf professional, the standards you set for yourself are the most demanding of all. With the TERSAN 1-2-3 Program, you can come closer to meeting these standards and win praise from your toughest critic—yourself.

For complete information on this program and a supply of TERSAN turf fungicides, contact your golf course supplier.

With any chemical, follow labeling instructions and warnings carefully.



TERSAN 1-2-3 DISEASE CONTROL PROGRAM



**New England's
Tony Caranci**

Turf Management

Products Budgets & Philosophy

THERE'S NOTHING MAGIC about managing a golf course. It's just like any business where the executive is responsible for a million dollars of real estate which has to be programmed for the pleasure and relaxation of a large group of people. It's a matter of evaluation, planning, execution, and follow-through," according to Anthony B. Caranci, the golf superintendent at Ledgesmont Country Club, Seekonk, Massachusetts.

Tony Caranci should know. He grew up in a family of golf superintendents and completed the Agronomy and Turf Managers course at the University of Massachusetts. His late father was Anthony B. Caranci, Sr., the golf course superintendent at Louisquissett Golf Course and Valley Ledgesmont Country Club. His brother is Thomas A. Caranci — well known on the West Coast and currently superintendent at Oahu Country Club in Hawaii. Tony took over the Ledgesmont Country Club seventeen years ago, after several years at Louisquissett.

The Ledgesmont golf course was about six years old when Tony arrived. "Its problems were just be-

ginning to show up," reports Tony.

"I realized that as I presented my annual maintenance budget, I had to present my Long-Term Grounds Maintenance Program. The two were inter-related. Each year planning and budgeting had to take care of a portion of the over-all goals."

Listening to Tony, one soon grasps that the biggest problem he faced was water. There was either too much on the surface or not enough to irrigate.

To solve the problems of too much water, twelve holes have been reconstructed to improve the drainage, and this reconstruction program still continues on an annual basis. "Turfgrass is very sensitive to wet feet as well as to drought."

Tony's ingenuity was needed to solve the drought problem. When the local water shortage limited irrigation, Tony moved water from a nearby gravel pit, over the natural land contour, to keep the irrigation system going and the grass alive. The long-range problem has been solved by constructing two lakes on the course. Now, water can be pumped from a newly installed well about one-quarter mile away or from the

golf course. The water is held in the lakes for use in the irrigation system when needed.

This good water management has also improved the ecology of the area. The club cannot dig wells on its own ground, because the town of Seekonk draws its water supply from wells on the golf course. Now, with adequate lake reservoirs the irrigation system can run at optimum, and water is actually being returned to the land.

"Since the name of the game is putting the first concern of the golf course manager is the putting surface," Tony comments.

The turfgrass choice was Vesper velvet bent. And "to make the greens an even better test of golf" Tony designed contours into the surface as greens were reconstructed to improve drainage. Hazards were also brought into play. "As the sand traps were refaced they were no longer left hidden but contoured into the landscape.

"Landscaping is important to the aesthetics as well as the play pattern," says Tony. So, annually trees, both evergreen and deciduous, are
(continued on page 36)

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Because practically everything MAINTAIN touches grows slower.

Just how much slower depends on what the weather does to your greenery and what kind of greenery it is.

For example, 200 acres of grassed median in Pennsylvania were treated with MAINTAIN early last spring, just after the first mowing. The grass was cut once more before Labor Day, and that was it. MAINTAIN saved the State Department of Transportation approximately 5 mowings that year.

What's more, MAINTAIN works on trees, shrubs and vines as well as grasses.

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And MAINTAIN can be sprayed where machinery can't go. Up steep slopes. Around guard rails. Along fences.

At Washington National Airport in Washington, D.C., MAINTAIN was used on a dangerously steep bank between two levels of the airport. MAINTAIN saved the maintenance department 5 mowings, and the chance of injuries was reduced immeasurably because the equipment was not used as often.

Of course, the best way to find out what MAINTAIN can do for you is to try it. And the best way to do that is to get in touch with your U.S. Borax

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Experimental variety of Kentucky bluegrass (left) is tolerant to low iron availability compared to a common non-tolerant variety (right). Note mottled appearance of grass on right caused by iron deficiency.

lime content (calcareous soils) are most apt to have a deficiency of plant available iron. This is referred to as "lime-induced" chlorosis and is a common problem in much of the arid west. When soluble iron is added to these soils it is rapidly oxidized from the ferrous (Fe^{2+}) to ferric (Fe^{3+}) form and precipitated as insoluble or very slightly soluble oxides and hydroxides (Figure 1). Due to these reactions the availability of iron (native compounds and commercial inorganic products) for plant uptake is at a minimum above pH 7.5.

Iron deficiency may be induced or accentuated by heavy phosphorus fertilization. This apparently is due to a physiological antagonism within the plant itself which inactivates a portion of the absorbed iron.

Other conditions which favor iron deficiency include cool temperatures and high soil moisture. In years when we experience cold, wet springs, deficiencies are more prevalent. Over-watering can give the same results. An imbalance of metallic ions, such as high availability of copper or manganese in relation to iron can also induce iron deficiency symptoms. Water containing bicarbonate will tend to raise the pH in the rhizosphere favoring iron precipitation and deficiency.

Iron For Turfgrass

By **ALBERT E. LUDWICK**
Extension Assistant
Professor, Soils
Colorado State University

TURFGRASS intensively managed and used, such as in golf course operations, requires a well planned fertilizer program to maintain plant vigor throughout the season and from year to year.

Nutrient deficiencies are normally quite simple to correct (or avoid) by means of fertilizer applications. Many fine products are available on today's market that are both effective and easy to use. Iron, however, is a somewhat more difficult problem, especially in the calcareous soils common to much of the western United States.

Soil Iron

Mineral soils contain an abundance of iron. Quantities generally range from 0.5 to 3% of the total soil weight. This is about the equivalent of 400 to 2500 lbs/1000 sq. ft. to a depth of 1 foot. The total content of

soil iron, however, does not reflect the iron supplying power of the soil (plant available iron).

Soils having a high pH and high

Iron in Turfgrass

Turfgrass production is a unique form of agriculture. Success is not measured by total production, but rather by appearance. Crop quality — intensity of color — is of paramount concern.

The objective in turfgrass production, therefore, is one of producing chlorophyll. Related to this goal is the genetic ability of the turfgrass itself to produce chlorophyll and any
(continued on page 30)

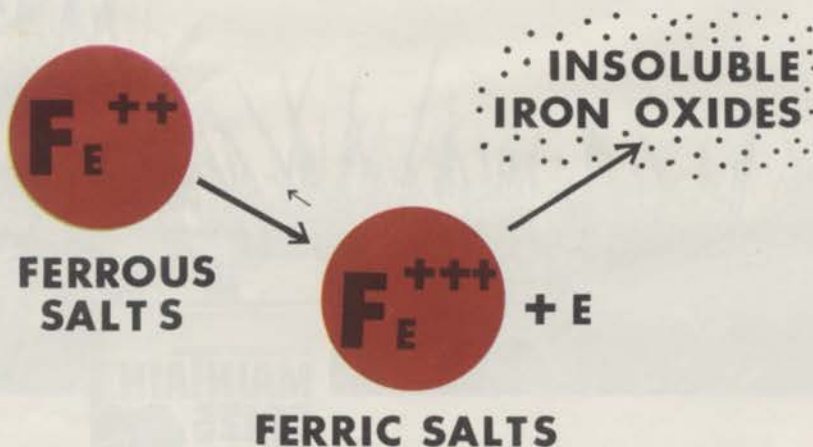


FIGURE 1. Soluble iron is rapidly precipitated when added to calcareous soils.

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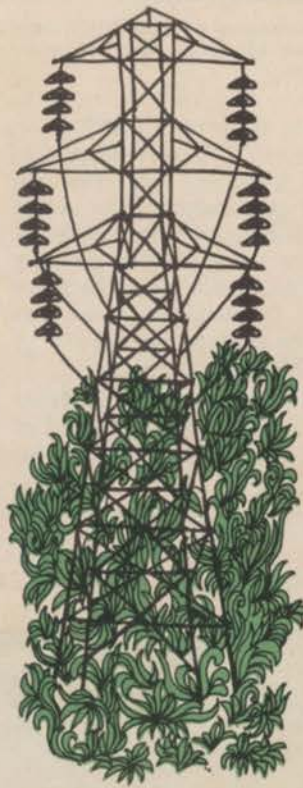
Either way you use it, you'll control that costly green tide.



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Course superintendent Charles Santoianni of Island Hill, Sayville, Long Island, says *Poa annua* bluegrass is a mainstay on many courses in his area.

A WEED is a weed wherever it grows. True? Not necessarily. Golf course superintendents in many parts of the northeast know its not true. On courses in most other parts of the country, *Poa annua* bluegrass is nothing but a nuisance. In this area, however, where short summers are the rule and growing conditions are far from ideal, *Poa annua* takes the place of the grasses normally used in southern areas and warmer climates. The hardiness and quick growth of this grass makes it an acceptable substitute.

However, *Poa annua* brings with it problems all its own, says Charles Santoianni, course superintendent of Island Hills at Sayville, Long Island, and insect control leads the list.

During the past few years northeastern superintend-

ents have found a new pest attacking the *Poa annua* they have been relying on.

Its the hyperodes weevil which first appeared in the area in 1967 and has been rapidly multiplying since. The resultant damage from the pest, which feeds only on *Poa annua*, has been an increasing problem on many courses.

The weevil has been found in nearly all areas where *Poa annua* is used to provide a grass cover, but golf courses have been especially hard hit, since intensive turf management seems to encourage the spread of the pest.

Santoianni employs frequent Diazinon insecticide, Agrico 12-4-8 fertilizer, and Acti-Dione R2 fungicide applications on his Island Hills course. Diazinon is
(continued on page 34)

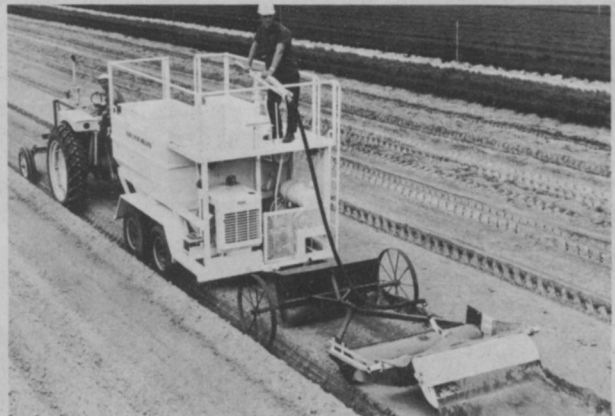
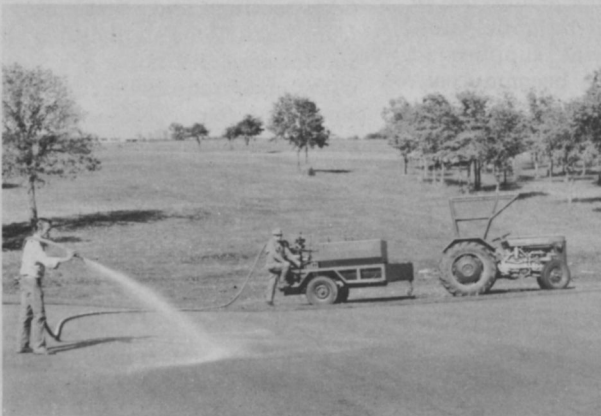




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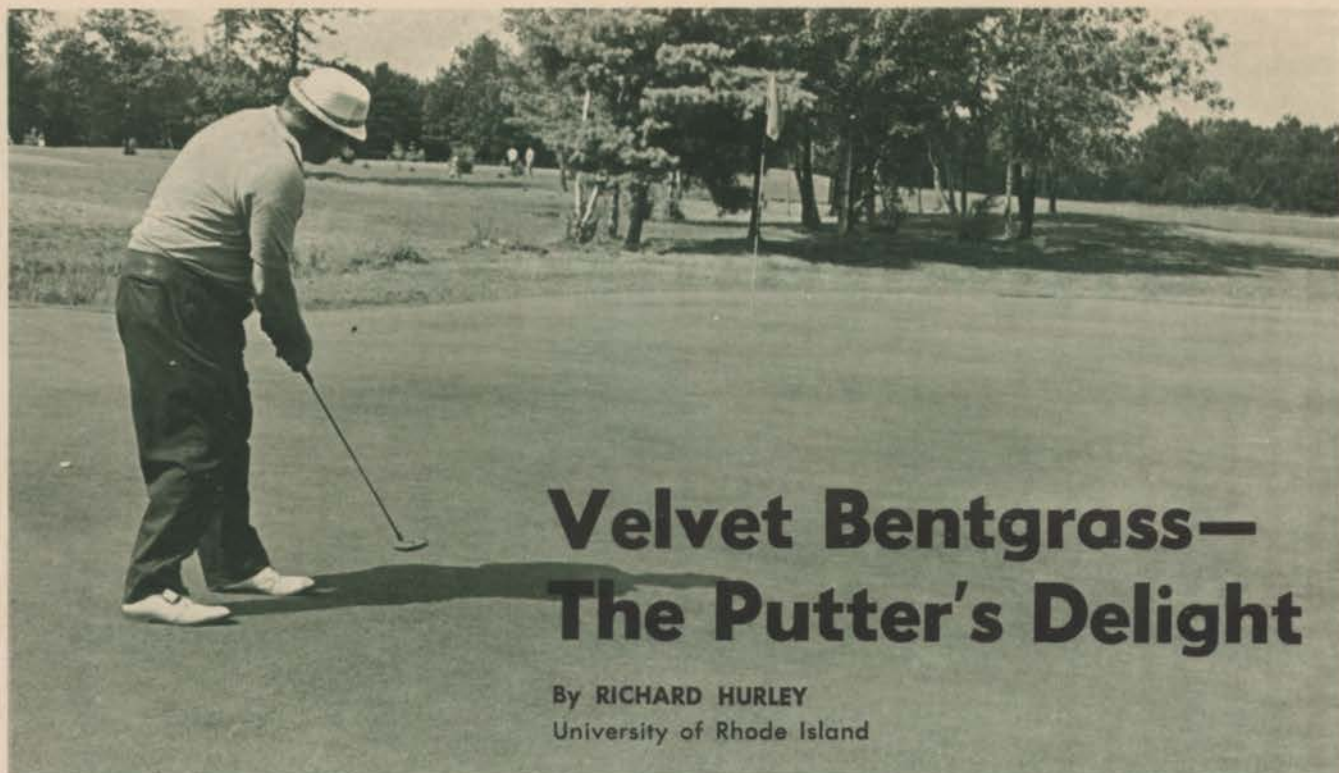


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Velvet Bentgrass— The Putter's Delight

By RICHARD HURLEY
University of Rhode Island

VELVET bentgrass, *Agrostis canina*, is widely acclaimed as the most exquisite of all sports turfs. Not only does the species have a superb appearance, but professional golfers have rated it the number one putting surface in actual test. Velvet bentgrass is well named, for golf greens of it are so dense and fine-textured as to be indeed like velvet.

The new Kingstown variety of velvet bentgrass results from a quarter century of breeding and selection at the University of Rhode Island. This stylish, highly uniform

cultivar, as true-putting as greens can be, stems from a single seed selected from a selfed plant of the Piper variety.

Unlike most of the creeping bentgrass greens grasses, which must be planted vegetatively from living stolons, Kingstown velvet bentgrass is available as conveniently handled seed bred remarkably true-to-type. Top quality seed is free of weeds and from crop. Wider use of velvet bentgrass can be anticipated, now that commercial supplies of Kingstown seed have become available. Seeding is economical, in that

only one pound of seed per thousand square feet is needed.

SPECIES ADAPTATION

Velvet bentgrass has undeservedly had a reputation for being hard-to-manage. We haven't found this to be so in Rhode Island. At Melody Hill, as on the research grounds at the University of Rhode Island, Kingstown velvet bent has proven dense, deep-rooting and reasonably free from afflictions without a lot of special care. It's not a heavy feeder, withstands reasonable drought and shade. Of course like any top bentgrass, Kingstown is deserving of knowledgeable attention.

The species is widely adapted to moist climates, and although tolerant of extremes does best where weather is steady (neither suddenly cold nor hot, and without desiccating winds).

Kingstown is rather particular about acid soil, and resents an alkaline pH.

Good drainage (aeration) is helpful.

Although it not difficult to adjust maintenance to Kingstown's needs, the cultivar can be expected to perform most satisfactorily east of the Appalachians from coastal Virginia northward, along the Pacific coast north from San Francisco, and in similar "maritime" environments around bodies of water such as the Great Lakes.

(continued on page 35)

The areas shaded in green represent the zone of greatest probable usefulness of Velvet bentgrass. It is available from Lofts Pdigreed Seed, Inc., Bound Brook, N.J.

