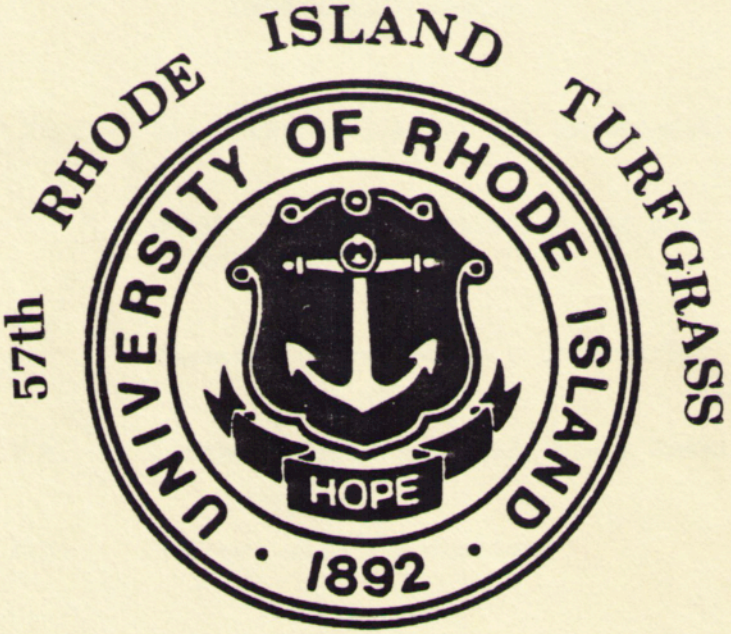


FIELD DAY

1988

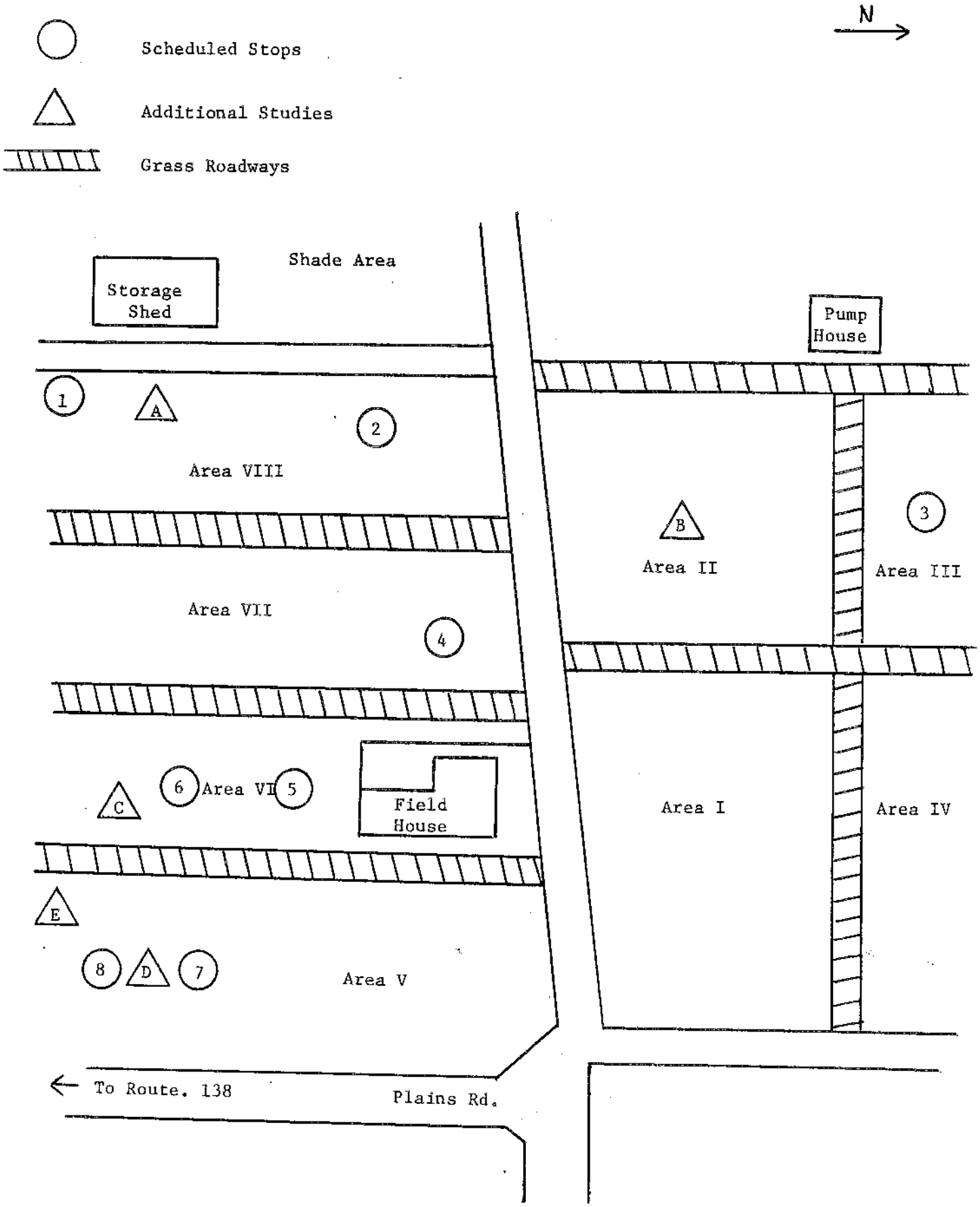
Agricultural Experimental Station
Kingston, RI 02881

FIFTY SEVENTH ANNUAL TURFGRASS FIELD DAY

Wednesday, August 24, 1988

SCHEDULE OF EVENTS

9:00 - 12:00 Noon	Registration (coffee and donuts will be provided)
	Exhibits and demonstrations of turf products and equipment
	Research plots open for observation
12:00 - 1:00 P.M.	Luncheon Barbecue (Shade Study Area)
1:00 - 1:15 P.M.	Welcome and Introductions
1:15 - 3:45 P.M.	Tour of Research Plots
	Variety Evaluations
	Fertilizer Studies
	Disease and Weed Control Studies
	Nutrient and Water Use Efficiency
	Wild Flower Evaluation


N
Scheduled Stops
Additional Studies
Grass Roadways
Shade Area
Storage Shed
Pump House
1
A
2
Area VIII
B
3
Area II
Area III
Area VII
4
6
Area VI
5
C
Field House
Area I
Area IV
E
8
D
7
Area V
To Route. 138
Plains Rd.

Extremely important sources of financial support for our research program are the grant-in-aids received for cooperative research with the turfgrass industry. Equally important are grants from the many other sources who, fortunately, believe our efforts are worthwhile.

We have established a "Turfgrass Research Fund" within the private, tax-free, URI Foundation" which is located here on the University campus. The list of contributors during the past year is listed below.

We thank all of you who have provided support. We could not maintain our scope without you. We also hope you will continue to provide assistance. Checks should be made out to "Turfgrass Research Fund - URI Foundation". They can be directed to any one of the project leaders.

1987-88 Grants

Turfgrass Research Benefactor ($1000 or more)

American Cyanamid Co.
Ciba Geigy Corp.
Connecticut Grounds Keepers Assn.
Cushman-Ryan
Dow Chemical Co.
Eli Lilly and Co.
Fermenta Plant Protection
Hoechst-Roussel Agri-Vet Co.
ICI Americas Inc.
Jacobsen
Lesco Inc.
Lofts Seed
Monsanto Co.
New England Sod Producers Assn.
R.I. Golf Course Superintendents Assn.
Rohm and Haas Co.
Sandoz Crop Protection
Sawtelle Bros.
Soilizer Co.
The Toro Co.
Turf Products Corp.
Turf Specialty
United States Golf Assn.
van der Have Western Seed

Turfgrass Research Fellow ($500 - $999)

Maine Golf Course Superintendent Assn.
Nor-Am Chemical Co.
PBI/Gordon Corp.

Turfgrass Research Associate ($250 - $499)

Agri Turf Inc.
Cape Cod Turf Managers Assn.
Melamine Chemicals Inc.
Old Fox
Peirson, Peter

Turfgrass Research Member ($100 - $249)

Blue Ridge Country Club
Duxbury Yacht Club
Gardener's and Nurserymen's Assn. of Westchester County
Needham Golf Club
New England Turf
Sakonnet Golf Club
Sands Point Golf Club

Turfgrass Research Contributor ($10 - $99)

Candlewood Valley Country Club
Custom Landscapes
Good Hamel Inc.
O'Connor Landscaping
Sky Meadow Inc.
Village Green Golf
Waterville Country Club

STUDIES OF SCHEDULED FOR REVIEW

1. **WATER USE EFFICIENCY** - R.J. Hull, C.R. Skogley, M. Wojcik

For many years we have been collecting and breeding turfgrasses in an effort to find or develop grasses that are more efficient in nutrient and water usage. We have been concentrating on fine fescues and colonial bentgrasses as they are particularly adapted to the soils and climate of the Northeast. We have several hundred collected grasses in various stages of evaluation at the moment. Currently, we are making a major effort to evaluate water use efficiency of some of our collections.

Drought tolerance and water use efficiency studies are under way. A rain shelter moved by a moisture sensor is used to aid our efforts. Several different measurements such as leaf and soil water potential, canopy temperature, leaf water content, and ^{32}P injections are monitored to facilitate our experiment. Grass leaves will also be examined with regard to cuticle thickness, number of stomata and its size, leaf shape and dimension, and leaf extension rate. All these measurements are done to answer these important questions: What is the mechanism evolving grass drought resistance and what morphological and possibly anatomical changes follow the onset of droughty conditions.

NUTRIFICATION INHIBITORS FOR SEEDED TURF - R.J. Hull, E.S. Hesketh, and H. Liu

The research shown here is what remains of an evaluation of nitrification inhibitors used to stabilize fertilizer nitrogen during turf seeding. Earlier studies have shown that these materials are not effective in increasing nitrogen use efficiency by established sod nor do they reduce nitrate leaching from turf. Leaching losses are minimal anyway but nitrification inhibitors have no impact on them. During turf seeding, when inhibitors can be mechanically incorporated into the soil, these materials may be more effective. This research indicated that water soluble, low vapor pressure nitrification inhibitors may reduce nitrogen losses and make more fertilizer nitrogen available to the developing grass plants.

See Page 9

2. **WEED CONTROL TRIALS** - J.A. Jagschitz and C.D. Sawyer

Evaluation of materials for preemergence control of oxalis, dandelion and crabgrass will be discussed. A trial was established to determine which herbicides would provide season-long control of crabgrass when applied after some crabgrass had reached the four-leaf stage while some was still germinating. Efficacy of post-emergent crabgrass chemicals when tank-mixed with insecticides or fungicides will also be discussed. Cooperators are invited to seek information on the progress of their studies.

See Page 14

3. **EVALUATION OF COMMERCIAL FUNGICIDES** - N. Jackson

Evaluations are made here for effective and long lasting disease control by commercially available fungicides alone and in combination. Of special interest is the development of fungal resistance to chemical activity when one compound is exclusively used for many years.

See Page 18

4. **KENTUCKY BLUEGRASS FERTILIZATION PRACTICES: NITROGEN AND IRON** - D.T. Duff and C.R. Skogley

This study is but one component of our major research effort at RI to identify management strategies which will permit reduced levels of all inputs required to produce quality turf.

The purpose of this particular study is to investigate the hypothesis that the routine application to Kentucky bluegrass of iron in conjunction with nitrogen will require reduced levels of nitrogen. This practice, coupled with identification of grass germplasm exhibiting greater efficiency of utilization, may lead to methods of producing quality turf with less nitrogen.

See Page 19

5. **EVALUATION OF EXPERIMENTAL FUNGICIDES** - N. Jackson

The development of new fungicides and new formulations necessitates their testing at different locations around the United States. This trial is maintained for the purpose of evaluating experimental fungicides as they are released by various chemical companies.

See Page 29

6. **COMPOSTS ON TURF** - N. Jackson

These trials have been initiated to determine the effect of various composts on turf quality and their impact on insect pests and fungal diseases.

See Page 30

7. **NATIONAL KENTUCKY BLUEGRASS AND PERENNIAL RYEGRASS** - C.R. Skogley

For the past twenty years, we have been a collaborator on regional and national turfgrass variety trials. Information gained from these trials at many locations, both regionally and nationally, are combined and the performance of the various grasses is determined both locally and throughout the region or nation.

Improved grasses continue to be developed each year. Data presented indicates this.

See Page 39

8. **WILDFLOWER EVALUATION AS GROUND-COVERS** - R.J. Hull and R.J. Shaw

Fifty wildflower species (25 annuals and 25 perennials) are under evaluation for their utility as ground-covers in Rhode Island. This is a cooperative study with Pure Seed Testing Corp. which will judge these plants for their effectiveness in providing ground-cover, their persistence and attractiveness. This is the first year of this study.

See Page 46

STUDIES NOT SCHEDULED FOR REVIEW
BUT LINED OUT FOR THE CONVENIENCE OF VIEWING

A. NITROGEN AND WATER USE EFFICIENCY BY TURF

B. GRASSES FOR GOLF COURSE FAIRWAYS AND TEES - PAGE 54

C. ESTECH FERTILIZER TEST

D. FINE FESCUE MIXTURE STUDY - PAGE 51

E. 1987 NATIONAL TALL FESCUE TEST - PAGE 27

USE OF NITRIFICATION INHIBITORS TO REDUCE NITROGEN LOSS DURING SEEDLING ESTABLISHMENT OF SOD

R.J. Hull, E.S. Hesketh and Haibo Liu

INTRODUCTION

Earlier research conducted at the URI Turfgrass Research Station has shown that the potential for nitrate leaching increases when nitrogen fertilizers are applied to thin or nonvigorous turfgrass stands. Generally, if weeds, insects, and diseases are controlled and fertilizers are applied at moderate rates, a vigorous perennial stand of turf can be maintained and nitrogen loss due to leaching will be negligible. Sod farms have a unique problem in that the sod crop does not constitute a perennial cover and after harvest it must be reseeded again. During this time of reestablishment, the possibility of nitrogen loss to leaching is greatly increased.

Previous research has shown that nitrification inhibitors were ineffective in maintaining nitrogen in the immobile ammonium form when applied to an established turf. Failure of these chemicals is thought to be due to the lack of soil incorporation and the attendant inactivation within the organic thatch layer. In order for nitrification inhibitors to work they must come in contact with the soil microbial population. These substances act by inhibiting the microbial oxidation of ammonium (NH_4^+) to nitrate (NO_3^-). Ammonium is positively charged and will bind to negatively charged soil particles which will hold it within the soil. Nitrate, by comparison, is negatively charged and cannot bind to the negatively charged soil particles leaving it free to be leached with rain or irrigation water. Also, nitrate can be denitrified to gaseous forms of nitrogen thereby contribution further to nitrogen loss.

Nitrification inhibitors may be more effective when mechanically incorporated into the soil prior to seeding. If these inhibitors perform as expected, they may reduce the need for the 1-2 lbs. N/1000 sq. ft. which are currently used for seedling establishment.

MATERIALS AND METHODS

A field plot experiment was established on an Enfield silt loam in July of 1987. Four treatments (three inhibitor and one control) were

applied prior to seeding. The treatments were 1.1 kg/ha (1 lb/acre) nitrapyrin, 7.2 kg/ha (6.5 lb/acre) dicyandiamide (DCD) and a mixture of these chemicals at the same rates. The control plots received no inhibitor. Inhibitors were incorporated into the soil with a rototiller within 15 minutes of application. Inhibitor plots were then subdivided into four nitrogen treatments: 12.25, 24.5, 49, and 98 kg N/ha (0.25, 0.5, 1.0, and 2.0 lbs N/1000 sq ft). In addition, all plots received 49 kg P and K/ha (1.0 lb P and K/1000 sq ft). The plots were rolled and seeded with 'Merit' Kentucky bluegrass (*Poa pratensis* L.). The seed was lightly raked into the soil surface and the plot area watered to prevent the seed bed from drying and to reduce volatile loss of nitrapyrin.

Plots were rated for turf quality on 26 August, 29 September and 15 October 1987. High scores reflected good turf vigor, density, and color. Clippings were harvested from a 0.96 sq m area of each plot on 29 September and 15 October. The grass was cut at a height of 3.8 and 2.5 cm on the September and October dates respectively. Grass clippings were dried in an oven at 75° C for 24 hours, weighed, ground in a Wiley Mill to pass a 40-mesh screen, and analyzed for total nitrogen by a micro-Kjeldahl technique. Data were subjected to an analysis of varience procedure for a split-plot design.

RESULTS AND DISCUSSION

Not surprisingly, increasing the rate of nitrogen applied at the time of seeding produced a positive response in clipping yields, nitrogen recovered by the grass, and turf quality (Table 1). The two higher nitrogen rates generally registered the greatest increase especially with respect to the quantity of fertilizer nitrogen recovered by the grass in the two clippings analyzed.

The nitrification inhibitor DCD, when incorporated into the soil just prior to seeding, significantly increased clipping growth, quantity of fertilizer nitrogen recovered by the grass, and turf quality (Table 2). Nitrapyrin treated plots exhibited no such response, never differing significantly from grass responses in the untreated plots. DCD being water soluble and less volatile was probably better incorporated within the root zone and remained in the soil for a longer time than did nitrapyrin. The mixture of DCD and nitrapyrin produced responses which were no different from DCD applied alone.

Contrary to the results of earlier studies, the water soluble nitrification inhibitor DCD when mechanically incorporated into the soil

Table 1. The quality, clipping yield, and nitrogen present in clippings of Kentucky bluegrass during summer establishment at four nitrogen levels.

Nitrogen Rate	Quality Score+	Clipping Yield#	Nitrogen Recovered
kg/ha		g/m^2	mg/m^2
12.25	4.7	14.5	286
24.50	5.0	14.5	268
49.00	5.3	16.8	353
98.00	6.1	22.2	463
f value	7.11**	17.09**	6.68**

+ Quality scores: 9 = excellent turf, 1 = dead or no turf
# Total of two clippings
** Significant at the P = 0.01 level

Table 2. Turf quality, clipping yield, and nitrogen recovered in clippings of summer seeded Kentucky bluegrass turf with nitrification inhibitors incorporated at time of seeding.

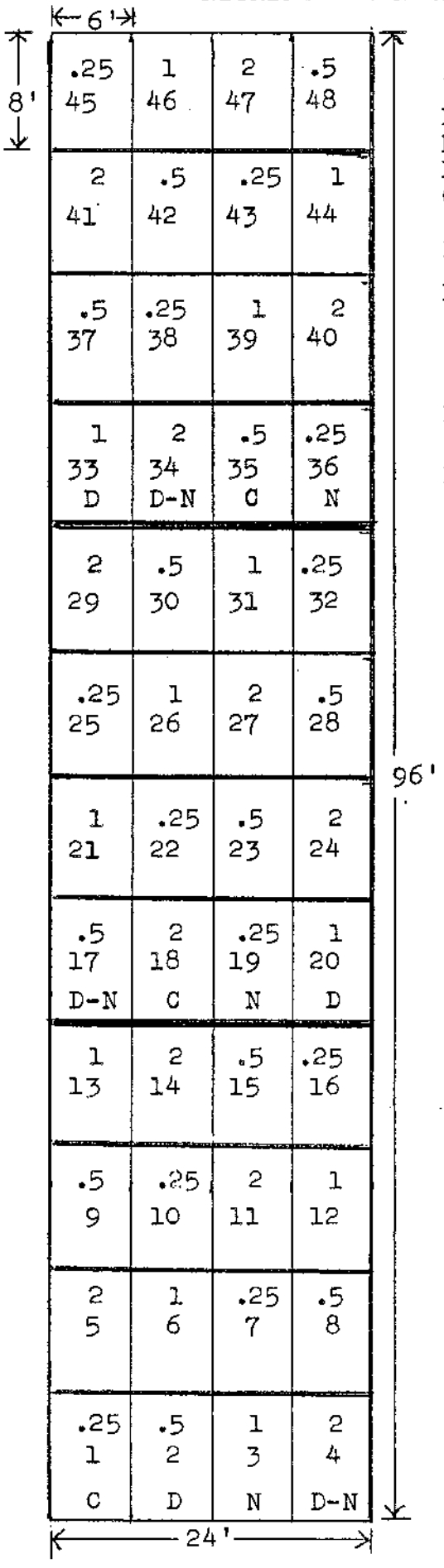
Inhibitor	Quality Score+	Clipping Yield#	Nitrogen Recovered
		g/m^2	mg/m^2
Control	4.9 b*	16.3 bc	323 ab
Nitrapyrin	4.5 b	13.9 c	263 b
DCD	5.6 a	18.3 ab	383 a
Nitpyn + DCD	6.0 a	19.6 a	401 a

+ Quality scores: 9 = excellent turf, 1 = dead or no turf
# Total of two harvests
* Means in a column followed by the same letter are not significantly different.

significantly increased the efficiency of nitrogen use by Kentucky bluegrass turf. At the 49 kg N/ha (1 lb/1000 sq ft) rate, the inclusion of DCD increased the nitrogen recovered in clippings from the two late

season mowings from 5.2% to 9.2% of the fertilizer nitrogen applied. It appears that nitrogen recovery by seedling Kentucky bluegrass is not very efficient (≤5%) but can by increased by the incorporation of a stable nitrification inhibitor at time of seeding. Although nitrogen recovered in clippings is only a portion of the total nitrogen within the turfgrass plants, the small percentage found in clippings indicates that fertilizer nitrogen applied at the time of seeding is not utilized very efficiently. The potential for nitrate leaching into ground water during the establishment period of a summer seeding may be great and this suggests caution is applying nitrogen during early establishment of turfgrass sod.

NITRIFICATION INHIBITORS USED AT SEEDING



INHIBITOR TREATMENTS

DCD - 7.2 kg/ha
Nitrapyrin - 1.1 kg/ha
DCD - Nitrapyrin - 7.2 & 1.1 kg/ha
Control

FERTILIZER RATES

NITROGEN: 0.25 lbs. N/1000 sq. ft.
0.5 "
1.0 "
2.0 "

PHOSPHORUS: 1.0 lb. P/1000 sq. ft.

POTASSIUM: 1.0 lb. K/1000 sq. ft.

TURFGRASS: Merit Kentucky Bluegrass

SEEDING RATE: 2 lbs./1000 sq. ft.

DATE OF SEEDING: 14 July 1987

WEED CONTROL IN COOL SEASON TURF WITH HERBICIDES

John A. Jagschitz, Assoc. Prof. Emeritus
and
Carl Sawyer, Research Associate

Having a weed-free turf requires good management coupled with the use of efficient and safe herbicides. Maintaining dense, vigorously growing turf will help prevent weed invasion. When grasses become weak and turf thin, weeds can easily take over. To make grass grow at its best, use adapted and improved turfgrasses, properly fertilize, mow and water, control insects and diseases, reduce traffic etc.

Select the herbicide that will control the weed and not harm the specific grass species involved. Follow the label directions and precautions, and apply the herbicide correctly. Proper calibration of equipment is essential as is the even distribution of the herbicide to the target area. IT IS UNLAWFUL TO USE ANY HERBICIDE FOR OTHER THAN ITS REGISTERED USE AS INDICATED ON THE LABEL. SOME HERBICIDES MENTIONED IN THIS ARTICLE MAY NOT AS YET BE REGISTERED FOR TURF USE. Trade names are used for identification and no product endorsement is implied, nor is discrimination intended against similar materials. Consult the annual Cooperative Extension Service publication from your state University prepared by specialists in turfgrass weed control.

TOTAL PLANT KILL

Before a lawn is seeded, weed control can begin. There are fumigants such as methyl-bromide (DOWFUME MC-2), metham (VAPAM, VPM) and methyl-isothiocyanate (VORLEX) that kill weeds and weed seed in the soil. This technique is especially useful for weeds which cannot be selectively controlled once a grass stand has become established.

There are herbicides that will total kill most vegetation and are useful for renovation (seeding) purposes. Materials such as cacodylic acid (RAD-E CATE), glyphosate (ROUNDUP) and paraquat (GRAMOXONE) are useful since they persist for only a short time in the soil and seeding within a few days is safe. Check the label. These herbicides are also useful for spot treatment of weeds and for short term vegetative control under fences, around edges of buildings, etc. If longer lasting kill is desired (prevention of new weeds from seed) and there are no shrub or tree roots in the treated area, consider adding such herbicides as oryzalin (SURFLAN), prometon (PRAMITOL), simazine (PRINCEP), etc. for residual control.

ANNUAL GRASS CONTROL

In spring or early summer grass seedings use a pre-emergence herbicide called siduron (TUPERSAN) to control annual grasses, such as crabgrass, in the seedbed. It will not harm the cool-season grasses as they germinate, but will control crabgrass as it germinates. One might consider using siduron in the seedbed, followed several weeks later when the turf matures, with one-half rate of some of the other pre-emergence crabgrass herbicides for extended seasonal control.

In established turf, the easiest and best way to control annual grasses, such as crabgrass, is with pre-emergent herbicides. These are applied before crabgrass seed germinates and the plant emerges. They do not kill established crabgrass plants. Good control from herbicides can be expected from applications made prior to crabgrass germination. In RI, this is usually in late April, during forsythia bloom and before dandelions are in full bloom.

Materials that have been available for several years are benefin (BALAN), bensulide (BETASAN, BETAMEC, LESCOSAN, PRE-SAN), DCPA (DACTHAL), oxadiazon (RONSTAR) and siduron (TUPERSAN). A newer material, pedimethalin (LESCO PRE-M, SCOTTS WEED GRASS CONTROL), has been available for turf use since 1986. A combination of benefin and trifluralin, called TEAM, has also recently become available. Prodiamine is a promising herbicide under test and may become available soon. Check the label as to the tolerance of the various cool-season turfgrasses to these herbicides.

DCPA, oxadiazon and pendimethalin have performed well when applied early in the season (March) and during seasons with extended crabgrass germination. With early season use, especially with benefin, bensulide and siduron, a second application 8 to 10 weeks later at one-half rate may insure seasonal control. For the control of goosegrass, oxadiazon and higher rates or repeat treatments of pendimethalin, appear to be the most promising.

After crabgrass has germinated there are several methanearsonate herbicides such as AMA, CMA, DSMA, MSMA, etc., that can be used for post-emergent control. Two or three applications spaced 7 to 10 days apart are needed to achieve control. Some temporary discoloration of cool-season turfgrass, especially red fescue at high temperatures, is likely from these materials. A newer herbicide, fenoxaprop (ACCLAIM) provides post-emergence crabgrass control with a single treatment. Most cool-season grasses show good tolerance. Bentgrasses appear to be less tolerant to fenoxaprop as do certain cultivars of Kentucky bluegrass. Check for recent testing. Some of the Kentucky bluegrass cultivars that appear to be very tolerant are CARDINAL, CHERI, ENMUNDI, ESCORT, NALLO, NUGGET, PSU-173 and WWAC 420. Those with the least tolerance appear to be AMERICA, COLUMBIA, GLADE, LOVEGREEN, MONOPOLY, RUGBY, RAM I, SOMERSET, TOUCHDOWN and TRENTON.

Combining post- and pre-emergence herbicides improves crabgrass control when some crabgrass has emerged and some will germinate later. In RI this is in late May or early June. Crabgrass at that time is in the 1 to 4 leaf stage with germination of new plants occurring into July. Adding methanearsonates or fenoxaprop with a pre-emergent herbicide provided good control. A second application of methanearsonates (9-16 days later) is usually required. An experimental material from monsanto (MON-15151) is promising for both pre and early post-emergence crabgrass control.

NUTSEDGE CONTROL

Selective control of yellow nutsedge in cool-season grass areas can be obtained with bentazon (BASAGRAN) or the methanearsonates. Two applications of either material at low rates and at a 10-day interval are more effective than a single high rate. Control is usually more complete when treatments are made in early summer rather than late spring. Possibly this is because most of the plants have emerged from the nutlets (tubers). Bentazon is more effective and most grasses are more tolerant to it. Do not mow too soon before or after treatment. However, if crabgrass is present the methanearsonates could control both nutsedge and crabgrass.

Evaluation of Commercial Fungicides - 1988

N. Jackson, Dept. of Plant Sciences

Treatments applied on a 21 day schedule in 10 gallons of water per 1000^2ft at 100 psi. Plot size 5'x10', four replications.

Treatment	Rate (ozs formulation/1000 ft^2)
1. Dyrene	8 fl
2. Vorlan	4
3. Daconil	12 fl
4. Tersan 1991	2
5. Control	-
6. Banner	2 fl
7. Rubigan	2 fl
8. Chipco 26019	2 fl
9. Bayleton	8
10. T 1991 + Chipco 26019	2+4
11. T 1991 + Daconil	2+6
12. T 1991 + Dyrene	2+4
13. T 1991 + Vorlan	2+2
14. Banner + Chipco 26019	1+4
15. Banner + Daconil	1+6
16. Banner + Dyrene	1+4
17. Banner + Vorlan	1+2
18. Rubigan + Chipco 26019	1+4
19. Rubigan + Daconil	1+6
20. Rubigan + Dyrene	1+4
21. Rubigan + Vorlan	1+2
22. Bayleton + Chipco 26019	1+4
23. Bayleton + Daconil	1+6
24. Bayleton + Dyrene	1+4
25. Bayleton + Vorlan	1+2

Penncross Bentgrass N →

I					II					III					IV				
1	2	3	4	5	13	4	22	2	16	14	17	24	10	25	12	8	2	9	3
6	7	8	9	10	23	15	11	17	10	20	6	19	3	18	11	21	7	22	15
11	12	13	14	15	14	5	19	1	24	12	21	4	23	9	17	10	1	14	6
16	17	18	19	20	18	20	7	3	25	5	16	7	22	1	23	16	13	25	19
21	22	23	24	25	12	6	21	9	8	15	13	11	8	2	18	5	20	4	24

Kentucky Bluegrass Fertilization Practices: Nitrogen and Iron

PRELIMINARY DATA: NOT FOR PUBLICATION

The primary objective of this test is to determine if application of iron in conjunction with nitrogen will permit any reduction of the amount of N required to produce quality Kentucky Bluegrass turf.

A rather severe infection of dollar spot and red thread took place during the summer of 1986. Table 1 provides the analysis of data acquired on the expression of the disease complex at various N levels and iron rates. There was no difference in the response to the two iron sources. The model permits calculation of the amount of N required to reach the 0 level of disease expression. The average of ferrous sulphate at 5.4 and chelated iron at 5.3 were identical for all practical purposes. More practical importance of the treatments is indicated by the values of the intercepts and the calculated N rate required to reach a 0 level of disease expression at the various iron rates as they were calculated from the model. The intercept values show decrease of disease expression with increasing iron rates at the 0 level of N application.

In practical terms, applications of iron at 0.9 ounce per 1000 square feet, reduced disease expression about 25% when no N was applied. The model also demonstrated that nearly one pound of N per 1000 square feet less N was required to reach the 0 level of disease expression when N application was accompanied by the highest level of ferrous sulphate. We do not suggest application of N and iron as an overall disease control practice; however, from the standpoint that healthy, vigorous grass can withstand the incursion of some fungi better than poorly fertilized turf, a combination of N and iron led to reduced expression of this particular disease complex.

A similar model was calculated for treatment influence upon turf quality. Again, the source of iron exhibited little influence over the results. The model was also used as a basis of calculating the amount of N required to reach an acceptable level of turf quality. In all cases, the values approximated 4 pounds of N per 1000 square feet. The quality data used to build the model are for the spring season only, therefore, it must be expected that these values will change over entire seasons, and must be considered very preliminary.

Kentucky Bluegrass Fertilization Practices: Nitrogen and Iron

Area VII

Support: R.I. Agricultural Experiment Station: Hatch 248

Investigators: D. T. Duff and C. R. Skogley

Plot Size: 1.0 x 1.5 meters

Study dimensions: 8 x 12 meters

Study purpose: To determine the efficiency of utilizing iron as a cosmetic treatment to reduce N requirements.

Treatments:

N: rates: 0.0, 2.0, 3.5, 5.0 pounds N per 1000 square feet per season: source: urea applied in solution: application: five applications per season at six week intervals beginning April 20.

Iron: rates: 0.0, 0.3, 0.6, 0.9 ounces per 1000 square feet per application: sources: ferous sulfate, chelate 330: application: applied in solution at time of N fertilization or with three week delay after N fertilization.

Design: Factorial as a randomized complete block.

Initiation date: April 20, 1986.

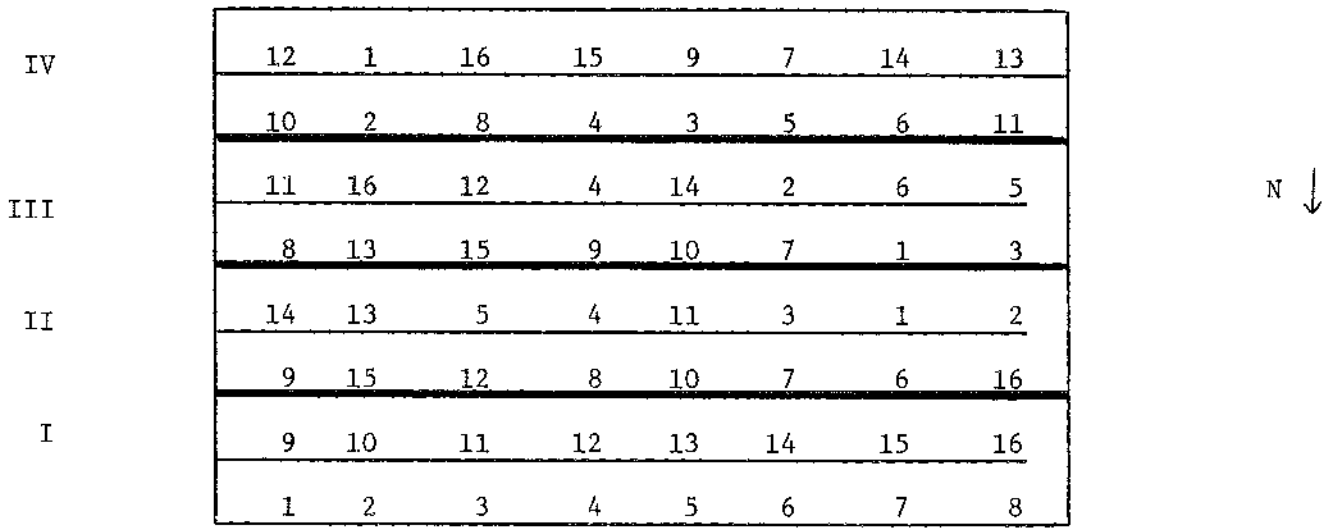


TABLE 1: NITROGEN AND IRON LEVELS. EFFECT UPON EXPRESSION OF DOLLAR SPOT AND RED THREAD DISEASE COMPLEX.

BLOCK I	IRON RATE	NITROGEN RATE 0	2	3.5	5.0	AVGE	SLOPE	INTERCEPT	N RATE AT Y=0
FERROUS SULPHATE	0	9.1	5.7	3.1	1.9	4.9	-1.48 X	8.8	5.9
	100	8.4	4.1	1.8	1.2	3.9	-1.48 X	7.7	5.2
	200	7.8	3.9	2.0	1.0	3.7	-1.37 X	7.3	5.3
	300	6.4	3.7	1.5	0.4	3.0	-1.23 X	6.2	5.0
	AVGE	7.9	4.3	2.1	1.1	3.9			5.4

BLOCK II	IRON RATE	NITROGEN RATE 0	2.0	3.5	5.0	AVGE	SLOPE	INTERCEPT	N RATE AT Y=0
CHELATED IRON	0	8.4	4.7	3.4	1.1	4.4	-1.42 X	8.1	5.7
	100	7.7	4.0	2.2	0.6	3.6	-1.41 X	7.3	5.2
	200	6.7	3.8	1.7	0.7	3.2	-1.22 X	6.4	5.3
	300	5.6	3.0	1.3	0.4	2.6	-1.06 X	5.4	5.1
	AVGE	7.1	3.9	2.2	0.7	3.5			5.3

N RATE AT Y=0: A CALCULATED VALUE WHICH INDICATES THE RATE OF N REQUIRED TO REACH THE O LEVEL OF DISEASE EXPRESSION

TABLE II: NITROGEN AND IRON LEVELS. EFFECT UPON EXPRESSION OF TURF QUALITY SCORES IN SPRING: MAY AND JUNE.

BLOCK I	IRON RATE	NITROGEN RATE 0	2	3.5	5	AVGE	SLOPE	INTERCEPT	N RATE AT Y=9	N RATE AT Y=6.5
FERROUS SULPHATE	0	2.6	4.9	6.6	7.1	5.3	6.61 log X	2.8	8.8	3.7
	100	2.6	5.4	6.3	7.1	5.4	6.29 log X	2.9	9.3	3.7
	200	2.4	5.4	6.1	6.9	5.2	6.23 log X	2.8	9.9	3.9
	300	3.6	5.3	6.4	6.9	5.6	4.77 log X	3.7	12.8	3.9
	AVGE	2.8	5.3	6.4	7.0	5.4			10.2	3.8

BLOCK II	IRON RATE	NITROGEN RATE 0	2	3.5	5	AVGE	SLOPE	INTERCEPT	N RATE AT Y=9	N RATE AT Y=6.5
CHELATED IRON	0	2.7	4.6	6.3	7.5	5.3	6.84 log X	2.6	8.5	3.7
	100	2.9	5.2	6.3	7.2	5.4	6.05 log X	3.1	9.5	3.7
	200	2.5	4.9	6.2	7.2	5.2	6.63 log X	2.6	9.1	3.8
	300	2.9	5.1	6.7	6.9	5.4	5.97 log X	3.1	9.8	3.7
	AVGE	2.8	4.9	6.4	7.2	5.3			9.2	3.7

N RATE AT Y=9: A CALCULATED VALUE WHICH INDICATES THE RATE
N RATE AT Y=6.5: OF N REQUIRED TO REACH THE 9 LEVEL (HIGHEST) OR 6.5 LEVEL (ACCEPTABLE) OF TURF QUALITY

1987 TALL FESCUE VARIETY TEST
1983 TALL FESCUE VARIETY TEST

D.T. DUFF AND C.R. SKOGLEY

Both tests are being carried out in cooperation with the National Turfgrass Evaluation Program (NTEP). The '87 test is much larger in terms of the number of cultivars and experimentals included, and is too new to make considered judgements on the merits of any particular selection or cultivar. The '83 test has been in trial long enough to make more considered comments.

Our goal in including tall fescue in our test is to ascertain if any of the newer strains are capable of producing acceptable turf in our southern New England locale. We do not consider tall fescue as competetive in use with Kentucky bluegrass, red fescue or perennial ryegrass in this area, nor do we perceive tall fescue as an acceptable component of a seed mixture for the production of fine quality turf for our location. There can be no question that tall fescue included as a minor component of a mixture results in a poor quality turf because of the clumping characteristic of the tall fescue. In this situation, the misuse of the grass leads to it being viewed as a pernicious weed.

We do view tall fescue as a grass having a useful niche in particular situations where the goal is to provide a turf cover on more extensive sites. Under lower management regimes, there may be a place for tall fescue in the total turf care pictures of Rhode Island and southern New England.

Turf quality data is presented in Table I. None of the mature tall fescue sods received high quality scores in our test. The LSD value presented indicates a rather high level of variability within the data. Generally, any selection with a quality score in the range 5.2 to 4.0 exhibited similar quality characteristics.

The national data, from 19 locations around the country, provide for a greater data base input. The LSD values of these data indicate selections with quality scores in the range 5.9 to 5.7 exhibited similar quality.

Further analysis was carried out on the US data in an attempt to rationalize and rank the cultivars and selections on the basis of their assigned turf quality scores at the 19 locations. At each, the grass with the highest quality was ranked 1, the second highest 2, following through to the 30 entries. The column headed rank, US was generated in this manner. This approach does not lend itself to accepted statistical treatment, however it seems logical that those cultivars and selections near the top of the rank were capable of producing better quality turf overall than were those further down the ranking scale.

1983 National Tall Fescue Test

Area VII

N ↑

Plot Plan

3 9 11 15 16 4 23 27 17 26	14 6 13 9 1 4 18 30 20 24	19 25 17 23 26 27 22 29 30 28
13 6 14 7 10 8 5 1 2 12	26 19 29 28 23 21 25 17 22 27	9 15 5 3 6 1 20 24 21 18
22 29 20 24 19 21 18 30 28 25	3 8 5 2 12 16 11 10 15 7	11 2 14 8 12 13 7 16 10 4
I	II	III

The National Tall Fescue Test was seeded 9/16/83 at a rate of 5lbs./1000ft.^{2} (1.8 oz./plot). A 5-10-5 grade of fertilizer was applied at a rate of 40lbs./per 1000ft.^{2} prior to seeding. The test is mown at 1.5 inches. Borders and between replications were seeded with All-Star Perennial ryegrass.

DATA

ENTRY	5/86 T.S.* $\bar{X}$	6/86 T.S. $\bar{X}$	7/86 T.S. $\bar{X}$	8/86 T.S. $\bar{X}$	9/86 T.S. $\bar{X}$	10/86 T.S. $\bar{X}$	1984 T.S. $\bar{X}$	1985 T.S. $\bar{X}$	1986 T.S. $\bar{X}$	3yr. T.S. $\bar{X}$
1. Johnstone	3.3	4.7	4.3	5.3	4.0	4.0	6.5	5.7	4.3	5.5
2. Rebel	3.7	5.0	5.0	6.7	6.3	6.7	6.3	5.7	5.6	5.9
3. Clemfine	2.7	4.0	4.7	6.0	5.3	5.3	6.4	5.4	4.7	5.5
4. Willamette	4.3	4.7	4.0	5.3	3.7	2.7	6.0	6.0	4.1	5.4
5. MER FA-83-1	3.3	4.0	5.3	6.3	5.0	5.3	6.5	5.6	4.9	5.7
6. ISI CJ	3.7	4.3	5.0	6.0	6.3	5.3	6.6	5.9	5.1	5.9
7. Hounddog	3.7	4.3	5.0	6.0	5.0	3.7	6.6	5.7	4.6	5.7
8. Brookston	4.0	4.7	4.7	5.0	4.0	4.7	6.5	5.7	4.5	5.6
9. Falcon	4.3	5.3	5.3	5.7	5.7	6.0	6.8	5.7	5.4	6.0
10. Maverick	4.0	4.3	4.7	5.7	5.3	4.0	6.5	5.8	4.7	5.7
11. Mustang	4.3	5.3	5.0	6.0	6.0	5.3	6.5	5.7	5.3	5.8
12. Adventure	3.7	4.7	5.3	6.0	6.0	6.7	6.6	6.1	5.4	6.0
13. TF-813	4.0	4.3	4.0	5.3	4.0	5.0	6.6	5.8	4.4	5.6
14. Olympic	4.7	5.3	6.0	6.0	6.3	6.0	6.0	6.4	5.7	6.0
15. Jaguar	4.0	5.3	5.3	6.3	5.7	5.7	6.8	6.2	5.4	6.1
16. 5-GL	5.0	6.0	5.3	6.3	5.0	4.3	6.5	6.1	5.3	6.0
17. Apache	4.3	5.3	4.7	6.0	6.7	5.7	6.9	6.3	5.5	6.2
18. 5L4	4.0	4.7	4.3	5.7	4.7	4.7	5.9	5.9	4.7	5.5
19. Finelawn	3.3	5.0	5.3	6.0	5.0	5.0	7.1	5.9	4.9	6.0

1983 National Tall Fescue Test (continued)

Area VII

DATA

ENTRY	5/86 T.S.* $\bar{X}$	6/86 T.S. $\bar{X}$	7/86 T.S. $\bar{X}$	8/86 T.S. $\bar{X}$	9/86 T.S. $\bar{X}$	10/86 T.S. $\bar{X}$	1984 T.S. $\bar{X}$	1985 T.S. $\bar{X}$	1986 T.S. $\bar{X}$	3yr. T.S. $\bar{X}$
20. Kenhy	3.3	3.0	4.0	4.3	2.7	3.0	4.2	4.7	3.4	4.1
21. Kentucky 31	3.0	3.7	4.7	5.3	4.7	4.0	6.1	4.7	4.2	5.0
22. Syn-GA-1	4.0	5.3	6.0	6.7	7.0	5.7	6.7	6.0	5.8	6.2
23. KS-78-4	3.0	3.3	4.0	5.3	4.3	4.3	5.8	5.5	4.0	5.1
24. Arid	3.3	4.3	5.0	6.7	6.3	5.0	6.6	5.8	5.1	5.8
25. NK 81425	2.0	3.0	3.0	4.3	4.0	3.7	5.6	4.7	3.3	4.5
26. NK 82508	3.0	4.3	4.0	5.0	4.0	3.7	6.3	5.3	4.0	5.2
27. Tempo	3.3	4.0	4.3	5.3	4.7	4.0	6.2	5.7	4.3	5.4
28. Barcel	3.0	4.0	5.0	5.0	4.3	3.3	5.2	5.2	4.1	4.8
29. Festorina	3.3	3.7	4.3	5.3	4.7	3.3	5.5	5.0	4.1	4.9
30. Unknown	3.7	4.7	5.0	6.3	4.3	4.3	6.9	5.9	4.7	5.8

* T. S. = Turf Score 1 = bare ground or dead turf
9 = best quality

TABLE I Mean Turfgrass Quality Ratings of Tall Fescue Cultivars in RI and Nineteen Locations in the United States. 1987 Season Data. 1983 Test. NTEP 1987.

	RI	US	RANK, US
Arid	4.3	5.9	1
Jaguar	4.3	5.9	2
Apache	4.6	5.8	3
5L4 (Bonanza)	4.0	5.8	4
Rebel	4.9	5.8	5
Mustang	4.4	5.7	6
Adventure	5.0	5.7	7
Olympic	4.6	5.7	8
Finelawn 5GL	4.0	5.7	9
Unknown	4.2	5.6	10
TF 813 (Trident)	4.3	5.6	11
Houndog	3.2	5.5	12
Syn-GA-1	5.2	5.5	13
Falcon	4.6	5.5	14
Maverick	3.9	5.4	15
Williamett	2.7	5.3	16
ISI CJ (Pacer)	4.2	5.3	17
Tempo	4.0	5.3	18
Finelawn I	4.2	5.3	19
Brookston	4.0	5.1	20
Clemfine	5.1	5.0	21
MER FA 83-1	4.9	4.9	22
KS 78-4 (Chesapeake)	3.7	4.9	23
Barcel	4.2	4.9	24
NK 82508	3.6	4.7	25
KY-31	3.9	4.7	26
Johnstone	3.6	4.6	27
NK 81425	3.1	4.5	28
Festorina	4.7	4.5	29
Kenhy	2.9	4.2	30
LSD Value	1.2	0.2	-

1987 National Tall Fescue Test
Area V

N ↓

43 49 10 2 39 14 54 66 38 1 45 4 22 3 19 15 9		
7 56 35 46 5 12 62 32 18 52 44 29 13 51 36 65 25		
48 41 6 53 47 8 30 17 11 67 33 59 28 42 57 27 68		III
50 58 63 40 26 64 55 21 23 60 34 31 20 61 16 24 37		
20 68 59 45 34 16 55 33 27 48 30 61 24 32 17 38 3		
2 29 14 54 1 4 22 19 9 65 58 18 44 60 15 66 42		II
47 57 53 7 63 13 11 35 28 51 64 36 25 43 50 49 10		
56 62 52 23 5 12 31 41 40 21 46 6 26 29 8 67 37		
68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52		
51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35		I
34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18		
17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1		

2m

1m

The 1987 National Tall Fescue Test was seed September 28, 1987 at a rate of 5 lbs/1000 ft^2 (50 g/plot). 40 lbs of a 5-10-5 grade of fertilizer was incorporated into the soil prior to seeding. The test is mown at 1.5 inches. Clippings are not removed.

1987 National Tall Fescue Test
Area V

Entry	Nov. % Stand X
1. Adventure	37
2. BAR Fa 7851	27
3. Trident	33
4. Titan	33
5. Pick DDF	25
6. Pick 127	25
7. Pick 845PN	27
8. Pick SLD	23
9. PE-7	32
10. PE-7E	33
11. Hubbard 87	32
12. Syn Ga	23
13. Legend	28
14. Taurus	28
15. Aztec	23
16. Sundance	28
17. Fatima	30
18. Normarc 25	33
19. Normarc 77	25
20. KWS-DVR	25
21. KWS-BG-6	20
22. Willamette	30
23. Chieftan	38
24. Pick GH6	25
25. Thoroughbred	40
26. Pick TF9	25
27. PST-50L	30
28. PST-5D7	27
29. Cimmaron	33
30. Bonanza	32
31. PST-5AG	28
32. PST-5BL	25
33. PST-5MW	28
34. Trailblazer	33
35. PST-5D1	25
36. PST-5AP	28
37. PST-5HF	32
38. Jaguar	33
39. PST-DBC	32
40. Olympic	35
41. Jaguar II	32
42. Monarch	25
43. Apache	37
44. PST-5DM	28
45. Pick-DM	27
46. Normarc 99	20
47. Pacer	33
48. Carefree	28
49. Richmond	35
50. Tip	35
51. Ky-31	43
52. Bel 86-1	32
53. Bel 86-2	32
54. PST-5EN	37
55. PST-5F2	32
56. Finelawn 5GL	33
57. Finelawn I	32
58. Rebel	32
59. Rebel II	35
60. Tribute	28
61. Arid	30
62. Wrangler	32
63. Mesa	35
64. JB-2	40
65. Falcon	28
66. P-164	20
67. P-345	35
68. P-160	17

EVALUATION OF EXPERIMENTAL FUNGICIDES - 1988

N. Jackson, Department of Plant Sciences

Compounds applied on a 21 day schedule in 10 gallons of water per 1000 square feet at 100 psi. Plot size 5' x 5', three replicates on 5 grasses.

→N

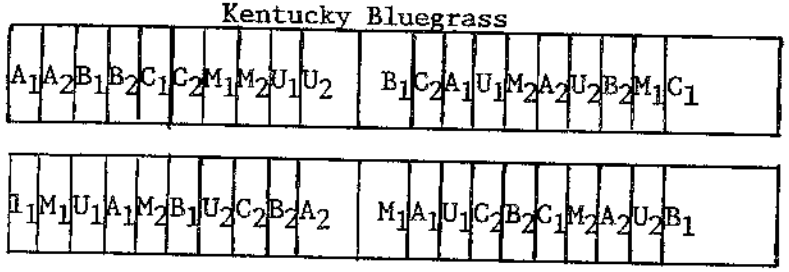
Treatment		Rate/1000			
1.	RH 3486	1.5 oz.	25	15	22
2.	"	3.0 oz.	9	14	2
3.	RH 3866	0.4 oz.	5	7	10
4.	"	0.8 oz.	11	4	3
5.	San 619	3.7 g	16	21	19
6.	"	7.5 g	6	10	24
7.	San 832	3.3 oz.	3	17	1
8.	Control	-	18	2	12
9.	Banner 1-1E	2 fl. oz.	20	6	4
10.	Banner 1G	28 oz.	13	19	21
11.	Lynx (HWG 1608)	24.6 ml.	22	8	23
12.	"	49.3 ml	17	1	7
13.	Bayleton	1.0 oz.	2	3	11
14.	Chipco 26019	4.0 fl. oz.	23	20	13
15.	Chipco 26014 + LS84	4.0 " + 6 ml.	8	12	5
16.	Chipco 26019 + LS84	2.0 " + 3 ml.	21	18	14
17.	Chipco 26019 + LS84	1.0 " + 1.5 ml.	1	22	9
18.	SDS 66534	4.3 oz.	14	5	17
19.	SDS 66533 + Daconil 500	2 oz. + 6 fl. oz.	7	16	6
20.	Daconil 90G	3.5 oz.	12	13	8
21.	Daconil 500	6.0 fl. oz.	10	9	15
22.	G696	16.0 fl. oz.	19	11	18
23.	Terraguard	8 oz.	15	23	16
24.	PP 523	80 g	4	23	20

Composts on Turf - 1988

N. Jackson, Department of Plant Sciences

Materials applied as topdressings to established turf of Kentucky bluegrass, perennial ryegrass. Plot size 1/500, 1/2000 acre, four replications.

Site 1
Kentucky Bluegrass



Compost	Source	Rate/Acre in Tons
A_1	IPS (Spent mushroom	5
A_2	medium)	10
B_1	IPS (Chicken manure)	5
B_2	"	10
C_1	IPS (Brewery sludge)	5
C_2	"	10
D	MSC (Milorganite)	*
M_1	Merner (Fishwaste, manures	5
M_2	and plant residues)	10
U_1	URI (Grass clippings, soil	5
U_2	and sand)	10

Site 2
Perennial
Ryegrass

D	C_2	B_2	A_2
M_2	A_2	-	C_2
-	B_2	M_2	D
C_2	-	A_2	M_2
A_2	D	C_2	B_2

* 730 lbs/acre = 1 lb actual N (per 1000 sq. ft.)

COLONIAL BENTGRASS TRIALS - 1984 AND 1986

Of all grasses available to us for Turf purposes perhaps none has greater potential for New England than does Colonial Bentgrass. It is adapted to acid, infertile soils is not demanding of water, is very winter hardy and tolerates a range of cutting heights from tee and fairway heights to lawn height. The variety Highland has given Colonial a bad name, but improved varieties such as Exeter, Bardot, and Holfier and even the old common variety, Astoria, have been valuable grasses.

Unlike several genera of grasses for Turf purposes the Colonial Bentgrasses have not received much attention. Little improvement work has been done. This is unfortunate as the species does have much to offer, particularly for New England.

In our grass improvement work at the Rhode Island Station, we are now concentrating our efforts on Bents and particularly, Colonial. We established turf trials with our collected materials in 1984 and 1986. Eighty one experimentals are included.

We have collected three years of data from our 1984 trials. Several selections show improvement over Exeter. Among them are entries numbered 20, 25, 36, 37, 45, 46, 47, and 50. Several of these were selected from Nova Scotia and New Brunswick, Canada.

Within the trial seeded in 1986 there are also a number of selections that are rated above the standard varieties. Again, most of them are of Canadian origin.

In our search for improved Colonials, we are looking for selections that are erect in growth, possibly rhizomatous, have good color and are disease resistant.

During the 1987 season over 300 additional Bentgrass selections, most Colonial, were made from old turf stands from New England to Minnesota. The USGA and GCSAA provided financial support for this collecting effort.

1984 R.I. Colonial Bentgrass Trial
Area VI

N ↓

50	45	40	35	30	25	20	15	10	5
49	44	39	34	29	24	19	14	9	4
48	43	38	33	28	23	18	13	8	3
47	42	37	32	27	22	17	12	7	2
46	41	36	31	26	21	16	11	6	1

Seeded - 7/13/84
Seeding Rate - 10g/plot
Fertilizer - 1 Kg N/Are (5-10-5) prior to seeding
Cutting Height - 3/4"

Entry	Selection	Source	Entry	Selection	Source
1	296	Prince Edward Isl.	26	311	Prince Edward Isl.
2	181	Maine	27	41	Rhode Island
3	346	Nova Scotia	28	182	Maine
4	100	Rhode Island	29	Exeter	- - - - - - -
5	269	Nova Scotia	30	118	Rhode Island
6	314	Prince Edward Isl.	31	286	Nova Scotia
7	266	Nova Scotia	32	57	Rhode Island
8	292	Prince Edward Isl.	33	226	Nova Scotia
9	219	Nova Scotia	34	203	Nova Scotia
10	297	Prince Edward Isl.	35	56	Rhode Island
11	227	Nova Scotia	36	A.T.-1	Rhode Island
12	299	Prince Edward Isl.	37	268	Nova Scotia
13	Exeter	- - - - - - -	38	285	Nova Scotia
14	234	Nova Scotia	39	307	Prince Edward Isl.
15	55	Rhode Island	40	250	Nova Scotia
16	117	Rhode Island	41	189	Nova Scotia
17	272	Nova Scotia	42	50	Rhode Island
18	107	Rhode Island	43	310	Prince Edward Isl.
19	304	Nova Scotia	44	46	Rhode Island
20	259	Nova Scotia	45	280	Nova Scotia
21	106	Rhode Island	46	319	New Brunswick
22	45	Rhode Island	47	44	Rhode Island
23	289	Nova Scotia	48	298	Prince Edward Isl.
24	40	Rhode Island	49	308	Prince Edward Isl.
25	105	Rhode Island	50	260	Nova Scotia

1984 R.I. Colonial Bentgrass Trial
Area VI

Entry	Winter Color	7/87 T.S.*	10/87 T.S.	11/87 T.S.	1985 T.S. X	1986 T.S. X	1987 T.S. X	3 Yr. T.S. X
1	4	4.0	6.5	7.0	5.8	6.5	5.8	6.0
2	4	5.0	7.0	6.5	5.2	5.9	6.2	5.8
3	5	4.5	6.0	7.0	5.7	6.1	5.8	5.9
4	3	5.0	6.5	5.5	5.9	6.6	5.7	6.1
5	5	5.0	7.0	7.5	6.3	6.4	6.5	6.4
6	4	6.0	6.0	6.0	6.0	7.1	6.0	6.4
7	3	5.5	7.0	6.0	6.2	6.9	6.2	6.4
8	3	5.0	7.0	7.0	6.5	6.9	6.3	6.6
9	3	6.0	7.0	6.0	6.4	6.2	6.3	6.3
10	5	5.5	7.0	6.0	4.9	5.3	6.2	5.5
11	6	6.5	6.0	7.0	6.1	7.0	6.5	6.5
12	4	5.5	6.5	6.5	5.9	6.1	6.2	6.1
13	5	6.0	6.0	6.5	6.5	6.8	6.2	6.5
14	4	6.5	6.0	6.0	6.5	6.5	6.2	6.4
15	-	-	-	-	-	-	-	-
16	5	7.0	6.0	7.5	6.7	6.6	6.8	6.7
17	5	6.0	6.0	6.5	7.1	6.7	6.2	6.7
18	4	5.0	6.0	5.5	6.9	7.0	5.5	6.5
19	5	5.5	6.0	6.0	6.8	7.2	5.8	6.6
20	4	6.0	6.0	6.5	7.7	7.2	6.2	7.0
21	5	6.5	5.5	6.5	6.7	6.9	6.2	6.6
22	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-
25	4	6.5	6.0	7.0	7.1	6.8	6.5	6.8
26	4	7.0	5.5	6.5	6.4	7.2	6.3	6.6
27	3	7.5	5.5	6.0	6.8	6.1	6.3	6.4
28	4	5.5	6.0	6.5	6.8	6.3	6.0	6.4
29	2	5.0	5.5	5.0	6.3	5.4	5.2	5.6
30	4	6.0	6.0	6.5	6.8	6.6	6.2	6.5
31	3	7.0	5.5	7.0	6.3	6.1	6.5	6.3
32	-	-	-	-	-	-	-	-
33	5	5.0	6.0	6.0	7.1	6.5	5.7	6.4
34	4	5.5	6.5	5.5	6.8	7.4	5.8	6.7
35	3	6.5	6.0	6.5	6.7	6.3	6.3	6.4
36	4	7.5	5.5	6.5	7.3	6.8	6.5	6.9
37	4	5.5	6.0	6.5	7.4	7.0	6.0	6.8
38	3	5.0	6.0	6.5	7.3	6.7	5.8	6.6
39	4	5.5	6.5	6.0	7.0	6.8	6.0	6.6
40	5	4.0	7.5	7.0	7.2	6.3	6.2	6.6
41	6	6.5	5.5	6.5	7.0	6.3	6.2	6.5
42	4	6.0	5.5	6.5	6.9	6.6	6.0	6.5
43	4	5.0	5.5	5.0	7.3	7.0	5.2	6.5
44	2	5.0	6.0	5.0	7.3	6.9	5.3	6.5
45	5	4.5	6.5	7.5	7.5	6.9	6.2	6.9
46	3	7.0	5.5	6.0	7.2	6.9	6.2	6.8
47	5	6.5	6.0	6.0	7.3	6.8	6.2	6.8
48	4	5.0	6.0	5.0	7.3	6.8	5.3	6.5
49	4	4.0	6.0	6.0	7.3	6.2	5.3	6.3
50	5	6.0	6.0	7.0	7.3	6.8	6.3	6.8

*T.S. = Turf Score 1 = bare ground or dead turf, 9 = best quality

1986 R.I. Colonial Bentgrass Trial
Area VI

Plot size
1 x 2m

N ↓

45	40	35	30	25	20	15	10	5
44	39	34	29	24	19	14	9	4
43	38	33	28	23	18	13	8	3
42	37	32	27	22	17	12	7	2
41	36	31	26	20	16	11	6	1

Entry	Selection	Source	Entry	Selection	Source
1	181	Maine	24	401	Maine
2	215	Nova Scotia	25	211	Nova Scotia
3	264	Nova Scotia	26	397	Maine
4	210	Prince Edward Is.	27	322	Nova Scotia
5	203	Nova Scotia	28	292	Prince Edward Is.
6	266	Nova Scotia	29	217	Nova Scotia
7	Exeter	- - - - - -	30	400	Maine
8	296	Prince Edward Is.	31	Exeter	- - - - - -
9	259	Nova Scotia	32	266	Nova Scotia
10	280	Nova Scotia	33	269	Nova Scotia
11	289	Nova Scotia	34	415	Rhode Island
12	399	Nova Scotia	35	304	Nova Scotia
13	268	Nova Scotia	36	298	Prince Edward Is.
14	Astoria	- - - - - -	37	209	Nova Scotia
15	272	Nova Scotia	38	319	New Brunswick
16	208	Nova Scotia	39	398	New Brunswick
17	213	Nova Scotia	40	250	New Brunswick
18	297	Prince Edward Is.	41	212	Nova Scotia
19	320	New Brunswick	42	193	Nova Scotia
20	285	Nova Scotia	43	180	Maine
21	286	Nova Scotia	44	Astoria	- - - - - -
22	314	Prince Edward Is.	45	265	Nova Scotia
23	Duchess	- - - - - - - - -			

1986 R.I. Colonial Bentgrass Trial
Area VI

Entry	Winter Color	7/87 T.S.*	10/87 T.S.	11/87 T.S.	1986 T.S. X	1987 T.S. X	2 Yr. T.S. X
1	4	5.5	6.0	5.5	6.5	5.7	6.1
2	2	6.5	7.5	6.5	7.5	6.8	7.1
3	5	5.0	6.0	5.5	5.5	5.5	5.5
4	3	6.0	6.0	7.0	7.0	6.3	6.6
5	3	5.5	6.0	6.5	6.0	6.0	6.0
6	3	6.0	6.5	7.0	7.5	6.5	7.0
7	5	6.5	6.5	6.5	7.0	6.5	6.7
8	3	6.5	6.0	5.5	7.5	6.0	6.7
9	3	6.5	6.0	6.0	6.5	6.2	6.3
10	4	6.0	6.0	6.5	6.5	6.2	6.3
11	4	5.0	6.5	7.0	7.5	6.2	6.8
12	5	5.5	6.5	6.5	6.5	6.2	6.3
13	4	6.0	5.5	5.0	7.5	5.5	6.5
14	4	4.0	5.5	5.5	5.5	5.0	5.2
15	4	5.5	7.0	7.5	7.0	6.7	6.8
16	2	7.5	6.0	6.5	8.0	6.7	7.3
17	2	7.6	5.5	6.5	7.5	6.5	7.0
18	5	5.0	5.5	5.0	6.5	5.2	5.8
19	2	6.0	5.0	5.0	7.5	5.3	6.4
20	3	6.0	6.5	7.0	7.0	6.5	6.7
21	2	6.0	6.0	7.5	7.0	6.5	6.7
22	4	7.0	7.0	7.0	6.5	7.0	6.7
23	4	4.5	6.0	5.5	6.0	5.3	5.6
24	4	4.0	5.5	6.0	5.5	5.2	5.3
25	2	7.0	5.5	6.0	7.0	6.2	6.6
26	4	4.0	5.5	5.0	5.0	4.8	4.9
27	5	6.0	6.0	6.5	7.0	6.2	6.6
28	4	5.5	6.0	5.5	6.5	5.7	6.1
29	2	7.0	5.0	4.0	7.5	5.3	6.4
30	4	5.0	6.0	6.5	6.0	5.8	5.9
31	4	5.5	6.0	7.5	7.5	6.3	6.9
32	5	6.0	6.0	6.5	7.5	6.2	6.8
33	4	5.0	5.5	6.5	7.5	5.7	6.6
34	3	5.5	5.5	6.0	8.0	5.7	6.8
35	3	6.0	5.5	6.5	7.0	6.0	6.5
36	5	5.5	5.5	6.5	6.0	5.7	5.8
37	2	7.5	5.0	6.0	7.0	6.2	6.6
38	2	7.0	5.5	5.5	7.5	6.0	6.7
39	4	4.0	6.5	6.0	6.0	5.5	5.7
40	4	5.0	5.5	6.5	5.0	5.7	5.3
41	6	6.5	5.5	5.5	7.0	5.8	6.4
42	5	7.0	5.5	6.0	7.0	6.2	6.6
43	4	5.5	6.0	5.5	6.5	5.7	6.1
44	3	5.0	6.0	5.0	5.0	5.3	5.1
45	3	5.5	6.0	7.5	5.5	6.3	5.9

*T.S. = Turf Score 1 = bare ground or dead turf, 9 = best quality

1985 RI PUTTING GREEN GRASS TRIAL
AREA VI

These plots were seeded in Sept., 1985. They consisted of 28 experimental selections of creeping and velvet bentgrasses. Several of the materials have been in development at this station for several years, while most of them are recent collections that are being evaluated for the first time. Kingstown velvet is included as the standard for this species and Penncross, Seaside, and Emerald are includes as standards of comparison for the creeping bentgrasses.

The velvet selections in plots 2, 3, 4, and 17 appear to be distinctly superior to the Kingstown variety. The cultivars in plots 2 and 4 are Rhode Island selections, while 3 and 17 were obtained from Manuel Francis at Green Harbor in Marshfield, MA.

We are also excited about the apparent improved quality of certain of our creeping bents. Plots No. 16 and 29 are our selection "19", which has been named "Providence" and, hopefully, will be on the market as an improved variety in another year or two. Plots 9, 15, and 32 are our "Polycross" selection and it, too, looks promising. There are other materials in trial that also look considerably better than currently available varieties. Additional years of testing will provide documentation on performance. We are obtaining information on disease reaction and seed production potential of these selections. These are very important characteristics in the development of a new variety.

We have collected additional creeping and velvet bentgrasses during 1987, and are in the process of increasing these for seed production and trial evaluation.

1985 R.I. Putting Green Grass Trial
Area VI

Plot size: 2x2m

								N
8	7	6	5	4	3	2	1	
16	15	14	13	12	11	10	9	
24	23	22	21	20	19	18	17	
32	31	30	29	28	27	26	25	

Entry	3/87 Color	4/87 T.S.	6/87 T.S.	7/87 T.S.	8/87 T.S.	11/87 T.S.	1986 T.S. X	1987 T.S. X	2 Yr. T.S. X
1.	3.0	4.5	6.5	6.5	6.5	6.0	7.3	6.0	6.7
2.	5.0	6.0	7.5	7.5	7.0	7.0	6.8	7.0	6.9
3.	7.0	7.0	7.0	7.5	7.5	7.5	7.8	7.3	7.6
4.	7.0	6.5	6.5	7.0	7.0	7.5	7.5	6.9	7.2
5.	2.0	3.5	6.5	5.0	6.0	4.0	5.5	5.0	5.3
6.	1.0	4.0	6.0	5.5	6.0	4.0	6.8	5.1	6.0
7.	4.0	4.5	5.5	5.0	5.0	5.5	6.0	5.1	5.6
8.	5.0	4.0	5.5	5.0	5.5	6.0	5.5	5.2	5.4
9.	3.0	4.5	7.0	7.0	7.5	5.0	7.3	6.2	6.8
10.	4.0	5.0	6.0	6.0	5.5	6.0	6.5	5.7	6.1
11.	1.0	2.5	5.5	5.5	6.0	4.5	6.0	4.8	5.4
12.	2.0	3.0	5.0	5.0	5.5	4.0	5.8	4.5	5.2
13.	4.5	5.5	7.0	6.0	4.5	5.5	6.5	5.7	6.1
14.	2.0	3.5	6.0	6.0	5.0	4.0	6.0	4.9	5.5
15.	3.0	5.0	6.5	6.5	6.5	6.0	7.0	6.1	6.6
16.	4.0	5.0	6.5	6.0	7.0	6.0	6.8	6.1	6.5
17.	6.0	6.5	8.0	7.5	7.5	7.5	7.8	7.4	7.6
18.	2.0	4.0	4.0	5.0	4.5	4.0	5.8	4.3	5.1
19.	2.0	3.5	6.5	5.0	5.5	5.5	6.5	5.4	6.0
20.	3.0	3.0	6.5	5.5	5.5	6.0	6.5	5.3	5.9
21.	3.0	4.0	6.0	5.5	5.0	5.5	4.8	5.2	5.0
22.	2.0	3.5	5.5	6.5	5.0	4.5	6.5	5.0	5.8
23.	3.0	5.0	5.5	5.5	4.0	5.5	6.5	5.1	5.8
24.	3.0	6.0	6.5	7.0	6.5	6.5	7.3	6.5	6.9
25.	3.0	3.0	5.5	5.5	5.0	4.0	5.8	4.6	5.2
26.	5.0	3.5	5.5	6.0	6.0	5.0	4.0	5.2	4.6
27.	4.0	4.5	7.0	6.0	6.0	6.0	5.0	5.9	5.5
28.	4.0	3.0	6.5	6.0	6.0	5.0	3.5	5.3	4.4
29.	4.0	6.0	7.0	7.5	7.5	6.0	6.8	6.8	6.8
30.	4.0	5.5	6.5	7.0	6.0	6.5	6.8	6.3	6.6
31.	4.0	5.0	6.0	5.5	5.5	5.5	5.8	5.5	5.7
32.	5.0	6.0	7.0	7.0	6.5	6.0	7.0	6.5	6.8

1985 Putting Green Grass Trial (continued)
Area VI

Seeding Date - 9/27/85
Fertilizer - 1 Kg N/Are (5-10-5)
No Line
Seeding rate based on %pure, live seed
Borders seeded with Jamestown F.R.

Entry	Selection	Entry	Selection	Entry	Selection	Entry	Selection
1	Kingstown	9	1*	17	416	25	230
2	408	10	323	18	233	26	235
3	417	11	300	19	245	27	216
4	141	12	239	20	316	28	301
5	281	13	188	21	315	29	19
6	318	14	Pencross	22	276	30	20
7	Seaside	15	3*	23	Emerald	31	410
8	1020	16	1019	24	87	32	2*

*Selection numbers 1, 2 and 3 are from the 1984 Creeping Bentgrass Polycross and do not refer to R.I. selection numbers.

1985 NATIONAL KENTUCKY BLUEGRASS TRIAL

This is a component of national trials that are located on at least 25 sites throughout the USA and Canada. Seeded in the fall of 1985, limited data were obtained in 1986--the establishment year, but data were taken from April through November in 1987.

For the 1987 season the following cultivars were the only ones with a quality score of 6.0 or above (9.0 is perfect) in our trials, Bristol, Bar VB 577, HV 97, Wabash, Freedom, Welcome, Midnight, Blacksburg and HV 103. For 22 locations reporting from throughout the country, the 1987 quality scores were highest, ranging from 5.9 to 6.4, for these ten varieties: Blacksburg, Midnight, Princeton 104, Lofts 1757, Bristol, Asset, Eclipse, A-34, Challenger and BA 73-540.

Common types, such as, Kenblue and South Dakota certified were rated 4.0 or below nationally, and in the mid-5's in Rhode Island. There are a total of 72 cultivars in the national trials. We have added three more in our local trials.

These variety trials are normally run for a five year period and ratings often change greatly during this period. We have greater confidence in recommending varieties after four or five years of observation than we do earlier.

Information on disease, inherent color, spring and fall color, and other parameters are also taken by various researchers, who are involved with the National Trials. National Progress Reports are prepared annually by the sponsors.

1985 National Kentucky Bluegrass Test

Area V

N ↑

Plot Plan

	68	8	34	32	38	3	15	24	52	39	33	4	17	48	9	53	11	61	13	72	64	67	41	57	22
III	1	36	27	2	6	19	25	71	69	63	28	55	14	35	49	70	30	44	65	18	40	10	58	59	66
	37	74	5	21	46	47	26	73	20	56	45	29	75	50	60	31	51	62	54	42	23	7	16	12	43
	54	21	42	39	38	32	14	20	37	75	8	65	55	45	56	29	44	30	68	66	53	72	13	11	22
II	46	12	6	7	19	5	25	74	69	71	63	10	40	18	47	59	58	26	51	31	60	73	50	62	42
	64	17	33	35	67	49	4	70	9	57	41	61	52	3	16	28	23	2	27	36	1	24	43	15	34
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
I	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

The 1985 National Kentucky Bluegrass Test was seeded on 10/18/85 at a rate of 3 lbs/1000ft.^{2}. A 5-10-5 grade of fertilizer was applied prior to seeding at a rate of 2 lbs N/1000ft.^{2}. The test is mown at 1.5 inches.

1985 National Kentucky Bluegrass Test
Area V

Entry	3/87 Color $\bar{X}$	4/87 T.S. $\bar{X}$	7/87 T.S. $\bar{X}$	10/87 T.S. $\bar{X}$	11/87 T.S. $\bar{X}$	1986 T.S. $\bar{X}$	1987 T.S. $\bar{X}$	2 Yr. T.S. $\bar{X}$
1. Classic	3.3	4.0	6.0	5.7	5.7	5.8	5.4	5.6
2. Monopoly	2.3	4.3	5.3	6.0	4.7	6.5	5.1	5.8
3. Barzan	1.7	3.3	5.0	5.7	5.3	5.4	4.8	5.1
4. Gnome	1.3	3.7	5.3	5.0	4.0	4.9	4.5	4.7
5. Tendos	1.7	4.3	5.7	5.7	6.0	5.9	5.4	5.7
6. P-104	3.0	4.7	6.0	5.3	5.3	5.9	5.3	5.6
7. Ram 1	1.0	3.7	5.7	5.7	5.0	6.4	5.0	5.7
8. Compact	2.0	3.3	5.7	5.0	5.7	5.7	4.9	5.7
9. Joy	2.0	4.7	5.3	4.7	4.7	6.2	4.9	5.6
10. Sydsport	2.7	4.3	5.3	5.0	5.3	5.5	5.0	5.3
11. Haga	3.0	4.7	5.7	5.3	6.0	7.0	5.4	6.2
12. Georgetown	3.0	4.3	5.3	5.0	5.0	6.4	4.9	5.7
13. Somerset	2.7	4.3	5.3	6.0	6.0	5.2	5.4	5.3
14. Mystic	3.0	4.3	5.7	5.3	5.7	6.5	5.3	5.9
15. Baron	1.7	4.0	5.3	5.3	4.7	6.0	4.8	5.4
16. Able 1	2.0	4.0	6.0	6.0	5.3	6.0	5.3	5.7
17. Ben-Sun	3.0	5.0	5.7	6.0	6.0	7.2	5.7	6.5
18. Merit	2.0	4.3	5.7	5.7	5.0	6.4	5.2	5.8
19. BAR VB 577	2.0	4.0	5.3	5.0	4.3	5.4	4.7	5.1
20. Annika	1.7	4.7	6.3	4.7	4.7	6.7	5.1	5.9
21. Conni	1.7	3.7	6.3	5.7	6.0	7.0	5.4	6.2
22. Kenblue	2.0	4.0	5.0	5.3	4.3	6.2	4.7	5.5
23. Bristol	3.0	4.7	6.0	7.0	7.0	6.4	6.2	6.3
24. Victa	1.3	4.0	5.0	5.3	4.7	6.2	4.8	5.5
25. Ba 70-139	2.0	4.0	5.7	5.7	6.0	5.5	5.4	5.5
26. Ba 70-242	2.0	4.0	5.7	5.7	6.0	6.0	5.4	5.7
27. Ba 72-441	2.3	3.7	6.0	6.0	5.3	5.7	5.3	5.5
28. Ba 72-492	3.0	5.0	6.0	6.3	5.7	6.0	5.8	5.9
29. Ba 72-500	3.0	5.0	6.0	6.3	6.3	6.9	5.9	6.4
30. Ba 73-626	2.3	4.0	6.0	6.0	5.7	5.9	5.4	5.7
31. BAR VB 534	2.3	4.0	6.7	7.0	7.0	6.2	6.2	6.2
32. Cynthia	1.0	3.7	5.0	6.3	6.0	5.0	5.3	5.2
33. NE 80-88	2.0	4.3	5.7	6.0	5.3	6.0	5.3	5.7
34. America	2.3	4.3	5.7	6.0	6.3	6.4	5.6	6.0
35. Ba 69-82	3.0	4.3	5.7	5.7	5.3	5.8	5.3	5.6
36. Ba 73-540	3.0	4.7	6.3	6.0	5.7	6.4	5.7	6.1
37. Parade	3.0	3.7	6.0	6.0	6.7	5.7	5.6	5.7
38. Asset	2.3	4.3	5.3	6.0	5.7	6.5	5.3	5.9
39. HV 97	2.7	4.3	6.7	7.0	6.0	6.8	6.0	6.4
40. Lofts 1757	2.7	4.7	5.7	6.0	7.0	6.7	5.9	6.3
41. Cheri	2.3	4.3	5.7	6.0	6.3	6.0	5.6	5.8
42. Eclipse	2.3	4.3	6.3	5.7	7.0	7.0	5.8	6.4
43. Liberty	3.0	3.7	6.3	6.3	6.3	7.2	5.7	6.5

1985 National Kentucky Bluegrass Test (continued)

Entry	3/87 Color $\bar{X}$	4/87 T.S. $\bar{X}$	7/87 T.S. $\bar{X}$	10/87 T.S. $\bar{X}$	11/87 T.S. $\bar{X}$	1986 T.S. $\bar{X}$	1987 T.S. $\bar{X}$	2 Yr. T.S. $\bar{X}$
44. Destiny	3.0	4.3	5.7	5.7	7.3	6.2	5.8	6.0
45. Dawn	3.0	4.7	6.0	6.0	7.0	6.7	5.9	6.3
46. Merion	1.7	3.7	6.0	5.3	4.7	6.4	4.9	5.7
47. Nassau	2.7	4.7	5.7	6.0	5.0	5.7	5.4	5.6
48. Amazon	1.3	3.3	6.3	6.7	6.3	7.0	5.7	6.4
49. 239	2.7	4.0	5.7	6.0	5.7	6.0	5.4	5.7
50. Wabash	3.0	5.0	6.0	7.0	6.0	7.4	6.0	6.7
51. Julia	2.3	4.3	6.3	6.0	6.3	6.2	5.7	6.0
52. Ikone	2.3	4.3	5.7	5.3	5.3	5.7	5.2	5.5
53. Glade	1.7	4.3	6.0	5.7	6.7	6.7	5.7	6.2
54. Huntsville	3.0	4.3	4.7	5.3	5.7	6.4	5.0	5.7
55. F-1872	3.7	4.3	6.0	6.7	7.0	6.5	6.0	6.3
56. Aquila	1.7	4.0	6.3	6.0	5.3	6.2	5.4	5.8
57. K1-152	3.3	4.0	5.0	6.0	6.7	5.8	5.4	5.6
58. Harmony	3.0	4.3	5.0	6.0	6.7	6.7	5.5	6.1
59. Welcome	2.3	4.7	6.0	6.3	7.0	6.8	6.0	6.4
60. Aspen	2.0	4.3	5.7	5.7	6.3	5.9	5.5	5.7
61. Rugby	3.7	4.7	6.0	5.7	6.3	6.2	5.7	6.0
62. Trenton	3.7	5.0	6.0	6.0	6.7	6.9	5.9	6.4
63. K3-178	3.7	4.7	6.0	6.0	6.3	6.5	5.8	6.2
64. Midnight	2.7	4.0	6.3	6.7	7.3	6.9	6.1	6.5
65. Challenger	3.0	4.7	6.0	6.0	7.0	7.0	5.9	6.5
66. Blacksburg	2.7	5.0	6.7	6.0	7.3	7.5	6.3	6.9
67. PST-CB1	3.3	4.7	5.7	5.7	5.7	6.2	5.4	5.8
68. S. Dakota Cert.	2.0	3.7	4.3	5.3	6.7	6.0	5.0	5.5
69. WW Ag 468	1.7	4.3	7.0	6.0	6.0	6.7	5.8	6.3
70. WW Ag 491	2.7	4.3	5.7	5.7	6.0	6.2	5.4	5.8
71. WW ag 495	1.0	3.7	6.0	6.0	6.0	6.9	5.4	6.2
72. WW ag 496	1.7	3.7	5.7	5.7	5.7	6.5	5.2	5.9
73. HV 102	2.7	4.3	6.3	5.7	5.7	6.4	5.5	6.0
74. HV 103	3.7	4.7	6.3	6.0	7.0	6.7	6.0	6.4
75. HV 107	2.3	3.3	5.7	5.0	5.3	6.8	4.8	5.8

1986 National Perennial Ryegrass Test

Area V N ↓

Plot Plan

III	30	28	38	48	3	42	11	54	27	66	33	64	5	13	60	24	51	20	58	36	62	8	25
	17	43	23	69	52	57	68	37	63	16	59	34	65	18	55	1	69	45	61	31	49	22	40
	14	35	6	21	26	44	7	29	47	2	32	10	19	50	12	53	39	15	41	56	4	46	9
	28	1	42	53	17	46	63	9	26	67	69	23	68	33	66	14	62	39	49	19	57	36	5
II	37	4	47	10	56	21	58	32	60	54	18	50	43	2	35	45	30	64	6	40	52	12	25
	11	22	34	61	16	27	48	3	29	41	8	38	65	15	55	24	20	59	51	31	7	44	13
	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
I	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24
	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

The National Perennial Ryegrass Test was seeded 9/15/86 at a rate of 6 lbs/1000ft.^{2}. A 5-10-5 grade of fertilizer was applied prior to seeding at arate of 40 lbs/1000ft.^{2}. The test is mown at 1.5 inches.

Entries

1. Barry
2. BAR Lp454
3. Tara
4. BAR Lp410
5. Cowboy
6. Yorktown II
7. Prelude
8. Palmer
9. Diplomat
10. Pavo
11. Ronja
12. Caliente
13. Aquarius
14. Delray
15. Goalie
16. Acrobat
17. Rival
18. Brenda
19. Derby
20. Regal
21. Gator
22. Patriot
23. Rodeo
24. Allaire
25. Pick 300
26. Pick 715
27. Ovation
28. SR4000
29. SR4031
30. SR4100
31. Pick 233
32. Pick 647
33. Pick 600
34. Ranger
35. ISI-K2
36. Pennfine
37. PSU-222
38. PSU-333
39. Mom Lp 763
40. Sheriff
41. Birdie II
42. Citation II
43. Regency
44. Manhattan
45. PST-2PM
46. PST-2DD
47. PST-2H7
48. PST-250
49. Vintage-2DF
50. PST-259
51. PST-M2E
52. Sunrye
53. Omega II
54. PST-2HH
55. ISI-85I
56. NK80389
57. Manhatten
58. Repell
59. Del 946
60. Belle
61. Pennant
62. J207
63. J208
64. Linn
65. Runaway
66. Dolby
67. Taya
68. BAR Lp410
69. BAR ER 6K

1986 NATIONAL PERENNIAL RYEGRASS TEST
AREA V

	ENTRY	7/87 T.S.	10/87 T.S.	11/87 T.S.	1987 T.S. X
1.	Barry	5.7	5.7	5.7	5.7
2.	BAR Lp 454	6.3	6.0	5.7	6.0
3.	Tara	5.3	6.3	6.0	5.9
4.	BAR Lp 410	6.0	6.0	5.7	5.9
5.	Cowboy	5.0	5.0	5.7	5.2
6.	Yorktown II	5.0	6.0	6.3	5.8
7.	Prelude	5.3	6.0	6.3	5.9
8.	Palmer	5.7	5.3	5.7	5.6
9.	Diplomat	5.0	5.3	5.3	5.2
10.	Pavo	5.3	5.7	5.7	5.6
11.	Ronja	5.7	5.7	6.0	5.8
12.	Caliente	5.0	5.3	5.7	5.3
13.	Aquarius	5.3	5.7	5.7	5.6
14.	Delray	5.0	5.7	5.3	5.3
15.	Goalie	6.0	6.0	6.0	6.0
16.	Acrobat	5.7	5.3	5.3	5.4
17.	Rival	4.3	5.7	5.0	5.0
18.	Brenda	5.7	5.7	5.3	5.6
19.	Derby	5.7	5.7	6.0	5.8
20.	Regal	4.7	5.0	5.0	4.9
21.	Gator	5.0	6.0	5.7	5.6
22.	Patriot	5.3	5.7	6.7	5.9
23.	Rodeo	4.7	5.7	6.3	5.6
24.	Allaire	5.7	5.3	5.3	5.4
25.	Pick 300	4.0	4.7	4.7	4.5
26.	Pick 715	4.3	5.3	6.0	5.2
27.	Ovation	5.0	5.7	5.3	5.3
28.	SR 4000	5.3	5.7	6.3	5.8
29.	SR 4031	5.3	5.7	6.0	5.7
30.	SR 4100	5.7	5.3	5.3	5.4
31.	Pick 233	6.3	6.3	6.7	6.4
32.	Pick 647	6.0	6.0	6.0	6.0
33.	Pick 600	4.7	5.7	6.3	5.6
34.	Ranger	6.0	6.0	7.0	6.3
35.	ISI-K2	5.0	6.0	5.7	5.6
36.	Pennfine	5.7	5.3	5.3	5.4
37.	PSU 222	5.7	6.0	6.0	5.9
38.	PSU 333	5.3	5.3	6.3	5.6
39.	Mom Lp 763	7.0	5.7	6.0	6.2
40.	Sheriff	4.7	5.0	5.7	5.1
41.	Birdie II	6.3	5.7	5.7	5.9
42.	Citation II	5.0	5.3	5.0	5.1
43.	Regency	4.7	5.7	6.0	5.6
44.	Manhattan II	5.0	5.7	6.0	5.6
45.	PST 2PM	6.0	6.0	6.3	6.1
46.	PST 2DD	5.0	6.0	6.3	5.8

1986 NATIONAL PERENNIAL RYEGRASS TEST
AREA V
CONTINUED

	ENTRY	7/87 T.S.	10/87 T.S.	11/87 T.S.	1987 T.S. X
47.	PST H7	6.0	5.3	6.3	5.9
48.	PST 250	5.0	5.3	5.0	5.1
49.	Vintage 2DF	5.3	5.3	5.7	5.4
50.	PST 259	5.0	5.7	5.7	5.5
51.	PST M2E	5.7	5.3	6.0	5.7
52.	Sunrye	4.7	5.3	6.0	5.3
53.	Omega II	5.7	5.7	5.7	5.7
54.	PST 2HH	5.3	5.3	5.7	5.4
55.	ISI 851	6.0	6.0	5.3	5.8
56.	NK 80380	5.3	5.7	5.0	5.3
57.	Manhattan	6.0	6.0	5.7	5.9
58.	Repell	5.7	5.7	6.3	5.9
59.	Del 146	5.7	5.3	5.7	5.6
60.	Belle	5.0	5.7	5.3	5.3
61.	Pennant	6.0	6.0	6.7	6.2
62.	J 207	5.7	5.7	6.0	5.8
63.	J 208	5.0	6.0	6.0	5.7
64.	Linn	4.0	5.0	4.0	4.3
65.	Runaway	6.3	5.7	6.0	6.0
66.	Dolby	5.3	5.0	4.7	5.0
67.	Taya	5.0	5.0	5.3	5.1
68.	Bar Lp 410	5.0	5.7	5.7	5.5
69.	Bar Lp 6K	5.7	5.0	5.0	5.2

EVALUATING WILDFLOWERS AS GROUND-COVERS IN RHODE ISLAND

R.J. Hull and R.J. Shaw

INTRODUCTION

The reduction of maintenance costs is a high priority with many grounds managers. In recent years, native species have gained in popularity for ground-cover purposes because they are presumably adapted to local conditions and should require less maintenance. Selecting those wild species which are best suited to serve as ground-covers is not easy and it is probable that some non-native wild plants may serve this purpose very well.

To provide some answers to the question of which wild plants have the greatest potential as ground-covers in Rhode Island, we undertook a cooperative study with Pure Seed Testing Corp. of Hubbard, Oregon. Pure Seed has collected wildflower seeds from all regions of the U.S. and wishes to evaluate them through cooperative projects with several universities. This is our first year as a cooperator.

Fifty species, 25 annuals and 25 perennials, have been identified as having potential to function as low growing ground-covers (Table 1.). These include a broad range of plant families from buttercups to asters. In addition to the plot experiment described here, beds of spaced plants have been established in the Horticultural gardens on the main campus. You are welcome to visit them if your schedule permits.

METHODS

Each of the fifty wildflower species selected by Pure Seed Testing were planted in replicated 4x3 ft plots on 5 July 1988. The area had been treated with Vapam (1 qt/100 sq ft) on 22 June to suppress weed growth during wildflower establishment. All seed was sown on a loosened soil surface and lightly incorporated with a metal rake. Germination rates were excellent.

In addition, four mixtures of wildflowers and some grasses were seeded in replicated 8x12 ft plots. These mixtures were prepared by Pure Seed Testing to provide ground-cover under a variety of conditions and locations. They are designated as:

Low Grow Plots A & F

Bloomers	Plots B & E
Regional	Plots C & H
Bloomers & Bighorn	Plots D & G

Bighorn is a fescue added as a grass component to the Bloomers wildflower mixture. Regional is a mixture formulated specifically for the Northeastern states.

DATA COLLECTION

All species will be evaluated for germination, density of stand (percent ground-cover), time of flowering, duration of flowering, stability as a stand (degree of lodging, maintenance of density, etc), and capacity for reestablishment during the second year. Plants will also be evaluated for their capacity to resist weed invasion, their tendency to attract insects, and their general attractiveness. Those species which seem best adapted to Rhode Island conditions will be used to formulate mixtures which will provide effective ground-cover and offer a pleasing floral display through much of the growing season.

Table 1. Wildflower Species Selected for Evaluation as Ground-covers under Rhode Island Conditions

ANNUALS

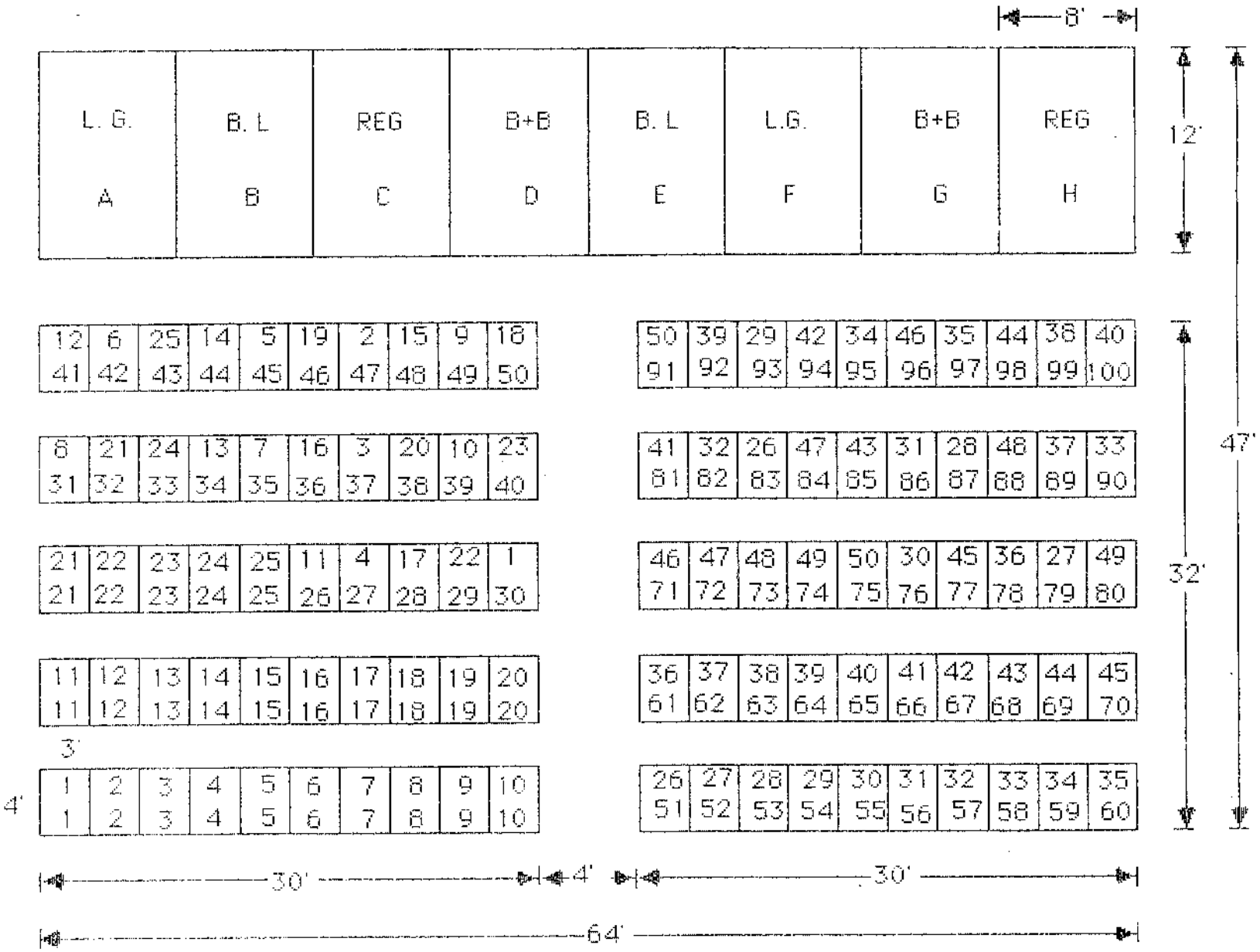
COMMON NAME	SCIENTIFIC NAME
1. African Daisy	Dimorphotheca aurantiaca
2. Baby's Breath	Gypsophila elegans
3. Catchfly	Silene armeria
4. Corn Poppy	Papaver rhoeas
5. Dwarf Cornflower	Centaurea cyanus dwf.
6. Globe Gilia	Gilia capitata
7. Mountain Garland	Clarkia unguiculata
8. Mountain Phlox	Linanthus grandiflorus
9. Pimpernel	Anagallis arvensis
10. Rocket Larkspur	Delphinium ajacis
11. Scarlet Flax	Linum grandiflorum rubrum
12. Spurred Snapdragon	Linaria maroccana
13. Sweet Alyssum	Lobularia maritima
14. Tall Plains Coreopsis	Coreopsis tinctoria
15. Lemon Mint	Monarda citriodora
16. Cosmos	Cosmos bipinnatus
17. Starflower	Scabiosa stellata
18. California Poppy	Eschscholzia californica
19. Baby Blue Eyes	Nemophila menziesii
20. Garland Chrysanthemum	Chrysanthemum coronarium
21. Blue Bells	Phacelia campanularia
22. Tidy Tips	Layia platyglossa
23. Annual Indian Blanket	Gallardia pulchella
24. Birds Eyes	Gilia tricolor
25. Tall Godetia	Clarkia amoena

Table 1. Continued

PERENNIALS

COMMON NAME	SCIENTIFIC NAME
26. Black-Eyed Susan	Rudbeckia hirta
27. Blue Flax	Linum perenne lewisii
28. Dwarf Columbine	Aquilegia vulgaris
29. Johnny Jump Up	Viola cornuta
30. DwarfLanceLeavedCoreopsis	Coreopsis lanceolata dwf.
31. Maiden Pinks	Dianthus deltoides
32. Missouri Primrose	Oenothera missouriensis
33. Prairie Coneflower	Ratibida columnifera
34. Purple Coneflower	Echinacea purpurea
35. Siberian Wallflower	Cheiranthus allionii
36. Sweet Williams	Dianthus barbatus
37. Soapwort	Saponaria ocymoides
38. Snow in Summer	Cerastium biebersteinii
39. White Yarrow	Achillea millefolium
40. Dames Rocket	Hesperis matronalis
41. Forget-me-not	Myosotis sylvatica
42. Creeping Zinnia	Sanvitalia procumbens
43. Tall Evening Primrose	Oenothera lamarkiana
44. Small Burnet	Sanguisorba minor
45. Red Yarrow	Achillea millefolium rubra
46. Gilia	Ipomopsis Rubra
47. Wild Thyme	Thymus serphylum
48. Rocky Mountain Penstemon	Penstemon strictus
49. English Wallflower	Cheiranthus cheiri
50. Roman Chamomile	Anthemis

WILDFLOWER STUDY --1988



3008 SQ FT

FINE FESCUE MIXTURE STUDY
AREA V

This study is supported by the Oregon Fine Fescue Commission. It is recognized that fine fescues are low fertility grasses. The purpose of this study is to evaluate Creeping Red, Chewings and hard fescues, each with several rates of Kentucky Bluegrass, and with both Kentucky Bluegrass and Perennial Ryegrass. In addition, cutting heights of 1 1/2 and 3/4 inches and fertilizer rates of 2 and 3 lbs. N/1000 annually are composed on each mixture.

The study was established in September, 1986. Only minimal data were obtained during the establishment year of 1987.

Fine Fescue Mixture Study (continued)
Area V

Seed Mixtures (percent by weight)

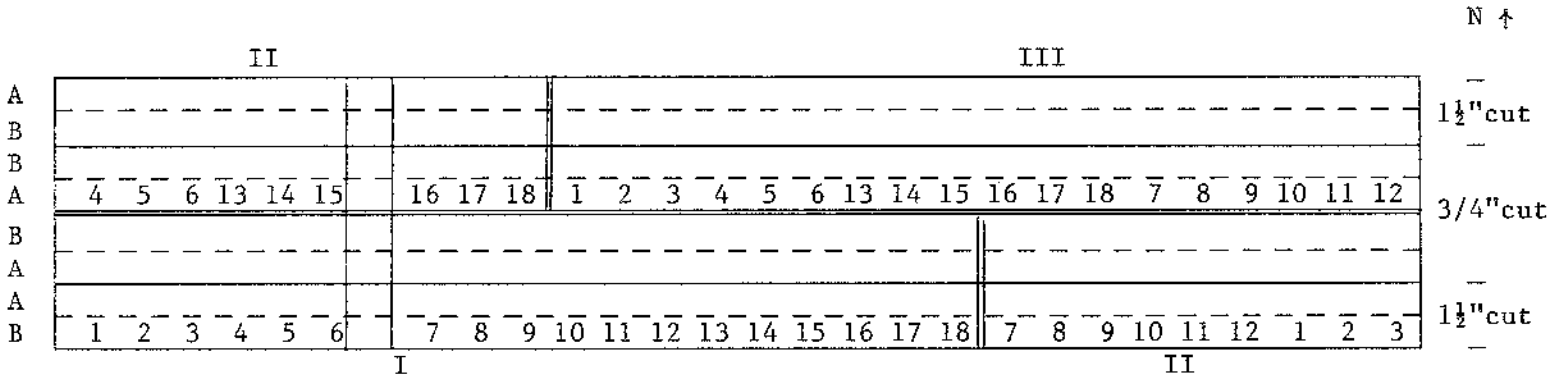
No.	"Jamestown" Chewings fescue	"Georgetown" Kty. bluegrass	"Palmer" Per. ryegrass
1	10	90	-
2	20	80	-
3	30	70	-
4	10	70	20
5	20	60	20
6	30	50	20
	Pennlawn Creeping red fescue		
7	10	90	-
8	20	80	-
9	30	70	-
10	10	70	20
11	20	60	20
12	30	50	20
	Tournament Hard fescue		
13	10	90	-
14	20	90	-
15	30	70	-
16	10	70	20
17	20	60	20
18	30	50	20

Quality Ratings

	1 1/2" Cut -A				3/4" Cut - A		
No.	4/87 X	7/87 X	10/87 X	1987 X	7/87 X	10/87 X	1987 X
1	5.2	5.3	5.2	5.2	6.2	5.8	6.0
2	4.7	5.8	5.2	5.2	6.0	5.8	5.9
3	5.0	5.8	5.3	5.4	6.5	5.7	6.1
4	4.3	6.0	5.7	5.3	6.2	5.8	6.0
5	4.0	6.3	5.7	5.3	6.2	6.0	6.1
6	4.5	6.0	5.7	5.4	5.7	6.2	6.0
7	4.8	5.8	5.3	5.3	5.8	5.7	5.8
8	5.0	5.7	5.2	5.3	5.7	5.8	5.8
9	5.0	6.3	5.7	5.7	6.0	5.8	5.9
10	4.7	6.2	5.7	5.5	5.7	6.0	5.9
11	4.8	5.8	5.5	5.4	5.7	5.8	5.8
12	4.7	5.8	5.5	5.3	5.3	5.8	5.6
13	5.2	6.0	5.5	5.6	6.3	6.0	6.2
14	4.5	5.8	5.5	5.3	5.7	6.0	5.9
15	4.7	5.5	5.5	5.2	5.5	6.0	5.8
16	4.2	5.7	5.5	5.1	5.7	6.0	5.9
17	4.5	6.0	5.5	5.2	5.8	5.8	5.8
18	4.3	5.7	5.5	5.2	5.7	5.8	5.8

Fine Fescue Mixture Study
Area V

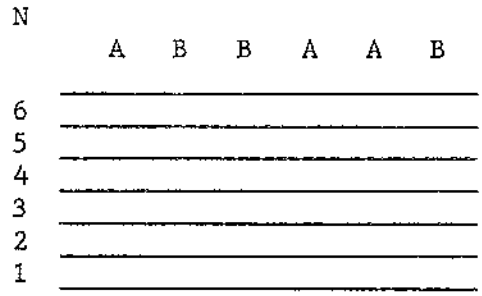
Plot Plan



A - 2 lbs N/1000 ft^2/yr
B - 3 lbs N/1000 ft^2/yr

Seeded 9/15/86 at 3.7 lbs/1000 ft^2
Fertilized with 5-10-5 at 40 lbs/1000 ft^2

1983 Fairway Grass Study
Area II



A = No fungicide
B = Seasonal Fungicide Program

Mowing - 3x per week at 5/8 inches

Fertilizer - 1lb. N/1000 ft^2 18-4-8 or similar grade in May and Sept. 0.5lb. N/1000 ft^2 Milorganite as needed from June - August.

Grass Mixture

Plot #	
1	50% Penncross - 50% Penneagle
2	25% Penncross - 25% Penneagle 50% Exeter
3	20% Penncross - 20% Penneagle 40% Exeter - 20% Prelude
4	10% Penncross - 10% Penneagle 30% Exeter - 50% Jamestown
5	40% Mystic - 40% Touchdown 20% Prelude
6	10% Mystic - 10% Touchdown 10% Exeter - 40% Jamestown 30% Prelude

Seasonal Fungicide Program

Schedule	Fungicide	oz./1000 ft^2
5/21	Actidione TGF	0.5
	Chipco 26019	1.0
6/11	Actidione TGF	0.5
	Chipco 26019	1.0
7/2	Actidione TGF	0.5
	Bayleton	0.5
7/23	Actidione TGF	0.5
	Chipco 26019	1.0
8/13	Chipco 26109	2.0
9/03	Chipco 26019	1.0

Data

Treatment	Winter Color X	4/87 T.S.* X	7/87 T.S. X	10/87 T.S. X	11/87 T.S. X	1984 T.S. X	1985 T.S. X	1986 T.S. X	1987 T.S. X	4 Yr. T.S. X
1A	3.0	4.0	5.3	5.5	6.5	6.0	5.5	6.4	5.3	5.8
1B	1.3	2.3	5.7	5.8	6.8	4.9	5.8	7.0	5.2	5.7
2A	3.7	5.0	5.3	6.0	6.5	5.3	5.0	6.1	5.7	5.6
2B	2.0	3.3	6.0	6.5	6.7	4.7	5.5	6.5	5.6	5.6
3A	4.0	5.3	6.0	6.0	6.3	5.7	5.0	5.9	5.9	5.6
3B	2.3	4.0	6.0	6.2	6.8	4.6	5.6	7.0	5.8	5.8
4A	4.0	6.0	5.5	6.3	7.0	5.4	5.1	6.1	6.2	5.7
4B	2.3	3.7	6.0	6.3	6.8	4.3	6.1	6.8	5.7	5.7
5A	4.7	6.0	6.5	5.5	6.5	6.1	5.5	6.4	6.1	6.0
5B	3.3	5.0	6.0	6.0	7.0	5.3	6.1	7.4	6.0	6.2
6A	5.0	7.0	6.2	5.3	6.7	5.9	5.5	6.4	6.3	6.0
6B	4.3	6.0	6.0	5.7	7.0	5.4	6.2	7.0	6.2	6.2

*T.S. = Turf Score: 1 = bare ground or dead turf
9 = best quality

1983 FAIRWAY GRASS STUDY

The trial was seeded five years ago. The purpose was to evaluate the performance of various grass mixtures, mown at 5/8 to 3/4 inches, with and without a seasonal fungicide program. Turfgrasses vary in response to cutting height, management requirements and response to diseases. We are attempting to learn more about grasses specifically adapted for fairway and tee usage.

Grasses in this study were mown at 3/4 inches through 1987 and at 5/8 inches in 1988. They receive one lb. of N/1000 sq. ft. from a 4-1-2 (approx.) ratio fertilizer in May and Sept., and 1/2 lb. of N from Milorgranite, as required, through the summer for a total of 2 1/2 to 3 1/2 lbs. of N/season. Fungicides are applied to one half of each mixture plot on a monthly basis from May through October for a total of six applications. The plot plan, grass mixture and quality data for four years are shown on the following page.

Quality of the turf stand has been influenced by fungicide treatment. In 1984 the quality was lower on fungicide treated plots. During 1985 and 1986 the reverse was true, while in 1987 the differences were slight. Disease pressure varies considerably from year to year, as we are well aware. We have no idea why fungicide treated plots would ever be of less quality then those not treated.

The four-year average of all fungicides treated plots was 5.9. Untreated plots averaged 5.8. This would not be a significant difference. For the year 1987 (4th year of the study) treated plots averaged 5.8 and untreated averaged 5.9, again, no apparent difference.

Grass mixture averages (treated and untreated averaged together provided the following figure as a four year average and during 1987. The 4th year of the study.

MIXTURE	AVERAGE 4-YEAR	1987
1. 50% Penncross - 50% Penneagle	5.8	5.2
2. 25% Penncross - 25% Penneagle 50% Exeter Colonial	5.6	5.6
3. 20% Penncross - 20% Penneagle 40% Exeter - 20% Prelude Perennial Ryegrass	5.7	5.85
4. 10% Penncross - 10% Penneagle 30% Exeter-50% Jamestown Chewings fescue	5.7	6.0
5. 40% Mystic Kty. Blue - 40% Touchdown Kty Blue - 20% Prelude	6.1	6.0
6. 10% Mystic - 10% Touchdown 10% Exeter - 40% Jamestown 30% Prelude	6.1	6.2

Although quality differences among grass mixtures is not great, there is slightly better quality with those mixtures with the least or with no creeping Bentgrasses. We would expect this as the Creeping Bents require a higher level of management and perform better at closer cut than we provided.

RHODE ISLAND TURFGRASS DISEASE CONTROL RECOMMENDATIONS - 1988

DISEASE (Causal Agent)	TURFGRASS HOST	FUNGICIDE[1]	RATE[2] per 1000 sq. ft.	SPRAY SCHEDULE + COMMENTS
ALGAE	All turfgrasses	Fore	4-6 oz	As needed (7-10 days)
		Manzate 200	4-6 oz	Alleviate poverty, compaction & poor drainage
MOSSES	All turfgrasses	Ferrous sulfate	8-16 oz	
ANTHRACNOSE (*Colletotrichum graminicola*)	Bentgrasses	Bayleton	1-2 oz	July-Sept (7-14 days)
		Daconil 2787 WP+F	4-6 oz, 7-11 fl oz	Combine a systemic with a
	Bluegrasses	Fore, Manzate 200	4-6 oz	contact fungicide for high
	Fescues	Rubigan AS	2-4 fl oz	disease risk turf. Improve
		Tersan 1991	2-3 oz	turf vigor.
BROWN PATCH (*Rhizoctonia solani*)	All turfgrasses	Banner*	1-2 fl oz	July-Sept (5-10 days)
		Bayleton*	1-3 oz	Hot, humid weather condi-
		Cleary 3336*	1-3 oz	tions with night tempera-
	Chipco 26019 WP+F		1-2 oz, 3-4 fl oz	tures above 68°F favor
		Daconil 2787 WP+F	4-6 oz, 7-11 fl oz	brown patch.
		Duosan	4-6 oz	Avoid excessive nitrogen.
		Fore	4-6 oz	*Systemic fungicides may
		Fungo*	1-3 oz	need contact fungicide
		Manzate 200	4-6 oz	supplement in high
		Rubigan AS*	1 1/2 fl oz	disease pressure
		Spotrete F	4-8 fl oz	situations.
		Tersan 1991*	1-3 oz	
		Tersan 75	4-6 oz	

[1] Mention of a trade name does not constitute a warranty of the product named, and does not signify that the product is approved to the exclusion of other comparable products. [2]Lower rates are to be used for preventive programs, higher rates or curative programs in 2 1/2-10 gals water/1000 sq.ft.

COPPER SPOT (*Gloeocercospora sorghi*)	Bentgrasses, particularly Velvet bentgrasses	Bayleton*	1/2-1 oz	
		Cadmium fungicides	(see label	
		Cleary 3336*	1/2-1 oz	
		Daconil 2787 WP+F	4 oz, 7 fl oz	*Systemic fungicides provide longer control (14-21 days)
		Duosan*	3 oz	
		Dyrene WP+F	4-6 oz, 4-6 fl oz	
		Fungo*	1/2-1 oz	
		Mertect 160*	1/2-1 oz	
		Rubigan AS*	3/4-1 1/2 fl oz	
		Tersan 1991*	1/2-1 oz	
DAMPING OFF (*Pythium* spp.) (*Fusarium* spp.) (*Helminthosporium* spp.) (*Rhizoctonia solani*)	All turfgrasses	Pre-emergence		
		Seed dressing	0.5%	
		Captan 50%	seed weight	Pay careful attention to seed bed preparation. Use good quality seed.
		Thiram 50% dust		
		Post emergence		
		treatment depends on the fungus involved		At emergence and 5-10 days after.
DOLLAR SPOT (*Sclerotinia homoeocarpa*)	All turfgrasses	Banner*	1-2 fl oz	June-September (7-14 days)
		Bayleton*	1/2-1 oz	
		Cadmium fungicides	(see label)	*Systemic fungicides may provide longer control (14-21 days)
		Chipco 26019 WP+F	1-2 oz, 2-4 fl oz	
		Daconil 2787 WP+F	4-6 oz, 7-11 fl oz	
		Duosan*	3 oz	
		Dyrene WP+F	4-6, 4-6 fl oz	BUT
		Fungo*	1/2-1 oz	Alternate systemic with contact fungicides to avoid tolerance build-up
		Mertect 160*	1/2-1 oz	
		Rubigan AS*	3/4-1 1/2 fl oz	
		Tersan 1991*	1/2-1 oz	
		Vorlan	1-2 oz	

DOWNY MILDEW (YELLOW TUFT) (*Sclerophthora macrospora*)	All turfgrasses	Subdue Banol Alliette	2 fl oz 2 fl oz 4 fl oz	May-September (10-14 days) Iron sulfate 10-20 #/acre recommended to mask yellowing on Kentucky bluegrass sod.
FAIRY RINGS (*Marasmius oreades*) and others	All turfgrasses	No satisfactory formulation. Replacement of infested soil or soil fumigation where practicle.		Consult Extension Service for soil fumigation procedures. Repeated aeration and ample watering may suppress symptoms.
FUSARIUM LEAF BLIGHT, CROWN ROT & ROOT ROT (*Fusarium culmorum*) (*Fusarium poae*) (*Fusarium* spp.)	Primarily Kentucky bluegrass in situations of full sun	Banner Bayleton Chipco 26019 WP+F Cleary 3336 Fungo Rubigan AS Tersan 1991	2-4 fl oz 4-6 oz 4-8 oz, 8 fl oz 4-8 oz 4-8 oz 2-4 fl oz 4-8 oz	Preventive applications June-August (14-21 days) Avoid drought stress & compaction Reduce thatch Moderate N fertility

NOTE: See also SUMMER PATCH AND NECROTIC RING SPOT. Symptoms are identical but the response to fungicides differs tremendously. Accurate diagnosis is essential.

HELMINTHOSPORIUM DISEASES (*Drechslera* or *Bipolaris* spp.)		Materials listed below are effective against all Helminthosporium diseases.		
LEAF SPOT AND MELTING OUT (*H. vagans* = *D. poae*)	Kentucky bluegrass	Chipco 26019 WP+F Daconil 2787 WP+F Duosan Dyrene WP+F Fore Manzate 200 Terraclor Vorlan	1-2 oz, 3-4 fl oz 4-6 oz, 7-11 fl oz 4-6 oz 4-6, 4-6 fl oz 4-6 oz 4-6 oz 4-6 oz 1-2 oz	October - May (7-14 days) Use improved cultivar Avoid close mowing, excessive nitrogen, & drought stress. Fungicide use in fall important for year round control of *H. vagans*.

Continued overleaf

HELMINTHOSPORIUM BLIGHT (*H. dictyoides* = *D. dictyoides*)	Bluegrasses, Fescues, Ryegrasses			April - July (7-14 days)
HELMINTHOSPORIUM LEAF SPOT (*H. sorokinianum* = *B. sorokiniana*)	All Turfgrasses			July - August (7-14 days)
RED LEAF SPOT (*H. erythrospilum* = *D. erythrospila*)	Bentgrasses			July - August (7-14 days)
ZONATE EYESPOT (*H. giganteum* = *D. gigantea*) (Velvet bentgrass in RI)	All Turfgrasses			July - September (7-14 days)
NEMATODES	Possible damage to bentgrasses and annual bluegrass	Mocap Nemacur	See label	See label
NECROTIC RING SPOT (*Leptosphaeria korrae*)	Primarily Kentucky bluegrass turf 3-5 years after establishment using sod. Symptoms can occur in shade.	Banner Chipco 26019*WP+F Rubigan AS Tersan 1991* (*Conflicting reports regarding efficacy)	2-4 fl oz 6-8 oz, 8-12 fl oz 2-8 fl oz 6-8 oz	*Preventive* applications Mid-May-late June (21-28 days) Bayleton is ineffective. Applying ammonium sulfate may aid recovery
NOTE: See also FUSARIUM BLIGHT AND SUMMER PATCH				
POWDERY MILDEW (Erysiphe graminis)	Bluegrasses, Fescues	Banner* Bayleton* Cleary 3336* Fungo* Karathane 22.5%WP Rubigan AS* Tersan 1991*	1-2 fl oz 1-2 oz 1-2 oz 1-2 oz 1/4-1/2 oz 2-4 fl oz 1-2 oz	July - November (7-14 days) Favored by shade. Avoid excessive nitrogen and raise height of cut. *Combine systemics with a good Helminthosporium leaf spot fungicide
PYTHIUM BLIGHT (GREASE SPOT) (Pythium spp.)	All turfgrasses	Banol Koban Subdue Teremec SP Aliette	1 1/2-4 fl oz 3-4 oz 1-2 fl oz 4 oz 4 oz	July - September (7-14 days) Infrequent in R.I.

RED THREAD (*Laetisaria fuciformis*) AND PINK PATCH (*Limonomyces* ssp.)	All turfgrasses Bermudagrass Bentgrasses Bluegrasses Ryegrass	Banner Bayleton Cadmium fungicides Chipco 26019 WP+P Daconil 2787 WP+F Duosan Dyrene WP+F Fore Rubigan AS* Tersan 75 Tersan 1991 Vorlan	1-2 fl oz 1-2 oz See label 2 oz, 2-4 fl oz 4 oz, 7 fl oz 3 oz 4-6 oz, 4-6 fl oz 4 oz 8 fl oz 4 oz 1-2 oz 2 oz	Anytime of year in cool, moist conditions. (7-14 days) Fungicide response may vary depending on the causal fungus present. May continue activity under snow on unfrozen ground.
RUSTS (*Puccinia* spp) Stem, stripe & leaf rusts	All turfgrasses especially Kentucky bluegrass	Banner* Bayleton* Fore Manzate 200 Zineb 75% WP	1-2 fl oz 1-2 oz 4-6 oz 4-6 oz 2-4 oz	July - August (7-21* days) Seldom serious in R.I. Plant resistant cultivars.
SLIME MOLDS (*Physarum cinereum*), (*Fuligo* spp.)	All turfgrasses	---	---	Fungicides not necessary Remove by mowing, poling or syringing.
STRIPE SMUT and FLAG SMUT (*Ustilago striiformis*) and *Urocystis agropyri*	Bentgrasses, Kentucky bluegrass	Banner, Bayleton or Rubigan AS with either Terraclor Chipco 26019 WP+F or Dyrene WP+F	2-4 fl oz 2-4 oz 12-16 fl oz + 6-8 oz 4-6 oz , 8-12 fl oz 6-8 oz, 6-8 fl oz	1 application during late October - November in 10 gal water per 1000 sq.ft.

SNOW MOLDS TYPHULA BLIGHT (GRAY SNOW MOLD) (*Typhula incarnata*) (*Typhula ishikariensis*)	All turfgrasses	Cadmium fungicides Chipco 26019 WP+F Mercury fungicides Teremec SP	See label 4-8 oz, 8 fl oz See label 9 oz	Preventive application in Nov-Dec prior to snow. Both snow molds may produce symptoms in fall during cold, wet weather. Fusarium patch may recur under similar conditions in spring. Most damage occurs under prolonged snow cover. Avoid lush growth in fall.
FUSARIUM PATCH (PINK SNOW MOLD) (*Fusarium nivale*)		Chipco 26019 Fungo Mercury fungicides Terraclor Tersan 1991 Vorlan	4-8 oz, 8 fl oz 2-4 oz See label 6-8 oz 2-4 oz 2-4 oz	
TAKE-ALL PATCH (*Gaeumannomyces graminis* var. *avenae*)	Bentgrasses	Phenyl mercury acetate was employed with some success but is no longer available for this use. Rubigan AS	2 fl oz 4-8 fl oz	Mar-June Sept-Dec. (10-14 days) Avoid indiscriminate liming. Reduce surface pH (top 1/2") to below 5.5 with ammonium sulfate or elemental sulfur.
SUMMER PATCH (*Phialophora* sp.)	Bluegrasses, principally Kentucky bluegrass in situations of full sun.	Banner Bayleton Tersan 1991 Rubigan AS	2-4 fl oz 4-6 oz 6-8 oz 4-8 fl oz	*Preventive* applications June - August
NOTE - See also FUSARIUM BLIGHT and SUMMER PATCH				
YELLOW PATCH (COOL SEASON BROWN PATCH) (*Rhizoctonia cerealis*)	Bentgrasses	Terraclor Chipco 26019	4-6 oz 1-2 oz	(Nov - April) Apply as required