1976

Winter 1976

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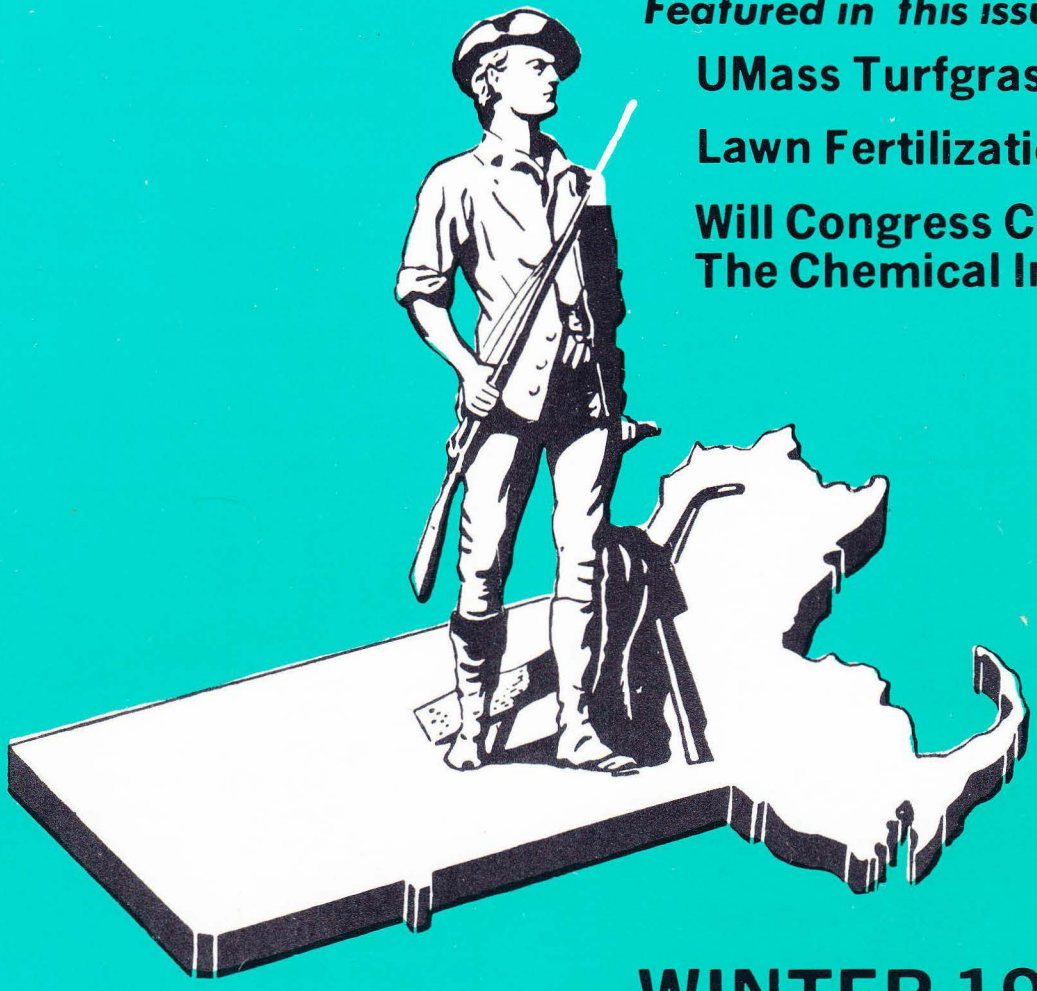

Featured in this issue:

UMass Turfgrass Trials

Lawn Fertilization

Will Congress Control The Chemical Industry?

WINTER 1976

BETTER TURF THROUGH RESEARCH AND EDUCATION

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The Massachusetts Turf and Lawn Grass Council Incorporated is chartered under the laws of the Commonwealth of Massachusetts as a non-profit corporation. The turf council seeks to foster "Better turf through research and education."

More detailed information on the subjects discussed here can be found in bulletins and circulars or may be had through correspondence with the editor.

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Lawn Fertilization

By Dr. Robert W. Schery
The Lawn Institute

Lawn fertilization has aroused considerable interest in recent years, and sometimes conflicting trends are involved. Lawn tending passed rapidly from an era of "dirt cheap" fertilizers, through an episode of widespread shortages and inflated prices, to the current situation in which supplies are again normalizing but prices remain advanced. Prices will continue high compared to the past because petrochemical costs have risen so much. Natural gas and petroleum derivatives are the raw material from which fertilizer nitrogen is derived, normally the most important nutrient of lawn fertilizers. Adding to costs, too, are inflationary increases in mining, hauling, processing, and so on.

Considerable progress towards intelligent lawn fertilization had been achieved in recent decades. The trend away from soluble agricultural fertilizers ill-formulated for turf, to special lawn products rich in nitrogen, of high analysis, light in weight, designed to spread easily with a home lawn spreader, essentially free of dust (which coats grass foliage causing burn), and formulated not to cake in the bag nor segregate unduly while spreading, was becoming almost universal. Along with wiser formulation and improved physical characteristics came "tailor made" nitrogen sources such as ureaform (Nitroform), designed to feed out this nutrient gradually over a prolonged span, thus avoiding the "feast-and-famine" cycle commonplace with soluble nutrients.

We won't, here, worry with the fine points of lawn fertilization,—such niceties as appropriateness of analysis, trace nutrients, the usefulness of sulfur (as from potassium sulphate rather than potassium chloride), and so on. But I do want to emphasize that fertilization is and has always been one of the most important lawn tending practices for regulating the lawn's ecosystem. Properly practiced, nothing else so easily equips the grass to thrive, fight off weeds, wear well and look nice. By the same token, improperly practiced fertilization can brown the lawn, foster disease, intensify mowing requirements, and encourage disorder in the ecosystem.

Because of the improved, long-lasting lawn fertilizers, and an educational campaign acquainting homeowners with lawngrass requirements, lawn fertilization, even if still insufficiently carried on, was becoming better carried out than ever before when the "energy crisis" hit. Since then considerations having little to do with lawn needs have interjected cross-currents into the smoothly evolving progression. First, a few highly-reactive altruists decided that it was "immoral" to fertilize American lawns while people were starving in far corners of the world, and almost succeeded in having restrictions imposed. They little realized that the pittance of specialized lawn fertilizer could in no material way influence world food sufficiency, the availability of which is governed by socio-economic and broad ecological forces. Then, as increased prices restricted demand, and as more nitrogen came on stream, this frenzy subsided. But resistance to higher prices persisted, and many turf custodians began to reassess fertilization practices. Quite understandably, professionals and homeowners alike want to be certain just how much fertilization is really required to maintain turf satisfactorily. They have a sincere desire not to be extravagant.

Such concerns have sparked investigation recently of grass cultivar response to minimum fertilization. No doubt some lawn keepers had been fertilizing more heavily than necessary, perhaps patterning their maintenance after golf green care, where high fertility levels must be maintained in order for the grass to endure the traffic and perform properly as a putting surface. Certainly more economical cultivars, such as Highland colonial bentgrass, require less fertilization than do the creeping bentgrasses of golf greens, and generally are better suited to home lawns. Nor do most bluegrasses require the six and eight pounds of nitrogen per thousand square feet annually, once suggested by the professionals for Merion bluegrass. Fine fescues in the North, and centipedegrass in the South, are recognized as "poor soil" grasses needing little fertilization.

Actually, the general run of bluegrasses, turf-type ryegrasses, and southern cultivars other than elite bermudagrasses, do very well with only modest fertilization. We've had no difficulty so far at the Lawn Institute from halving former rates. Under "average" conditions, four pounds of nitrogen per thousand square feet annually elicits peak performance from most bluegrass lawns according to expert opinion. Most would do quite well even at two or three pounds if soil conditions are at all favorable. Indeed, considering that many lawns are fertilized very meagerly or not at all, a national average of even one pound per thousand square feet would do wonders for lawn appearances country wide! State surveys suggest that the national average is probably nearer one quarter pound than one pound. Obviously, as a country, we are not fertilizing our turf enough rather than too much.

At the Ohio Turfgrass Field Day a set of replicates was shown that had been left without fertilization (or irrigation) for the year, compared to other replicates provided the usual four pound rate. Cutivar ranking altered appreciably comparing no fertilization to normal feeding. Many of the most highly esteemed selections were no better than common types when unfertilized. Another study, in force in Connecticut since 1968, compares cultivars receiving low fertilization. Again, some of the cultivars which rank highest under "normal" feeding show up less well under low maintenance. Examples are given in the accompanying tables.

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Some of the old-fashioned bluegrasses suffer less than do some of the dandies under low fertilization, although several modern cultivars (such as Baron and Touchdown) not included in the tables have the reputation of doing well under moderate fertilization. For low maintenance turf such as occurs in parks, hidden parts of the back yard, along roadsides, these may prove satisfactory. Not that they will perform so well unfertilized as if fertilized, but they seem to suffer less from the absence of fertilization than do many of the highly bred cultivars, especially when mowed fairly tall (two inches or so). This is not to suggest that lawnsmen initiate reduced fertilization as a matter of policy. It is ominous that in the Connecticut study quality of most cultivars went downhill as the study progressed. Most well-tended turfs can ride out two or three lean years, especially if nutrients are recycled by leaving the clippings rather than collecting them.

With few exceptions, modern cultivars are not exactly gluttons so far as fertilizer is concerned. They have been bred for many useful traits, including low growth, disease tolerance, density, and attractive texture. They can live up to expectation in these characteristics and display themself most handsomely, only if provided fertilization approaching the regimen in force during their selection. Ability to endure low fertility did not seem critical when most of the cultivars were bred, since the "energy crisis" was not yet upon us. Rather, it appeared as though no end was in sight for abudant, inexpensive fertilizer. Fortunately, most bluegrass cultivars are broadly adaptable, and not prima donnas so far as fertilization is concerned. In the future new cultivars very likely will be scrutinized for persistance under low fertility, the same as they are screened for disease tolerance, pest resistance, and other features contributing to their self-reliance.

Cultivars	Average score for 4 years, (1 1/2 inches mowing height)	Score for replicates not fertilized (1975)	Rating points "lost" due to lack of fertilization
Adelphi	8.1	3.0	-5.1
Sodco	7.9	3.0	-4.9
A-34	7.7	2.5	-5.2
A-20	7.4	2.8	-4.6
Vantage	7.3	4.8	-2.5
Merion	7.2	2.8	-4.4
Nugget	7.1	1.3	-5.8
Arista	7.0	3.0	-4.0
Sydsport	7.0	2.0	-5.0
Fylking	7.0	2.5	-4.5
Prato	7.0	2.5	-4.5
Windsor	6.8	3.8	-3.0
Pennstar	6.7	2.5	-4.2
Newport	6.7	3.3	-3.4
Park	6.7	4.3	-2.4
S. Dakota Common	6.4	5.3	-1.1
Kenblue	6.2	4.0	-2.2
Delta	6.1	2.8	-3.3

Table 1. Selected examples of commercial bluegrass cultivars grown in Ohio, indicating ratings under normal fertilization compared to no fertilization during 1975. Ratings are scored 1-9 (with 9 best). After S. Miller, J. F. Wilkinson and D. P. Martin, *Kentucky Bluegrass Cultivars Under Low Fertility,* Ohio State Univ. Turfgrass Field Day "Program", October 1, 1975.

	Average density (in July)	Density first spring	Density after 5 years	Apparent trend (minus = negative, plus = positive)
Adelphi	4.3	2.3	5.3	- - - -
Arista	5.0	5.0	6.6	-
Belturf	4.0	7.3	7.6	0
Birka	4.7	7.7	7.3	+
Cougar	3.7	6.7	7.0	0
Delta	5.7	3.7	6.1	- -
Fylking	5.3	6.3	7.0	-
Kenblue	6.3	7.7	6.8	+
Merion	4.7	5.3	6.8	-
Newport	4.7	4.7	6.8	- -
Nugget	3.0	2.7	6.0	- - -
Park	5.7	4.3	6.5	- -
Pennstar	4.7	6.7	7.3	0
Prato	5.3	6.0	7.3	-
Sodco	4.0	5.7	7.0	-
S. Dakota common	5.3	6.3	7.1	0
Sydsport	3.7	4.3	6.5	- -
Vantage	2.3	5.0	6.3	-
A-34	4.7	7.7	7.8	0
Windsor	4.7	5.7	6.7	-

Table 2. Density of selected bluegrass cultivars grown in Connecticut for 5 years under low fertility. Ratings 0-9, (with 9 highest). After R. J. Lukens, G. S. Walton and P. M. Miller, *Performance of Bluegrass Cultivars Under A Low Maintenance Program,* Conn. Agric. Exp. Sta., New Haven, Bull. 753, 1975.

Turf Conference Reminder

The annual Turf Conference will be held on March 2, 3, 4, 1977 and it promises to be the largest conference to date.

This year the conference will be held in the Springfield Civic Center and will include an industrial show with over 100 representatives from various industries. This will provide a convenient opportunity for you to familiarize yourself with new products and materials.

So make a note now, and be sure to attend the 1977 Turf Conference.

Perennial Ryegrass Variety Trial Performance in 1976

By R. N. Carrow and J. Troll
University of Massachusetts, Amherst

The perennial ryegrass trial was initiated in May 1973, however, a few cultivars were not seeded until September 1973. Each cultivar or blend was seeded into 4 x 6 ft. main plots (3 replications) with each main plot split into 4 x 3 ft. subplots for cutting height treatments of 3/4 and 1 1/2 inch. Mowing was twice weekly and fertilization at 4 lbs. actual N./1000 ft.^{2} per growing season. The area was irrigated once in midsummer. Tables 1, 2 and 3 contain the visual quality and disease ratings for 1976.

Table 1. Quality Ratings of Perennial Ryegrasses Mowed at 3/4 Inch in 1976.

Cultivars	Quality Rating (9=ideal, 1=no live turf)					Average Quality Ratings		
	4/28	5/29	6/25	8/6	9/29	1976	1975	1974
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Springfield (B)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
N7 - 133	5.5	6.7	5.5	6.0	8.2	6.4	6.0	5.7
N7 - 157	6.0	7.2	6.2	6.7	8.2	6.9	6.3	6.8
K8 - 137	5.7	6.7	6.3	6.0	8.2	6.6	6.1	6.2
K8 - 142	6.3	7.7	6.7	6.7	8.2	7.2	6.9	6.5
Epic	5.7	6.3	5.5	6.0	8.0	6.3	5.9	5.3
KO - 14	5.8	6.3	5.7	6.2	8.0	6.4	5.7	6.0
KO - 13	6.5	7.2	5.8	6.5	7.8	6.8	6.0	5.9
Ensporta *	5.0	6.8	6.2	6.5	8.5	6.6	6.0	6.5
Pennfine (C)	6.5	7.7	7.0	7.3	8.7	7.4	7.4	6.9
Manhattan (D)	7.7	8.2	7.7	7.3	8.5	7.9	7.4	6.8
Norlea	6.5	6.5	5.8	6.3	8.2	6.7	6.1	5.9
Pelo*	6.2	6.5	5.7	6.5	8.2	6.6	6.3	6.3
Barenza*	6.2	6.7	6.0	6.0	8.0	6.6	6.2	6.2
Lamora*	5.5	6.3	5.8	5.8	7.7	6.2	6.1	5.9
C + D*	7.0	8.2	7.2	6.8	8.0	7.4	7.1	7.0
C + D + A*	7.0	7.7	7.3	6.7	8.7	7.5	7.6	6.5
C + D + B*	7.0	8.0	7.3	7.0	8.5	7.6	7.2	6.9

* Seeded September 1973, all others seeded May 1973.

Under the 3/4 inch cutting height (Table 1), superior cultivars or blends were; Manhattan, C + D + B, C + D + A, C + D, Pennfine and K8-142. Lamora and Epic did not perform well. During the midsummer stress period Manhattan and Pennfine exhibited the best quality.

When maintained at 1 1/2 inch (Table 2), good performance was exhibited by; K8-142, C + D, C + D + A, C + D + B, Manhattan and Pennfine. K8-142 demonstrated the best midsummer quality, however, all cultivars tended to decrease in quality in midsummer due to high temperature, drought and disease stresses.

Table 2. Quality Ratings of Perennial Ryegrasses Mowed at 1 1/2 Inch in 1976.

Cultivars	Quality Rating (9=ideal, 1=no live turf)					Average Quality Rating		
	4/28	5/29	6/25	8/6	9/29	1976	1975	1974
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.2	6.7	6.5	6.0
[illegible]	6.5	6.8	5.8	6.0	7.7	6.6	6.1	5.8
Springfield (B)*	6.3	7.3	6.0	6.2	8.0	6.8	6.8	5.5
N7 - 133	5.5	6.7	5.8	6.2	7.8	6.4	6.1	6.1
N7 - 157	5.5	6.8	6.2	6.0	7.7	6.4	6.2	6.2
K8 - 137	5.3	6.5	6.3	5.8	8.0	6.4	6.2	6.5
K8 - 142	7.0	8.2	7.0	7.2	8.2	7.5	6.9	6.6
Epic	5.7	6.2	5.5	6.0	7.7	6.2	6.0	5.1
KO - 14	6.2	6.8	5.8	6.2	7.7	6.5	6.3	6.3
KO - 13	6.3	7.0	6.2	6.7	7.7	6.8	6.4	5.8
Ensporta*	4.7	6.3	6.2	6.5	8.3	6.4	5.9	6.9
Pennfine (C)	6.0	7.3	6.7	6.8	8.3	7.0	7.2	7.1
Manhattan (D)	7.0	7.7	6.7	6.3	8.5	7.2	7.1	6.7
Norlea	6.3	6.5	5.8	6.3	8.3	6.6	6.4	5.8
Pelo*	5.8	6.3	5.8	6.5	8.2	6.5	6.5	4.7
Barneza*	5.8	6.7	6.2	6.3	8.0	6.6	6.3	6.1
Lamora *	4.8	6.3	5.8	5.8	7.8	6.1	5.9	5.9
C + D *	7.2	8.0	6.8	6.8	7.8	7.3	7.1	6.8
C + D + A*	6.8	7.7	7.5	6.7	8.0	7.3	6.7	6.8
C + D + B*	6.7	7.7	7.2	6.7	8.0	7.3	6.8	7.1

* Seeded September 1973, all others seeded May 1973.

Both gray and pink snowmold infection were evident in late February (Table 3). Moderate to severe injury

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from gray snowmold (*Typhula itoana*) occurred on KO-14, KO-13 and Lamora. All cultivars except Springfield, KO-14, and C + D + A had moderate to very severe injury from pink snowmold (*Fusarium nivale*). A mild dollar spot (*Sclerotina homeocarpa*) infection occurred in August with Manhattan, C + D + A, and C + D + B being moderately injured.

Table 3. Disease Ratings for Perennial Ryegrasses in 1976. All ratings are an average of both cutting heights.

	Disease Rating (0 = none, 5 = total kill)			
	Gray snowmold		Pink snowmold	Dollar Spot
Cultivars	4/18/75	2/28/76	2/28/76	8/6/76
NK - 100	2.0	1.0	3.3	0
NK - 200 (A)	2.0	1.0	2.0	0.3
Springfield (B)	1.3	1.3	1.3	0
N7 - 133	1.7	1.0	4.0	0
N7 - 157	2.7	1.0	3.3	0
K8 - 137	2.3	1.0	2.3	0.7
K8 - 142	1.3	0.7	2.7	0
Epic	3.0	1.3	2.7	0
KO - 14	2.7	3.0	1.3	0
KO - 13	2.7	2.0	2.3	0.3
Ensporta*	4.0	1.0	2.7	0
Pennfine (C)	1.0	0.7	2.7	0
Manhattan (D)	1.0	0.3	2.3	1.3
Norlea	1.0	1.0	1.7	0
Pelo*	1.7	1.3	2.3	0
Barenza*	2.3	1.3	2.7	0
Lamora*	1.7	1.7	2.0	0
C + D *	2.3	1.3	2.3	1.0
C + D + A*	1.7	0.7	1.3	1.7
C + D + B*	1.7	1.3	2.0	1.7

* Seeded September 1973, all others seeded May 1973.

Perennial Ryegrass Variety Trials—1973

	Gray Snowmold 2/28/76 (3/4 & 1 1/2")				Pink Snowmold 2/28/76 (3/4 & 1 1/2")				Quality 4/28/76 (3/4")			
Trt.	I	II	III	Ave.	I	II	III	Ave.	I	II	III	Ave.
1	0	1	2	1.0	3	3	4	3.3	5.5	5.5	6.5	5.8
2	0	1	2	1.0	3	1	2	2.0	6.0	7.0	7.5	6.8
3	0	2	2	1.3	1	1	2	1.3	6.5	6.0	6.0	6.2
4	1	1	1	1.0	4	4	4	4.0	5.5	5.0	6.0	5.5
5	1	0	2	1.0	3	4	3	3.3	5.5	7.0	5.5	6.0
6	0	1	2	1.0	2	3	2	2.3	4.5	6.5	6.0	5.7
7	0	1	1	0.7	2	3	3	2.7	7.0	6.5	7.0	6.8
8	2	2	0	1.3	3	3	2	2.7	6.0	5.5	5.5	5.7
9	3	3	3	3.0	1	1	2	1.3	6.0	5.0	6.5	5.8
10	3	1	2	2.0	2	3	2	2.3	6.5	6.5	6.5	6.5
11	0	2	1	1.0	1	3	4	2.7	4.0	5.0	6.0	5.0
12	0	1	1	0.7	2	3	3	2.7	5.5	7.0	7.0	6.5
13	1	0	0	0.3	1	3	3	2.3	7.0	8.0	8.0	7.7
14	2	0	1	1.0	1	2	2	1.7	6.5	6.0	7.0	6.5
15	2	3	0	1.3	2	3	2	2.3	5.5	6.0	7.0	6.2
16	0	3	1	1.3	2	3	3	2.7	5.5	6.0	7.0	6.2
17	0	3	2	1.7	2	2	2	2.0	5.0	5.5	6.0	5.5
18	1	1	2	1.3	1	3	3	2.3	7.0	7.0	7.0	7.0
19	1	1	0	0.7	1	1	2	1.3	6.5	7.0	7.5	7.0
20	1	2	1	1.3	1	1	4	2.0	7.0	7.0	7.0	7.0

Perennial Ryegrass Variety Trials—1973

	Quality 4/28/76 (1 1/2")				Quality 5/29/76 (3/4")				Quality 5/29/76 (1 1/2")			
Trt.	I	II	III	Ave.	I	II	III	Ave.	I	II	III	Ave.
1	5.5	6.0	6.0	5.8	6.0	6.5	6.5	6.3	7.0	7.0	6.5	6.8
2	6.5	6.5	6.5	6.5	6.0	7.0	7.0	6.7	7.0	7.0	6.5	6.8
3	7.0	6.5	5.5	6.3	7.0	6.5	6.5	6.7	7.5	7.5	7.0	7.3
4	5.5	5.0	6.0	5.5	6.5	7.0	6.5	6.7	6.5	7.0	6.5	6.7
5	5.5	6.5	4.5	5.5	7.0	7.5	7.0	7.2	7.0	7.0	6.5	6.8
6	4.0	6.0	6.0	5.3	6.5	6.5	7.0	6.7	6.0	6.5	7.0	6.5
7	6.5	7.5	7.0	7.0	7.5	7.5	8.0	7.7	7.5	8.5	8.5	8.2
8	6.5	5.0	5.5	5.7	6.5	6.5	6.0	6.3	6.0	6.5	6.0	6.2
9	6.0	6.0	6.5	6.2	6.5	6.5	7.0	6.3	6.5	6.5	7.5	6.8
10	6.5	6.5	6.0	6.3	7.5	7.5	6.5	7.2	7.5	7.5	6.0	7.0
11	3.5	5.0	5.5	4.7	6.0	7.5	7.0	6.8	5.0	6.5	7.5	6.3
12	5.5	6.0	6.5	6.0	6.5	8.5	8.0	7.7	6.0	8.0	8.0	7.3
13	6.5	8.0	6.5	7.0	8.0	8.5	8.0	8.2	7.0	8.5	7.5	7.7
14	6.0	6.0	7.0	6.3	6.0	7.0	6.5	6.5	6.0	7.0	6.5	6.5
15	5.5	5.6	6.5	5.8	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.3
16	4.5	6.5	6.5	5.8	6.0	7.0	7.0	6.7	6.0	7.0	7.0	6.7
17	4.5	5.0	5.0	4.8	6.5	6.5	6.0	6.3	6.5	6.5	6.0	6.3
18	6.5	7.5	7.5	7.2	8.0	8.0	8.5	8.2	7.5	8.0	8.5	8.0
19	6.0	7.0	7.5	6.8	7.5	8.0	7.5	7.7	7.5	8.0	7.5	7.7
20	7.0	6.5	6.5	6.7	8.0	8.0	8.0	8.0	8.0	7.0	8.0	7.7

Perennial Ryegrass Variety Trials—1973

	Quality 6/25/76 (3/4")				Quality 6/25/76 (1 1/2")				Quality 8/6/76 (3/4")			
Trt.	I	II	III	Ave.	I	II	III	Ave.	I	II	III	Ave.
1	6.0	5.5	5.5	5.7	6.0	6.0	6.0	6.0	6.0	7.0	7.0	6.7
2	6.0	6.5	5.5	6.0	6.0	6.5	5.0	5.8	6.0	6.0	6.5	6.2
3	6.5	5.5	6.0	6.0	5.5	6.0	6.5	6.0	6.0	6.0	6.0	6.0
4	5.5	5.5	5.5	5.5	6.0	5.5	6.0	5.8	6.5	6.0	5.5	6.0
5	6.0	6.5	6.0	6.2	6.0	6.0	6.5	6.2	6.0	6.5	7.5	6.7
6	6.0	6.0	7.0	6.3	6.0	6.0	7.0	6.3	6.0	6.0	6.0	6.0
7	6.5	6.5	7.0	6.7	6.5	7.5	7.0	7.0	6.5	7.0	6.5	6.7
8	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0
9	5.0	5.5	6.5	5.7	5.5	5.5	6.5	5.8	6.0	6.5	6.0	6.2
10	6.0	6.0	5.5	5.8	6.5	6.5	5.5	6.2	6.5	7.0	6.0	6.5
11	6.0	6.5	6.0	6.2	5.5	6.5	6.5	6.2	6.0	7.0	6.5	6.5
12	6.5	7.5	7.0	7.0	6.0	7.0	7.0	6.7	7.0	7.5	7.5	7.3
13	7.5	8.0	7.5	7.7	6.5	7.0	6.5	6.7	7.5	7.0	7.5	7.3
14	5.5	6.0	6.0	5.8	5.5	6.0	6.0	5.8	6.0	6.5	6.5	6.3
15	5.5	5.5	6.0	5.7	5.5	6.0	6.0	5.8	6.5	6.5	6.5	6.5
16	6.0	6.5	5.5	6.0	6.0	6.5	6.0	6.2	5.5	6.5	6.0	6.0
17	6.0	5.5	6.0	5.8	6.0	5.5	6.0	5.8	5.5	6.0	6.0	5.8
18	7.0	7.0	7.5	7.2	6.5	7.0	7.0	6.8	6.5	7.0	7.0	6.8
19	7.0	7.0	8.0	7.3	7.0	7.5	8.0	7.5	6.5	6.5	7.0	6.7
20	7.0	7.0	8.0	7.3	7.0	6.5	8.0	7.2	7.0	7.0	7.0	7.0

Perennial Ryegrass Variety Trials—1973

	Quality 8/6/76 (1 1/2")				Quality 8/6/76 (3/4 & 1 1/2")				Quality 9/29/76 (3/4")					Quality 9/29/76 (1 1/2")			
	I	II	III	Ave.	I	II	III	Ave.	I	II	III	Ave	Trt.	I	II	III	Ave.
1	5.5	7.5	7.0	6.7	0	0	0	0	8.0	9.0	8.5	8.5	1	8.0	8.5	8.0	8.2
2	6.0	6.0	6.0	6.0	0	1	0	0.3	7.0	8.0	8.5	7.8	2	7.5	7.5	8.0	7.7
3	5.5	6.5	6.5	6.2	0	0	0	0	7.0	8.0	8.5	7.8	3	7.5	8.0	8.5	8.0
4	6.5	6.0	6.0	6.2	0	0	0	0	8.0	8.5	8.0	8.2	4	7.5	8.0	8.0	7.8
5	6.0	6.0	6.0	6.0	0	0	0	0	7.5	8.5	8.5	8.2	5	7.0	7.5	8.5	7.7
6	6.0	5.5	6.0	5.8	0	1	1	0.7	8.0	8.0	8.5	8.2	6	8.0	7.5	8.5	8.0
7	7.0	7.0	7.5	7.2	0	0	0	0	8.5	8.5	7.5	8.2	7	8.5	8.5	7.5	8.2
8	6.0	6.0	6.0	6.0	0	0	0	0	8.0	8.0	8.0	8.0	8	7.5	7.5	8.0	7.7
9	6.0	6.5	6.0	6.2	0	0	0	0	8.0	8.5	7.5	8.0	9	7.5	8.0	7.5	7.7
10	7.0	7.0	6.0	6.7	0	0	1	0.3	8.5	7.5	7.5	7.8	10	7.5	8.5	7.0	7.7
11	5.5	7.0	7.0	6.5	0	0	0	0	8.5	8.0	9.0	8.5	11	8.0	8.5	8.5	8.3
12	6.5	7.0	7.0	6.8	0	0	0	0	8.5	8.5	9.0	8.7	12	8.0	8.0	9.0	8.3
13	6.0	6.5	6.5	6.3	1	1	2	1.3	8.5	8.5	8.5	8.5	13	8.5	8.5	8.5	8.5
14	6.0	6.5	6.5	6.3	0	0	0	0	8.5	8.5	7.5	8.2	14	8.0	8.5	8.5	8.3
15	6.0	6.5	7.0	6.5	0	0	0	0	8.0	8.0	8.5	8.2	15	8.0	8.0	8.5	8.2
16	5.5	7.5	6.0	6.3	0	0	0	0	8.0	8.5	7.5	8.0	16	8.0	8.5	7.5	8.0
17	5.5	6.0	6.0	5.8	0	0	0	0	8.0	7.5	7.5	7.7	17	7.5	8.5	7.5	7.8
18	6.5	6.5	7.0	6.8	2	0	1	1.0	8.0	8.0	8.0	8.0	18	8.0	7.5	8.0	7.8
19	6.0	7.0	7.0	6.7	1	2	2	1.7	8.5	8.5	9.0	8.7	19	7.0	8.0	9.0	8.0
20	6.5	6.0	7.5	6.7	1	2	2	1.7	8.5	8.5	8.5	8.5	20	8.0	7.5	8.5	8.0

Red Fescue Variety Trial Performance in 1976

By R. N. Carrow and J. Troll
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The red fescue trial was established in September 1973 with the seeding of 14 cultivars. Another 14 cultivars or blends were seeded in May 1974. Each cultivar or

Table 1. Visual quality ratings for red fescues mowed at 3/4 inch in 1976.

Cultivar	Quality Rating (9 = ideal, 1 = no live turf)					Average Quality Rating		
	4/28	5/29	6/25	8/6	9/22	1976	1975	1974
Ruby	4.2	5.0	4.8	5.0	6.8	5.2	4.8	4.7
Dawson	5.5	7.2	6.3	6.8	7.5	6.7	6.2	6.4
Halifax	6.5	8.0	6.8	8.0	7.0	7.3	6.9	6.6
Atlanta	7.8	8.8	7.8	8.0	8.0	8.1	7.4	6.5
Highlight (A)	5.2	6.3	6.3	6.5	7.3	6.3	6.0	6.0
Golfrood	4.7	5.8	5.7	5.8	7.5	5.9	6.0	6.9
Wintergreen (B)	5.8	7.2	6.5	6.5	7.3	6.7	6.3	6.0
KI-190	5.5	6.7	6.2	6.3	7.7	6.5	5.2	4.8
KI-191	5.2	6.5	5.7	6.5	7.7	6.3	5.5	5.5
Waldorf	7.8	8.7	8.0	8.2	8.2	8.2	7.4	5.9
Scarlett	7.0	8.5	7.3	7.8	8.2	7.8	6.9	6.2
Jamestown (C)	8.8	8.8	8.3	8.3	8.3	8.5	7.7	6.4
Pennlawn (D)	7.5	8.0	7.0	7.3	6.7	7.3	6.7	5.5
Engina *	2.7	3.3	3.5	3.7	6.3	3.9	3.4	-
Barfalla	7.3	7.8	7.2	7.5	7.5	7.5	6.8	5.9
Erika *	7.0	7.3	7.0	7.0	7.8	7.2	6.1	-
Polar (E) *	6.7	7.7	7.2	7.7	8.0	7.5	6.4	-
Banner *	8.3	8.7	7.8	7.8	8.0	8.1	6.9	-
Kobet *	6.8	7.3	6.8	7.0	7.5	7.1	6.1	-
Reptans *	4.2	4.5	4.7	4.7	7.2	5.1	4.3	-
Encota *	6.0	6.8	6.3	6.5	8.2	6.8	5.8	-
Oase *	4.3	5.5	5.5	5.3	6.7	5.5	4.6	-
Agio *	3.3	3.8	4.5	4.0	6.8	4.5	3.9	-
D + B *	5.7	6.5	6.0	6.0	7.5	6.3	5.4	-
D + C *	7.3	7.7	6.5	6.8	8.0	7.3	5.9	-
D + A *	6.0	6.8	6.5	6.5	7.8	6.7	5.9	-
A + C *	7.5	8.5	7.3	7.8	8.5	7.9	6.7	-
A + E *	5.3	6.7	6.3	6.5	8.3	6.6	6.3	-

* Seeded May 1974; all others seeded September 1973.

Table 2. Visual quality and disease ratings for red fescues mowed at 1-1/2 inches in 1976.

Cultivar	Quality Rating (9 = ideal, 1 = no live turf)					Average Quality Rating			Gray snow-mold (0=none, 5=total kill)
	4/28	5/29	6/25	8/6	9/22	1976	1975	1974	2/28
Ruby	4.2	5.8	5.2	5.3	6.7	5.4	5.4	5.6	2.0
Dawson	5.2	7.2	6.3	7.2	7.2	6.6	6.6	7.4	2.3
Halifax	6.3	8.3	6.7	7.7	7.0	7.2	7.2	6.3	1.3
Atlanta	7.2	9.0	7.7	8.0	7.3	7.8	7.3	6.4	0.7
Highlight (A)	4.7	6.0	5.8	5.8	6.7	5.8	6.0	6.5	1.3
Golfrood	4.5	5.5	5.8	5.8	7.2	5.8	6.0	7.1	2.0
Wintergreen (B)	5.5	6.8	6.2	6.5	7.2	6.4	6.3	6.3	1.3
KI-190	5.3	6.7	6.0	6.3	7.2	6.3	5.4	5.4	1.0
KI-191	5.0	5.8	5.7	6.2	6.8	5.9	5.7	5.7	1.3
Waldorf	7.0	8.7	7.7	7.8	7.6	7.8	7.2	6.1	1.0
Scarlett	6.2	8.2	7.0	7.3	7.5	7.2	6.9	6.4	1.0
Jamestown (C)	8.3	8.8	8.3	8.3	7.5	8.2	7.7	6.6	1.0
Pennlawn (D)	7.3	7.8	7.0	7.3	6.2	7.1	6.8	6.0	2.0
Engina *	4.2	4.7	4.7	4.7	6.5	5.0	4.7	-	1.3
Barfalla	7.0	7.8	7.5	7.3	7.2	7.4	7.0	6.7	0.7
Erika *	7.0	7.3	7.0	7.2	7.3	7.2	6.5	-	1.0
Polar (E) *	6.5	7.7	7.2	7.3	7.8	7.3	6.6	-	1.7
Banner *	8.3	8.7	7.8	7.8	7.7	8.1	7.0	-	0
Kobet *	7.2	7.5	7.3	7.2	7.2	7.3	6.5	-	0.3
Reptans *	4.5	4.8	5.0	4.8	6.8	5.2	4.6	-	1.0
Encota *	6.0	6.7	6.3	6.5	7.5	6.6	6.0	-	0.3
Oase *	5.3	5.7	6.0	5.7	6.7	5.9	5.5	-	0.7
Agio *	4.2	4.7	4.5	4.5	6.4	4.9	4.6	-	0.7
D + B *	5.8	6.5	6.0	6.0	7.2	6.3	5.7	-	0.3
D + C *	6.8	7.5	6.7	6.8	7.7	7.1	6.0	-	0.3
D + A *	6.2	6.8	6.3	6.3	7.3	6.6	5.9	-	0.3
A + C *	7.2	8.3	7.2	7.5	7.7	7.6	6.5	-	0.3
A + E *	5.5	6.8	6.2	6.5	7.2	6.4	6.2	-	0.7

* Seeded May 1974, all others seeded September 1973.

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blend was replicated three times in 4 x 6 ft. main plots, which were subdivided into 4 x 3 ft. subplots for cutting height treatments of 3/4 and 1 1/2 inch. Fertilization was at 2.5 lbs. actual N/1000 ft.^{2} per growing season. Mowing was twice weekly and irrigation was necessary once in midsummer.

Red Fescue Variety Trial

	Gray Snowmold 2/28/76 (3/4 + 1-1/2")				Quality 4/28/76 (3/4 ")				Quality 4/28/76 (1-1/2")			
Trt	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	1	3	2	2.0	3.5	5.0	4.0	4.2	4.0	4.5	4.0	4.2
2	2	3	2	2.3	3.0	6.5	7.0	5.5	4.0	5.0	6.5	5.2
3	0	2	2	1.3	5.0	6.5	8.0	6.5	6.5	6.0	6.5	6.3
4	1	1	0	0.7	7.5	8.5	7.5	7.8	7.0	8.0	6.5	7.2
5	2	1	1	1.3	3.5	5.5	6.5	5.2	3.0	5.0	6.0	4.7
6	3	2	1	2.0	4.0	4.0	6.0	4.7	4.5	4.0	5.0	4.5
7	1	2	1	1.3	5.0	6.0	6.5	5.8	5.0	5.5	6.0	5.5
8	0	2	1	1.0	5.0	6.0	5.5	5.5	4.5	5.5	6.0	5.3
9	2	1	1	1.3	5.5	5.0	5.0	5.2	5.5	5.0	4.5	5.0
10	1	1	1	1.0	7.5	7.5	8.5	7.8	7.0	7.0	7.0	7.0
11	1	1	1	1.0	7.5	7.0	6.5	7.0	6.5	6.0	6.0	6.2
12	1	1	1	1.0	8.5	9.0	9.0	8.8	8.0	8.5	8.5	8.3
13	2	2	2	2.0	8.0	7.0	7.5	7.5	7.5	7.5	7.0	7.3
14	1	2	1	1.3	3.0	3.0	2.0	2.7	6.0	3.5	3.0	4.2
15	1	1	0	0.7	7.5	7.5	7.0	7.3	7.0	6.5	7.5	7.0
16	1	1	1	1.0	6.0	7.0	7.5	7.0	6.5	7.0	7.5	7.0
17	2	2	1	1.7	6.5	7.5	6.0	6.7	6.5	6.5	6.5	6.5
18	0	0	0	0	8.5	8.0	8.5	8.3	8.5	8.0	8.5	8.3
	0	1	0	0.3	7.0	7.0	6.5	6.8	7.0	7.5	7.0	7.2
	1	1	1	1.0	5.5	5.0	2.0	4.2	5.5	5.0	3.0	4.5
21	0	1	0	0.3	6.0	6 0	6.0	6.0	6.0	6.0	6.0	6.0
22	0	1	1	0.7	5.0	5.0	3.0	4.3	5.5	5.5	5.0	5.3
23	0	1	1	0.7	2.0	4.0	4.0	3.3	4.5	4.0	4.0	4.2
24	0	0	1	0.3	4.0	6.0	7.0	5.7	5.5	5.5	6.5	5.8
25	0	1	0	0.3	7.5	7.5	7.0	7.3	6.5	7.0	7.0	6.8
26	0	1	0	0.3	6.5	5.5	6.0	6.0	6.5	5.5	6.5	6.2
27	0	1	0	0.3	7.0	7.5	8.0	7.5	7.0	7.0	7.5	7.2
28	1	1	0	0.7	6.5	5.5	4.0	5.3	6.5	6.0	4.0	5.5

When maintained at 3/4 inch, cultivars that were clearly outstanding were; Jamestown, Waldorf, Atlanta and Banner (Table 1). Jamestown performed especially well during the midsummer stress period. Inferior quality was apparent for Engina, Agio, Reptans, Ruby, Oase and Golfrood.

Red Rescue Variety Trial

	Quality (3/4") 5/29/76				Quality (1-1/2") 5/29/76				Quality (3/4") 6/25/76			
Trt	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	5.0	5.5	4.5	5.0	6.5	5.5	5.5	5.8	5.0	5.5	4.0	4.8
2	5.5	7.5	8.5	7.2	7.0	6.5	8.0	7.2	5.0	6.5	7.5	6.3
3	7.5	7.5	9.0	8.0	9.0	8.0	8.0	8.3	6.5	6.5	7.5	6.8
4	8.5	9.0	9.0	8.8	9.0	9.0	9.0	9.0	7.5	8.0	8.0	7.8
5	4.5	7.0	7.5	6.3	5.0	6.0	6.5	6.0	5.5	6.5	7.0	6.3
6	5.0	5.5	7.0	5.8	5.5	5.0	6.0	5.5	5.0	5.5	6.5	5.7
7	7.0	7.0	7.5	7.2	7.0	7.0	6.5	6.8	6.0	6.5	7.0	6.5
8	6.5	7.0	6.5	6.7	6.5	6.5	7.0	6.7	6.0	6.5	6.0	6.2
9	7.5	6.0	6.0	6.5	6.5	5.5	5.5	5.8	6.5	5.0	5.5	5.7
10	9.0	8.5	8.5	8.7	9.0	8.5	8.5	8.7	8.0	8.0	8.0	8.0
11	9.0	8.5	8.0	8.5	9.0	8.5	7.0	8.2	8.0	7.5	6.5	7.3
12	9.0	9.0	8.5	8.8	9.0	9.0	8.5	8.8	8.5	8.0	8.5	8.3
13	8.0	8.0	8.0	8.0	8.0	8.0	7.5	7.8	7.0	7.0	7.0	7.0
14	5.0	3.0	2.0	3.3	7.0	4.0	3.0	4.7	4.5	3.0	3.0	3.5
15	7.5	8.0	8.0	7.8	7.5	8.0	8.0	7.8	7.0	7.5	7.0	7.2
16	6.5	8.0	7.5	7.3	6.5	8.0	7.5	7.3	6.5	7.5	7.0	7.0
17	7.0	8.5	7.5	7.7	7.0	8.5	7.5	7.7	7.0	7.5	7.0	7.2
18	8.5	9.0	8.5	8.7	8.5	9.0	8.5	8.7	7.5	8.0	8.0	7.8
19	7.5	8.0	6.5	7.3	7.5	8.0	7.0	7.5	7.0	7.0	6.5	6.8
20	5.5	5.5	2.5	4.5	5.5	5.5	3.5	4.8	5.5	5.5	3.0	4.7
21	7.5	6.5	6.5	6.8	7.0	6.5	6.5	6.7	6.0	6.5	6.5	6.3
22	6.0	6.0	4.5	5.5	6.0	5.5	5.5	5.7	6.0	6.0	4.5	5.5
23	2.5	4.5	4.5	3.8	5.0	4.5	4.5	4.7	4.5	4.0	5.0	4.5
24	5.5	7.0	7.0	6.5	6.0	6.5	7.0	6.5	5.5	6.0	6.5	6.0
25	7.5	8.0	7.5	7.7	7.0	8.0	7.5	7.5	6.5	6.5	6.5	6.5
26	7.0	6.5	7.0	6.8	7.0	6.5	6.0	6.8	6.5	6.5	6.5	6.5
27	8.5	8.5	8.5	8.5	8.0	8.5	8.5	8.3	7.0	7.5	7.5	7.3
28	7.0	7.5	5.5	6.7	7.5	7.5	5.5	6.8	6.5	6.5	6.0	6.3

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(Continued from Page 9)

At the 1 1/2 inch cutting treatment, Jamestown, Banner, Waldorf and Atlanta were superior (Table 2). Unacceptable quality was demonstrated by Agio, Engina, Reptans, Ruby, Highlight, Golfrood, K1-191, and Oase.

In late February gray snowmold (*Typhula itoana*) was evident on the plots (Table 2). Moderate injury was apparent on Dawson, Ruby, Golfrood, Pennlawn and Polar. Banner, Koket, Encota, D + B, D + C, D + A and A + C were least affected.

Red Fescue Variety Trial

Trt	Quality (1-1/2") 6/25/76				Quality (3/4") 8/6/76				Quality (1-1/2") 8/6/76			
	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	5.5	5.5	4.5	5.2	4.5	5.5	5.0	5.0	5.0	5.5	5.5	5.3
2	6.5	5.5	7.0	6.3	5.0	7.5	8.0	6.8	7.5	6.5	7.5	7.2
3	7.0	6.5	6.5	6.7	7.0	8.5	8.5	8.0	7.5	8.0	7.5	7.7
4	7.0	8.0	8.0	7.7	8.0	8.0	8.0	8.0	8.5	8.0	7.5	8.0
5	5.5	5.5	6.5	5.8	5.0	7.5	7.0	6.5	5.0	6.0	6.5	5.8
6	5.5	5.5	6.0	5.8	4.5	5.5	7.5	5.8	5.5	5.5	6.5	5.8
7	6.0	6.5	6.0	6.2	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
8	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.3	6.0	6.5	6.5	6.3
9	6.5	5.0	5.5	5.7	7.0	6.0	6.5	6.5	6.5	6.0	6.0	6.2
10	7.5	8.0	7.5	7.7	8.5	8.0	8.0	8.2	8.0	8.0	7.5	7.8
11	7.5	7.5	6.0	7.0	8.0	8.0	7.5	7.8	8.0	7.5	6.5	7.3
12	8.5	8.0	8.5	8.3	8.5	8.5	8.0	8.3	8.5	8.5	8.0	8.3
13	7.0	7.0	7.0	7.0	8.0	7.5	6.5	7.3	8.0	7.5	6.5	7.3
14	6.5	4.0	3.5	4.7	5.0	3.0	3.0	3.7	6.5	4.0	3.5	4.7
15	7.5	7.5	7.5	7.5	7.5	8.0	7.0	7.5	7.5	7.5	7.0	7.3
16	6.5	7.5	7.0	7.0	6.5	7.0	7.5	7.0	7.0	7.0	7.5	7.2
17	7.0	7.0	7.5	7.2	7.5	8.5	7.0	7.7	7.5	7.5	7.0	7.3
18	7.5	8.0	8.0	7.8	8.0	7.5	8.0	7.8	8.0	7.5	8.0	7.8
19	7.0	7.5	7.5	7.3	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.2
20	5.5	5.5	4.0	5.0	5.5	5.5	3.0	4.7	5.5	5.5	3.5	4.8
21	6.0	6.5	6.5	6.3	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
22	6.0	6.5	5.5	6.0	5.0	6.0	5.0	5.3	5.0	6.5	5.5	5.7
23	4.5	4.0	5.0	4.5	2.5	4.0	5.5	4.0	3.5	4.5	5.5	4.5
24	5.5	6.0	6.5	6.0	5.5	6.0	6.5	6.0	5.5	6.0	6.5	6.0
25	6.5	7.0	6.5	6.7	7.0	7.5	6.0	6.8	7.0	7.5	6.0	6.8
26	6.5	6.5	6.0	6.3	6.0	6.5	6.5	6.5	6.0	6.5	6.5	6.3
27	7.0	7.0	7.5	7.2	7.5	8.0	8.0	7.8	7.5	7.5	7.5	7.5
28	6.5	6.0	6.0	6.2	7.0	6.5	6.0	6.5	7.0	6.5	6.0	6.5

Red Fescue Variety Trial

Trt No.	Quality (3/4") 9/22/76				Quality (1-1/2") 9/22/76			
	I	II	III	Ave	I	II	III	Ave
1	6.5	7.0	7.0	6.8	6.5	7.0	6.5	6.7
2	7.0	7.5	8.0	7.5	7.5	7.0	7.0	7.2
3	8.0	6.0	7.0	7.0	7.5	6.5	7.0	7.0
4	8.0	7.5	8.5	8.0	7.5	7.0	7.5	7.3
5	6.5	7.5	8.0	7.3	6.0	7.0	7.0	6.7
6	7.0	7.5	8.0	7.5	7.0	7.0	7.5	7.2
7	7.5	7.5	7.0	7.3	7.5	7.0	7.0	7.2
8	7.5	8.0	7.5	7.7	7.0	7.5	7.0	7.2
9	8.0	7.5	7.5	7.7	7.5	6.5	6.5	6.8
10	8.5	7.5	7.5	8.2	8.5	7.0	7.0	7.6
11	8.0	8.0	8.5	8.2	7.5	7.5	7.5	7.5
12	8.0	8.5	8.5	8.3	7.5	7.5	7.5	7.5
13	7.5	8.0	4.5	6.7	7.0	7.0	4.5	6.2
14	6.5	7.0	5.5	6.3	7.5	6.5	5.5	6.5
15	7.5	8.0	7.0	7.5	7.0	7.5	7.0	7.2
16	8.0	8.0	7.5	7.8	7.5	7.5	7.0	7.3
17	8.0	8.0	8.0	8.0	7.5	8.0	8.0	7.8
18	8.0	8.0	8.0	8.0	8.0	7.5	7.5	7.7
19	7.0	8.0	7.5	7.5	6.5	7.5	7.5	7.2
20	8.0	6.0	7.5	7.2	7.5	5.5	7.5	6.8
21	8.5	8.0	8.0	8.2	8.0	7.5	7.0	7.5
22	6.5	7.0	6.5	6.7	7.0	6.5	7.0	6.7
23	4.0	8.0	8.5	6.8	4.5	7.0	7.5	6.4
24	6.5	8.0	8.0	7.5	7.0	7.5	7.0	7.2
25	8.5	8.0	7.5	8.0	8.0	7.5	7.5	7.7
26	8.0	7.5	8.0	7.8	7.5	7.5	7.0	7.3
27	8.5	8.5	8.5	8.5	8.0	7.5	7.5	7.7
28	8.5	8.5	8.0	8.3	7.0	7.0	7.5	7.2

University of Massachusetts Turfgrass Research Fund

We would like to take this opportunity to thank the following for their generous contribution to the Massachusetts Turf and Lawn Grass Coucil and apologize to those we have failed to mention.

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Velsicol Chemical Corp., Chicago, Ill	$ 300.00
Fisons Corp., Bedford, MA	$ 750.00
O. M. Scott, Marysville, OH	$1000.00

To: Members of the Massachusetts Turf and Lawn Grass Council

I wish to thank the members of the Massachusetts Turf and Lawn Grass Council, the various associations, and the students for their support of the turfgrass teaching and research programs at the University of Massachusetts. I am particularly indebted to Dr. Joe Troll for his warm friendship and professional cooperation during my stay at UMass. I believe that we were able to get the research program well underway and I am sorry that I was unable to continue, due to financial considerations. However, it is my hope that through strong industry support the University will continue this important effort.

Since my arrival at Kansas State University in August, I have met three former turf students from UMass. These gentlemen are presently assistants or superintendents. Talking with these students and others here in Kansas certainly made me well aware of the beneficial impact the instructional program at UMass has had on the turf industry. Please accept my sincere thanks for your friendship and cooperation.

Dr. R. N. Carrow

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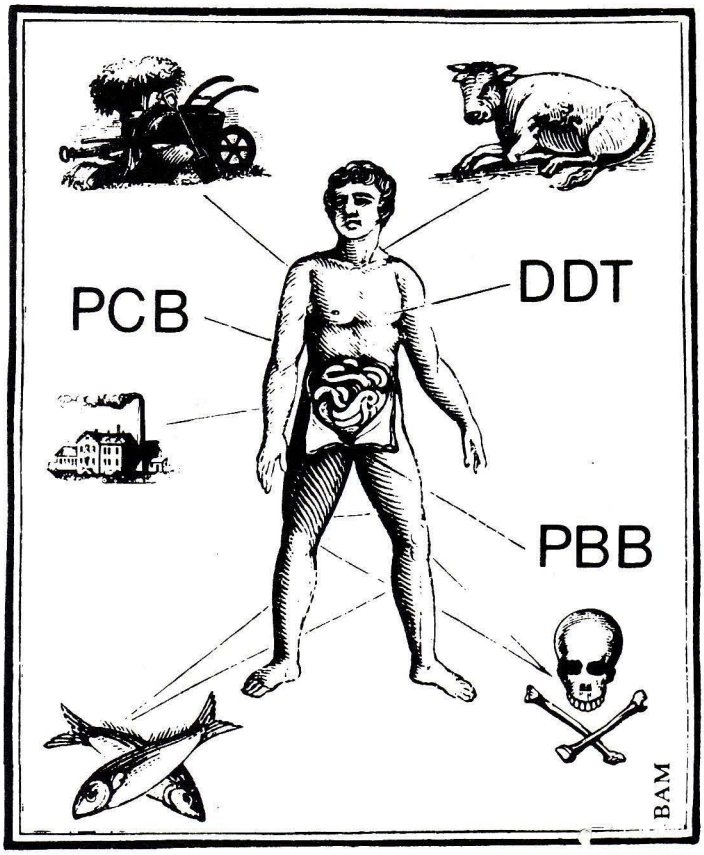
Will Congress Control the Chemical Industry?

by Jeffrey Nedelman

Hardly a week goes by without the disclosure that yet another chemical or manmade compound poses a serious threat to the environment or to man. The World Health Organization recently reported that 60 to 90 percent of all cancer is environmentally induced. Recent statistics indicate that one in four Americans will contract cancer in some form. Indeed, despite the important advances of the last decade aimed at cleansing our air and water, there is clear evidence that we are still contaminating our environment faster than we can clean it up.

The recent case of the pesticide kepone is an example of what happens when contaminants are found to be harmful only after they have been widely used. Kepone was withdrawn from the market not long ago, after it was found to be causing severe nervous disorders in people exposed to it. But another pesticide produced by the same manufacturer remained in widespread use. Since 1962, mirex has been used throughout the South to control fire ants and has been sprayed from the air by the Department of Agriculture. When a plane loaded with the substance crashed recently, scientists at the site discovered that mirex breaks down into kepone in the soil. Since then, the Environmental Protection Agency has detected minute amounts of kepone in samples of human mothers' milk in the South. The EPA has not determined whether these levels are harmful, or whether the source of the pesticide is the mirex sprayed by the Department of Agriculture. But the EPA is now expanding its testing, and has offered to provide physicians to the mothers with tainted milk, if problems arise.



Nor is kepone the only case. Mercury and cadmium attack the central nervous system; carbon tetrachloride

(Continued on Page 12)

(Continued from Page 11)

and chlorinated phenols destroy the liver; asbestos, a widely used fire preventative, causes cancer when inhaled; vinyl chloride and arsenic cause cancer; flourocarbons, aerosol sprays, and nitrogen oxide emissions from the Concorde deplete the earth's protective shield of ozone, increase the incidence of skin cancer, and threaten worldwide climatic and foodchain disruptions.

PCBS, or polychlorinated biphenyls, used in the electrical and plastics industries and dumped into the environment for decades, cause fatal disorders, miscarriages, and birth defects. PCBS, which are longer lasting than DDT, have accumulated in Great Lakes trout and coho salmon to the point where the Food and Drug Administration is seizing interstate shipments of fish, and people are being warned not to eat fish from the Lakes more than once a week. In Michigan, PBBS, or polybrominated biphenyls, a related chemical which was found in livestock feed two years ago, have poisoned some 30,000 cattle and over a million chickens. Despite assurances from the Food and Drug Administration that no threat to human health was posed, some Michigan farm families have experienced symptoms of fatigue, sight loss and painful joints. "Michigan is the guinea pig for PBBS," admits the state's Health Director. "I hate to say that publicly, but it's true."

In Lake Superior, the world's largest and purest body of fresh water, the Reserve Mining Company continues to dump taconite tailings, which have been linked to stomach cancer, at a rate of 67,000 tons a day. While the EPA is suing to halt this pollution, the residents of four Lake Superior communities are now drinking specially filtered water. The list goes on and on.

There are over 2 million different chemical compounds known to man. Each year that list grows by 25,000. Today there are more than 30,000 chemicals in actual commercial production, a list that grows annually by 1,000. Of the 2 million known compounds, only 3,000 have been tested adequately for cancerous properties, and of these, 1,000 have shown signs of causing cancer. Given the tens of thousands of chemical compounds, the diversity of their uses, and the seriousness of their impacts, we will contaminate and jeopardize the future if current practices continue.

What the public does not seem to understand and what the chemical industry will not publicize and explain is that these chemicals often require 20 to 30 years of use to produce cancer. The industry claims the right to introduce and widely use chemicals and additives until a statistically significant number of bodies pile in the streets. Only then would it permit governmental intervention. The chemical industry enjoys a business of $100 billion a year, earned not only at our immediate expense, but at the expense of future generations. The time has come for the Congress to mandate that the industry use stringent laboratory and premarket testing procedures rather than the public as guinea pigs for its products. Before large number of additional chemicals and hazardous

substances are introduced into the environment, we must insist on knowing whether they are safe.

Two important pieces of legislation, the Environmental Health Act of 1975, introduced by Senator Gaylord Nelson (D-Wis.), and the new Toxic Substances Bill, are now awaiting congressional action. If enacted, this legislation would go a long way to cure abuses of the past. However, both bills are being vigorously attacked by well organized and financed industrial and business organizations.

Simply put, the Environmental Health Act is aimed at situations where some evidence of a serious potential hazard exists, but the scientific evidence is inconclusive. The legislation would prohibit the potentially serious conduct until it could be proved safe, or until it could be shown that the benefits substantially outweighed the risks. It gives judges the power to resolve uncertainties, where substantial risk is possible, in favor of public health.

It is a simple, straightforward principle that one would expect to find embodied in the law that courts must protect human life and health when either is seriously threatened. However, some courts, specifically the Eighth Circuit Court of Appeals that reviewed the Reserve Mining case, expressed doubts about what the law is and how it should be interpreted. This legislation would resolve those doubts.

The most important aspect of the Toxic Substances legislation is the requirement for premarket testing—evaluating the impact on health of a product in the laboratory before it is introduced in the environment. This is a fundamental and indispensable provision of the bill. Other sections of the Toxic Substances Bill would give the Environmental Protection Agency the authority to require better information from the industry regarding health and ecological effects of new products. It would require the EPA to balance the various costs, risks, and benefits of a chemical or substance before it is introduced and a commitment is made by the industry.

After five years of stalemate, Congress may at last be ready to enact a Toxic Substances Control Act under which chemicals would be tested in the laboratory rather than the environment. The Senate recently passed the Toxic Substances Bill, including a ban on PCBS, by a vote of 60-13; but the House has yet to act. The chemical industry is picking its fight in the House, and that is where the critical test will come. In the Senate now, the Environmental Health Act is moving toward committee hearings, and an eventual vote.

Both pieces of legislation work together to build an effective preventive health program. The Toxic Substances Bill now in the House (H. R. 10318) and the Environmental Health Act in the Senate (S. 841) would help control the introduction of dangerous chemicals and put the burden of proving the safety of these products on the manufacturers. Both pieces of legislation need broad-based public support to speed congressional action.

Jeffrey Nedelman is legislative director for Sen. Gaylord Nelson of Wisconsin.

Kentucky Bluegrass Variety Trial 1973—Performance in 1976

By R. N. Carrow and J. Troll
University of Massachusetts, Amherst

The Kentucky bluegrasses in this trial were established in May 1973; however, a few cultivars were not seeded until May 1974. Each cultivar was replicated three times in 4 x 6 ft. main plots. The main plots were divided into 4 x 3 ft subplots for mowing height treatments of 3/4 and 1 1/2 inch. Mowing was twice weekly and fertilization was at 4 lbs. actual N/1000 ft.^{2} per growing season. Irrigation was applied once in midsummer.

When maintained at 3/4 inch outstanding cultivars were; Nugget, Touchdown, Parade, Merion, K1-149,

Table 1. Visual quality ratings for Kentucky bluegrass mowed at 3/4 inch in 1976.

	Quality Rating (9 = ideal, 1 = no live turf)					Average Quality Rating		
Cultivar	4/28	5/29	6/25	8/6	9/28	1976	1975	1974
Vantage	7.5	7.0	5.5	7.7	8.7	7.3	7.3	6.2
Victa	8.0	8.2	8.3	8.8	8.2	8.3	8.2	7.2
Baron	8.2	8.2	7.8	8.5	8.5	8.2	7.9	7.0
Merion	8.7	8.2	8.0	9.0	8.2	8.4	8.0	7.1
Birka *	6.3	6.8	5.7	7.0	8.2	6.8	6.7	6.1
Delta	4.5	5.2	4.0	6.0	7.5	5.4	5.5	5.8
Fylking	7.2	7.8	6.8	7.8	8.2	7.6	7.7	6.7
Newport	6.3	5.3	4.5	5.7	7.7	5.9	6.8	6.6
Park	3.8	3.8	3.6	5.7	7.2	4.8	4.8	6.2
Adelphi	8.0	7.8	7.3	8.8	8.3	8.0	7.9	7.0
Nugget	8.0	8.7	8.7	9.0	8.5	8.6	8.0	7.5
Aquila	6.3	4.7	4.5	6.7	8.2	6.1	7.2	6.9
Continental	6.7	6.0	5.3	7.3	8.2	6.7	7.4	7.2
Parade	8.3	8.7	8.0	8.8	8.5	8.5	8.0	7.0
KI-129	3.2	3.5	3.2	5.2	7.0	4.4	4.0	6.1
KI-131	8.0	8.0	7.3	8.3	8.5	8.0	8.0	7.2
KI-138	4.7	5.0	4.5	6.5	7.7	5.7	6.4	7.4
KI-149	8.5	8.3	7.7	9.0	8.3	8.4	8.0	7.1
KI-159	8.3	7.7	6.2	8.2	8.5	7.8	8.0	6.9
Fanfare	8.0	8.0	6.7	8.5	8.7	8.0	7.6	7.0
Pennstar	7.2	7.8	7.3	8.3	8.7	7.9	7.9	6.8
Majestic *	7.7	8.0	6.8	8.3	8.5	7.9	6.9	5.9
Bonnieblue *	8.0	8.2	7.5	8.5	8.7	8.2	7.2	5.8
Olymprisp*	6.2	6.2	5.0	7.0	8.2	6.5	6.3	5.7
Touchdown *	8.7	8.5	7.8	9.0	8.7	8.5	7.3	6.2
Arista *	6.0	4.8	4.7	7.0	8.0	6.1	6.4	6.1
Sydsport *	7.5	8.0	6.8	8.5	8.7	7.9	7.1	6.0
WK-412 *	7.2	7.3	6.0	7.2	8.3	7.2	7.0	5.8

* Seeded May 1974, all others seeded May 1973.

Table 2. Visual quality ratings for Kentucky bluegrass mowec at 1-1/2 inch in 1976.

	Quality Rating (9 = ideal, 1 = no live turf)					Average Quality Rating		
Cultivar	4/28	5/29	6/25	6/8	9/28	1976	1975	1974
Vantage	7.5	7.5	5.5	7.5	8.7	7.3	7.6	6.2
Victa	8.0	8.0	7.8	8.7	8.0	8.1	8.2	7.2
Baron	8.2	8.2	7.5	8.2	8.2	8.1	7.9	7.1
Merion	8.7	8.0	7.3	8.0	8.2	8.0	8.0	7.3
Birka *	6.5	6.8	5.5	6.7	7.8	6.7	7.1	6.2
Delta	5.0	5.0	4.0	6.0	7.2	5.4	6.6	6.3
Fylking	7.3	7.7	6.2	7.3	7.8	7.3	7.5	6.9
Newport	6.2	5.8	5.7	6.3	7.5	6.3	7.5	6.7
Park	6.3	4.3	4.7	6.0	7.2	5.5	6.7	6.4
Adelphi	7.8	7.7	7.5	8.7	8.2	8.0	8.0	6.6
Nugget	8.0	8.7	8.0	8.8	8.2	8.3	7.6	6.9
Aquila	6.5	5.5	4.7	6.5	7.7	6.2	7.5	6.5
Continental	6.5	6.5	5.5	6.7	7.8	6.6	7.7	7.0
Parade	8.3	8.7	7.8	8.5	8.3	8.3	8.1	7.1
KI-129	4.2	4.0	4.0	5.5	6.8	4.9	5.6	7.0
KI-131	8.2	8.0	6.2	6.5	8.3	7.4	7.9	7.1
KI-138	6.2	5.8	4.7	6.5	7.0	6.0	7.4	6.8
KI-149	8.2	8.2	7.5	8.8	8.0	8.1	7.8	7.0
KI-159	8.0	7.3	6.0	7.2	8.3	7.4	7.8	6.4
Fanfare	7.8	7.5	6.2	8.0	8.5	7.6	7.8	7.0
Pennstar	7.3	8.0	7.0	8.3	8.3	7.8	7.7	7.0
Majestic *	7.3	8.0	6.8	8.2	8.3	7.7	7.1	5.8
Bonnieblue *	8.0	8.0	7.0	8.0	8.2	7.8	7.1	5.7
Olymprisp *	6.0	6.2	5.3	6.8	8.0	6.5	6.5	5.5
Touchdown *	8.5	8.5	7.8	8.7	8.5	8.4	7.5	6.0
Arista *	6.2	5.3	5.0	6.5	7.7	6.1	6.8	6.0
Sydsport *	6.8	8.3	7.2	8.5	8.7	7.9	7.2	5.9
WK-412 *	6.8	7.2	6.0	7.0	8.2	7.0	7.0	5.9

* Seeded May 1974, all others seeded May 1973.

Victa, Baron and Bonnieblue (Table 1). Poor quality was demonstrated by K1-129, Park, Delta, K1-138 and Newport.

At the 1 1/2 inch height superior cultivars were: Touchdown, Parade, Nugget, Victa, Baron, and K1-149 (Table 2). Cultivars which did not show acceptable quality were; K1-129, Delta and Park.

Table 3. Disease ratings for Kentucky bluegrasses in 1976. All ratings are an average of both cutting heights.

	Disease rating (0 = none, 5 = total kill)		
	Gray Snowmold		Pink Snowmold
Cultivar	4/18/76	2/26/76	2/26/76
Vantage	0	1.7	1.7
Victa	0.3	0.7	1.7
Baron	0.7	1.0	1.7
Merion	1.3	1.3	0.3
Birka	0	0.3	3.3
Delta	0.3	1.3	3.7
Fylking	1.3	0.7	2.3
Newport	0.7	0.7	3.0
Park	0.7	1.0	3.7
Adelphi	1.0	1.7	2.0
Nugget	1.0	1.0	1.3
Aquila	1.0	1.0	3.3
Continental	2.3	0.3	3.3
Parade	1.0	1.3	0.3
K1-129	0.3	0.3	4.0
K1-131	0.7	1.3	3.0
K1-138	0.7	0.3	4.0
K1-149	0.7	1.3	1.0
K1-159	0.7	1.3	1.0
Fanfare	1.0	2.0	0.7
Pennstar	0.7	1.3	1.7
Majestic	0.3	0	2.0
Bonnieblue	0	1.0	1.0
Olymprisp	0.3	0.7	1.3
Touchdown	0	0.7	1.0
Arista	0.3	0.3	4.0
Sydsport	0	0.7	0.7
Wk-412	0	1.0	2.3

* Seeded in May 1974, all others seeded May 1973.

Gray snowmold (*Typhula itoana*) was observed in late February (Table 3). Moderate injury occurred on Fanfare, Adelphi and Vantage. Pink snowmold (*Fusarium nivale*) was also evident with most cultivars exhibiting injury. The least infected were Merion, Parade and Sydsport. Very severe injury occurred on K1-129, K1-138, Arista, Delta, and Park.

Kentucky Bluegrass Variety Trial - 1973

	Pink Snow Mold 2/26/76 (3/4 + 1-1/2 ")				Gray Snow Mold 2/26/76 (3/4 + 1-1/2 ")				Quality 4/28/76 3/4"			
Cultivar	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	-	3	2	1.7	-	3	2	1.7	-	7.5	7.5	7.5
2	2	2	1	1.7	1	1	0	0.7	8.0	8.0	8.0	8.0
3	2	1	2	1.7	1	1	1	1.0	8.5	8.5	7.5	8.2
4	0	1	0	0.3	1	2	1	1.3	9.0	8.5	8.5	8.7
5	3	3	4	3.3	1	0	0	0.3	6.5	7.0	5.5	6.3
6	4	4	3	3.7	2	1	1	1.3	4.5	4.0	5.0	4.5
7	2	3	2	2.3	0	1	1	0.7	7.5	7.0	7.0	7.2
8	4	2	3	3.0	0	1	1	0.7	4.0	7.5	7.5	6.3
9	4	4	3	3.7	1	1	1	1.0	3.5	4.0	4.0	3.8
10	3	2	1	2.0	1	2	2	1.7	7.5	8.5	8.0	8.0
11	2	2	0	1.3	2	1	0	1.0	8.0	7.0	9.0	8.0
12	3	3	4	3.3	1	1	1	1.0	5.5	7.0	6.5	6.3
13	3	4	3	3.3	0	1	0	0.3	6.0	7.0	7.0	6.7
14	0	1	0	0.3	1	2	1	1.3	8.5	8.5	8.0	8.3
15	4	4	4	4.0	0	1	0	0.3	3.5	3.5	2.5	3.2
16	4	2	3	3.0	1	2	1	1.3	8.5	7.5	8.0	8.0
17	4	4	4	4.0	1	0	0	0.3	6.0	6.5	1.5	4.7
18	0	2	1	1.0	1	1	2	1.3	8.5	8.5	8.5	8.5
19	1	1	1	1.0	1	2	1	1.3	9.0	8.0	8.0	8.3
20	1	1	0	0.7	2	3	1	2.0	8.0	8.0	8.0	8.0
21	1	2	2	1.7	2	1	1	1.3	7.5	7.5	6.5	7.2
22	3	2	1	2.0	0	0	0	0	7.0	8.0	8.0	7.7
23	2	1	0	1.0	2	1	0	1.0	7.5	8.0	8.5	8.0
24	0	2	3	1.3	0	1	1	0.7	7.0	7.5	4.0	6.2
25	3	0	0	1.0	1	1	0	0.7	8.5	8.5	9.0	8.7
26	4	4	4	4.0	1	0	0	0.3	7.5	6.5	4.0	6.0
27	1	1	0	0.7	0	2	0	0.7	8.0	8.0	6.5	7.5
28	1	3	3	2.3	1	1	1	1.0	8.0	7.5	6.0	7.2

(Continued on Page 17)

(Continued from Page 15)

Kentucky Bluegrass Variety Trial - 1973

Cultivar	Quality 4/28/76 (1-1/2")				Quality 5/29/76 (3/4")				Quality 5/29/76 (1-1/2")			
	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	-	7.5	7.5	7.5	-	7.5	6.5	7.0	-	8.0	7.0	7.5
2	8.0	8.0	8.0	8.0	8.0	8.0	8.5	8.2	7.5	8.5	8.0	8.0
3	8.5	8.5	7.5	8.2	8.0	8.5	8.0	8.2	8.0	8.5	8.0	8.2
4	9.0	8.5	8.5	8.7	8.5	8.0	8.0	8.2	8.5	8.0	7.5	8.0
5	6.5	7.5	5.5	6.5	7.0	8.0	5.5	6.8	7.0	7.5	6.0	6.8
6	5.0	4.5	5.5	5.0	5.0	5.5	5.0	5.2	4.5	5.5	5.0	5.0
7	7.5	7.5	7.0	7.3	7.5	8.0	8.0	7.8	7.5	8.0	7.5	7.7
8	4.5	7.0	7.0	6.2	3.5	6.0	6.5	5.3	5.0	6.0	6.5	5.8
9	4.5	5.5	6.0	5.3	3.0	5.0	3.5	3.8	3.5	5.5	4.0	4.3
10	7.0	8.5	8.0	7.8	7.5	8.0	8.0	7.8	7.0	8.5	7.5	7.7
11	8.0	7.5	8.5	8.0	9.0	8.0	9.0	8.7	9.0	8.0	9.0	8.7
12	6.0	7.0	6.5	6.5	6.0	4.0	4.0	4.7	7.5	5.0	4.0	5.5
13	6.0	7.0	6.5	6.5	6.0	5.5	6.5	6.0	7.0	5.5	7.0	6.5
14	8.5	8.5	8.0	8.3	9.0	8.5	8.5	8.7	9.0	8.5	8.5	8.7
15	3.5	4.0	5.0	4.2	3.5	4.0	3.0	3.5	4.0	4.5	3.5	4.0
16	8.5	7.5	8.5	8.2	8.0	8.5	7.5	8.0	8.5	8.0	7.5	8.0
17	6.5	6.5	5.5	6.2	7.0	5.5	2.5	5.0	7.0	6.5	4.0	5.8
18	8.5	8.0	8.0	8.2	8.5	8.0	8.5	8.3	8.5	8.0	8.0	8.2
19	8.5	7.5	8.0	8.0	8.0	7.5	7.5	7.7	7.5	7.5	7.0	7.3
20	8.0	8.0	7.5	7.8	8.0	8.0	8.0	8.0	7.5	7.5	7.5	7.5
21	8.0	7.5	6.5	7.3	8.0	8.0	7.5	7.8	8.5	8.0	7.5	8.0
22	6.5	8.0	7.5	7.3	7.5	8.0	8.5	8.0	7.5	8.0	8.5	8.5
23	7.5	8.0	8.5	8.0	8.0	8.5	8.0	8.2	7.5	8.5	8.0	8.0
24	7.0	7.5	3.5	6.0	7.0	7.0	4.5	6.2	7.0	7.0	4.5	6.2
25	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
26	7.0	6.5	5.0	6.2	6.0	5.5	3.0	4.8	6.5	6.5	3.0	5.3
27	7.5	7.5	5.5	6.8	8.5	8.0	7.5	8.0	9.0	8.0	8.0	8.3
28	8.0	7.5	5.0	6.8	7.5	8.0	6.5	7.3	8.5	7.5	5.5	7.2

Kentucky Bluegrass Variety Trial - 1973

Cultivar No.	Quality (3/4") 6/25/76				Quality (1-1/2") 6/25/76				Quality (3/4") 8/6/76			
	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	-	6.0	5.0	5.5	-	6.0	5.0	5.5	-	8.0	7.5	7.7
2	8.5	8.0	8.5	8.3	8.0	8.0	7.5	7.8	9.0	9.0	8.5	8.8
3	8.0	8.0	7.5	7.8	7.0	8.0	7.5	7.5	8.5	8.5	8.5	8.5
4	8.5	8.0	7.5	8.0	7.5	7.5	7.0	7.3	9.0	9.0	9.0	9.0
5	6.0	5.5	5.5	5.7	5.5	5.5	5.5	5.5	7.5	7.5	6.0	7.0
6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	6.0	6.5	5.5	6.0
7	7.0	7.0	6.5	6.8	6.0	6.0	6.5	6.2	7.5	8.0	8.0	7.8
8	2.5	5.5	5.5	4.5	5.5	6.0	5.5	5.9	4.0	6.5	6.5	5.7
9	2.5	4.5	4.0	3.6	3.5	5.5	5.0	4.7	5.5	5.5	6.0	5.7
10	7.5	7.5	7.0	7.3	7.5	8.0	7.0	7.5	8.5	9.0	9.0	8.8
11	9.0	8.0	9.0	8.7	8.5	7.5	8.0	8.0	9.0	9.0	9.0	9.0
12	5.0	4.5	4.0	4.5	6.5	4.5	3.0	4.7	7.0	7.0	6.0	6.7
13	5.5	4.5	6.0	5.3	6.5	4.0	6.0	5.5	8.5	5.5	8.0	7.3
14	8.5	7.5	8.0	8.0	8.5	7.5	7.5	7.8	9.0	9.0	8.5	8.8
15	3.0	4.0	2.5	3.2	3.5	5.5	3.0	4.0	5.0	5.5	5.0	5.2
16	8.0	7.0	7.0	7.3	7.0	6.0	5.5	6.2	9.0	8.0	8.0	8.3
17	6.5	5.0	2.0	4.5	6.5	4.5	3.0	4.7	9.0	6.5	4.0	6.5
18	8.0	7.5	7.5	7.7	8.0	7.5	7.0	7.5	9.0	9.0	9.0	9.0
19	6.5	6.0	6.0	6.2	6.5	5.0	6.0	6.0	9.0	7.5	8.0	8.2
20	6.5	6.5	7.0	6.7	6.5	6.0	6.0	6.2	9.0	9.0	7.5	8.5
21	7.0	8.5	6.5	7.3	7.5	7.0	6.5	7.0	8.5	9.0	7.5	8.3
22	7.0	6.5	7.0	6.8	7.0	6.5	7.0	6.8	7.5	9.0	8.5	8.3
23	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0	8.0	9.0	8.5	8.5
24	5.5	5.5	4.0	5.0	6.0	6.0	4.0	5.3	7.5	8.0	5.5	7.0
25	8.0	8.5	7.0	7.8	8.0	8.5	7.0	7.8	9.0	9.0	9.0	9.0
26	5.5	5.5	3.0	4.7	6.5	5.5	3.0	5.0	7.5	7.0	6.5	7.0
27	7.5	6.5	6.5	6.8	8.0	7.0	6.5	7.2	9.0	8.0	8.5	8.5
28	7.0	5.5	5.5	6.0	7.5	5.5	5.0	6.0	8.0	7.0	6.5	7.2

Kentucky Bluegrass Variety Trial - 1973

Trt. No.	Quality (1-1-2") 8/6/76				Quality (3/4") 9/28/76				Quality (1-1/2") 9/28/76			
	I	II	III	Ave	I	II	II	Ave	I	II	III	Ave
1	-	8.0	7.0	7.5	-	9.0	8.5	8.7	-	9.0	8.5	8.7
2	8.5	9.0	8.5	8.7	8.0	8.5	8.0	8.2	8.0	8.0	8.0	8.0
3	7.5	8.5	8.5	8.2	8.5	9.0	8.0	8.5	8.5	8.5	7.5	8.2
4	8.0	8.5	7.5	8.0	8.5	8.5	7.5	8.2	8.5	8.5	7.5	8.2
5	7.5	6.5	6.0	6.7	8.0	8.5	8.0	8.2	8.0	8.0	7.5	7.8
6	6.0	6.5	5.5	6.0	7.5	8.5	6.5	7.5	7.0	8.0	6.5	7.2
7	6.5	7.5	8.0	7.3	7.5	8.5	8.5	8.2	7.0	8.0	8.5	7.8
8	5.5	6.5	7.0	6.3	6.0	8.5	8.5	7.7	6.0	8.5	8.0	7.5
9	6.0	6.0	6.0	6.0	7.5	7.0	7.0	7.2	7.5	7.0	7.0	7.2
10	8.5	9.0	8.5	8.7	8.5	8.5	8.0	8.3	8.5	8.0	8.0	8.2
11	9.0	8.5	9.0	8.8	9.0	8.0	8.5	8.5	9.0	7.5	8.0	8.2
12	8.5	7.0	4.0	6.5	8.0	9.0	7.5	8.2	8.0	9.0	6.0	7.7
13	8.5	4.5	7.0	6.7	8.5	8.0	8.0	8.2	8.0	7.5	8.0	7.8
14	9.0	8.5	8.0	8.5	8.5	8.5	8.5	8.5	8.0	8.5	8.5	8.3
15	5.5	6.0	5.0	5.5	6.0	8.0	7.0	7.0	6.0	8.0	6.5	6.8
16	7.5	6.0	6.0	6.5	8.5	8.0	9.0	8.5	8.5	7.5	9.0	8.3
17	7.5	7.5	4.5	6.5	8.5	8.0	6.5	7.7	8.5	6.5	6.0	7.0
18	9.0	9.0	8.5	8.8	8.5	8.0	8.5	8.3	8.0	8.0	8.0	8.0
19	8.0	5.5	8.0	7.2	9.0	8.0	8.5	8.5	9.0	7.5	8.0	8.3
20	8.5	8.0	7.5	8.0	9.0	8.5	8.5	8.7	9.0	8.0	8.5	8.5
21	9.0	8.5	7.5	8.3	9.0	8.5	8.5	8.7	8.5	8.5	8.0	8.3
22	7.5	8.5	8.5	8.2	8.5	8.5	8.5	8.5	8.0	8.5	8.5	8.3
23	7.5	8.5	8.0	8.0	8.5	9.0	8.5	8.7	8.0	9.0	7.5	8.2
24	7.5	7.5	5.5	6.8	8.5	8.5	7.5	8.2	8.5	8.5	7.0	8.0
25	9.0	9.0	8.5	8.7	9.0	8.5	8.5	8.7	9.0	8.0	8.5	8.5
26	7.5	6.0	6.0	6.5	8.5	8.0	7.5	8.0	8.5	7.5	7.0	7.7
27	8.5	8.5	8.5	8.5	9.0	8.5	8.5	8.7	9.0	8.5	8.5	8.7
28	8.0	6.5	6.5	7.0	8.5	8.5	8.0	8.3	8.0	8.5	8.0	8.2

Kentucky Bluegrass Variety Trial 1974—Performance in 1976

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The Kentucky bluegrasses in this trial were established in September 1974. Each cultivar was replicated three times in 4 x 6 ft. main plots. The main plots were divided in 4 x 3 ft. subplots for mowing height treatments of 3/4 and 1 1/2 inch. Fertilization was at 4.0 lbs. actual N/1000 $ft.^2$ per growing season and mowing was twice a week. Irrigation was applied once in midsummer.

All cultivars produced in acceptable turf when maintained at 3/4 or 1 1/2 inch (Tables 1, 2). However, Galazy and EVB 1224 were generally the best, while EVB 760, Merion and EVB 391 rated the lowest.

Several disease infestations occurred in 1976 (Table 3). Gray snowmold (*Typhula itoana*) infection was most evident on Galaxy and Glade, however, injury was only

Table 1. Visual quality ratings for Kentucky bluegrasses mowed at 3/4 inch in 1976.

Cultivar	Quality rating (9 = ideal, 1 = no turf)					Average quality rating	
	4/28	5/29	6/25	8/6	9/22	1976	1975
EVB 391	7.3	7.0	6.7	7.5	8.5	7.4	7.6
EVB 295	7.2	7.0	7.0	7.3	9.0	7.5	7.3
EVB 760	6.8	6.7	6.7	6.8	8.5	7.1	7.5
EVB 887	7.3	7.7	7.3	7.3	8.7	7.7	7.4
EVB 1128	7.5	8.2	7.3	7.3	8.3	7.7	7.6
EVB 1224	7.0	7.3	7.7	8.5	8.7	7.8	7.5
Galaxy	7.5	7.8	7.3	8.2	9.0	8.0	7.5
Merion	7.3	7.0	6.8	7.2	8.2	7.3	7.7
Glade	7.0	7.2	6.8	7.5	8.8	7.5	7.4
Cheri	7.3	6.8	7.5	8.3	8.8	7.7	7.6

Table 2. Visual quality ratings for Kentucky bluegrasses mowed at 1-1/2 inch in 1976.

Cultivar	Quality rating (9 = ideal, 1 = no turf)					Average quality rating	
	4/28	5/29	6/25	8/19	9/22	1976	1975
EVB 391	7.2	6.3	6.5	7.5	8.7	7.2	7.8
EVB 295	7.0	6.8	7.0	7.3	8.7	7.4	7.4
EVB 760	6.8	7.2	6.7	6.8	8.2	7.1	7.7
EVB 887	7.2	7.5	7.0	7.3	8.5	7.5	7.6
EVB 1128	7.3	7.8	6.8	7.3	8.5	7.5	7.6
EVB 1224	7.2	7.2	7.3	8.5	8.5	7.7	7.6
Galaxy	7.0	7.3	7.0	8.2	8.8	7.7	7.6
Merion	7.2	6.8	6.5	7.2	8.5	7.2	7.7
Glade	6.8	6.8	6.5	7.5	9.0	7.3	7.5
Cheri	7.0	6.7	7.3	8.3	8.8	7.6	7.6

Table 3. Disease evaluations for Kentucky bluegrasses in 1976. All ratings are an average of both cutting heights.

Cultivar	Disease ratings (0 = none, 5 = total kill)					
	Gray snowmold	Pink snowmold	Helminthosporium leaf spot	Fusarium flight	Dollar spot	
	2/28	2/28	4/28	6/25	8/6	9/22
EVB 391	0	1.7	0.7	0	0.3	0.8
EVB 295	0	1.7	0.7	0.7	0.3	0.3
EVB 760	0	0.3	0.7	0	2.7	1.2
EVB 887	0	0.3	1.3	0	1.0	0.5
EVB 1128	0.7	1.0	1.7	0.7	1.3	0.7
EVB 1224	0.7	0.3	1.0	0.3	1.3	0.8
Galaxy	1.3	1.7	1.3	0.3	0	0
Merion	0.3	0	1.0	0	1.7	1.3
Glade	1.0	1.7	2.0	0	0.7	0.2
Cheri	0.3	1.7	1.7	0.7	0	0

slight. Merion, EVB 760, EVB 887, and EVB 1224 exhibited little injury from pink snowmold (*Fusarium nivale*). Leaf spot (*Helminthosporium* spp.) infection was most apparent on Glade, Cheri and EVB 1128 with moderate injury. A mild infestation of (*Fusarium roseum*) occurred in June. Slight injury was noticed on EVB 295, EVB 1128, and Cheri. Dollar spot (*Sclerotinia homeocarpa*) occurred in August and September. Galaxy and Cheri showed no symptoms, while EVB 760 and Merion exhibited slight to moderate infection.

Kentucky Bluegrass Variety Trials - 1974

Trt	Gray Snowmold 2/28/76 (3/4 + 1-1/2")				Pink Snowmold 2/28/76 (3/4 + 1-1/2")				Quality 4/28/76 (3/4")			
No.	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	0	0	0	0	1	2	2	1.7	7.5	7.5	7.0	7.3
2	0	0	0	0	1	2	2	1.7	7.0	7.5	7.0	7.2
3	0	0	0	0	1	0	0	0.3	7.0	6.5	7.0	6.8
4	0	0	0	0	1	0	0	0.3	7.5	7.5	7.0	7.3
5	1	0	1	0.7	1	1	1	1.0	8.0	7.7	7.0	7.5
6	0	0	2	0.7	0	0	1	0.3	7.5	7.0	6.5	7.0
7	2	0	2	1.3	1	2	2	1.7	7.5	7.5	7.5	7.5
8	1	0	0	0.3	0	0	0	0	7.5	7.0	7.5	7.3
9	2	1	0	1.0	2	2	1	1.7	7.0	7.0	7.0	7.0
10	1	0	0	0.3	2	1	2	1.7	7.5	7.0	7.5	7.3

* 0 = none, 5 = total kill

Trt	Quality 4/28/76 (1-1/2)				Helium 4/28/76 1-1/2 + 3/4				Quality 5/29/76 (3/4")			
No.	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	7.5	7.0	7.0	7.2	0	1	1	0.7	6.0	7.5	7.5	7.0
2	7.0	7.0	7.0	7.0	0	1	1	0.7	6.0	8.0	7.0	7.0
3	7.0	6.5	7.0	6.8	1	0	1	0.7	7.0	6.5	6.5	6.7
4	7.5	7.0	7.0	7.2	2	1	1	1.3	7.5	8.0	7.5	7.7
5	8.0	7.0	7.0	7.3	1	2	2	1.7	8.5	8.0	8.0	8.2
6	7.5	7.5	6.5	7.2	1	1	1	1.0	8.0	7.5	6.5	7.3
7	7.0	7.0	7.0	7.0	1	1	2	1.3	8.0	8.0	7.5	7.8
8	7.5	7.0	7.0	7.2	1	1	1	1.0	7.5	6.0	7.5	7.0
9	6.5	7.0	7.0	6.8	2	2	2	2.0	6.5	7.5	7.5	7.2
10	7.0	7.0	7.0	7.0	2	1	2	1.7	6.5	7.0	7.0	6.8

Kentucky Bluegrass Variety Trials - 1974

Trt	Quality 5/29/76 (1 1/2")				Quality (3/4") 6/25/76				Quality (1-1/2") 6/25/76			
No.	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	6.0	6.5	6.5	6.3	6.0	7.0	7.0	6.7	6.0	7.0	6.5	6.5
2	6.0	7.5	7.0	6.8	6.0	7.5	7.5	7.0	6.0	7.5	7.5	7.0
3	7.5	7.5	6.5	7.2	6.5	7.5	6.0	6.7	6.5	7.0	6.5	6.7
4	7.5	7.5	7.5	7.5	7.5	8.0	6.5	7.3	7.0	7.5	6.5	7.0
5	8.0	8.0	7.5	7.8	7.5	6.5	8.0	7.3	7.5	6.0	7.0	6.8
6	7.5	7.5	6.5	7.2	8.0	8.0	7.0	7.7	7.0	8.0	7.0	7.3
7	7.5	8.0	6.5	7.3	7.0	8.0	7.0	7.3	7.0	8.0	6.0	7.0
8	7.0	6.0	7.5	6.8	8.0	6.0	6.5	6.8	7.5	6.0	6.0	6.5
9	6.5	6.5	7.5	6.8	7.0	7.0	6.5	6.8	7.0	6.0	6.5	6.5
10	6.5	7.0	6.5	6.7	7.5	7.5	7.5	7.5	7.5	7.5	7.0	7.3

Trt	Fusarium (3/4 + 1-1/2") 6/25/76				Quality (3/4") 8/6/76				Quality (1-1/2") 8/6/76			
No.	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	0	0	0	0	6.0	8.5	8.0	7.5	7.0	8.0	8.5	7.8
2	0	1	1	0.7	6.0	8.0	8.0	7.3	6.0	8.0	8.0	7.3
3	0	0	0	0	7.0	6.5	7.0	6.8	7.0	7.5	7.0	7.2
4	0	0	0	0	7.0	8.5	6.5	7.3	7.5	8.5	7.0	7.7
5	0	0	2	0.7	8.0	6.0	8.0	7.3	8.0	6.0	7.5	7.2
6	0	1	0	0.3	8.5	9.0	8.0	8.5	8.5	9.0	7.5	8.3
7	0	0	1	0.3	8.5	8.0	8.0	8.2	8.5	8.0	7.5	8.0
8	0	0	0	0	9.0	6.0	6.5	7.2	9.0	6.5	7.0	7.5
9	0	0	0	0	8.0	8.0	6.5	7.5	8.0	8.0	6.5	7.5
10	1	1	0	0.7	8.5	8.5	8.0	8.3	8.5	8.5	8.0	8.3

Kentucky Bluegrass Variety Trials - 1974

Trt	Dollar Spot (3/4 + 1-1/2") 8/6/76				Dollar Spot (3/4 + 1-1/2") 9/22/76				Quality (3/4") 9/22/76			
No.	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	0	0	1	0.3	2.0	0	0.5	0.8	8.0	9.0	8.5	8.5
2	1	0	0	0.3	1.0	0	0	0.3	9.0	9.0	9.0	9.0
3	2	3	3	2.7	2.0	0	1.5	1.2	8.5	9.0	8.0	8.5
4	1	0	2	1.0	0	0	1.5	0.5	9.0	9.0	8.0	8.7
5	1	3	0	1.3	0	1.5	0.5	0.7	8.5	7.5	9.0	8.3
6	2	0	2	1.3	0	0	2.5	0.8	9.0	9.0	8.0	8.7
7	0	0	0	0	0	0	0	0	9.0	9.0	9.0	9.0
8	0	2	3	1.7	0	2.0	2.0	1.3	9.0	7.5	8.0	8.2
9	0	0	2	0.7	0	0	0.5	0.2	8.5	9.0	9.0	8.8
10	0	0	0	0	0	0	0	0	8.5	9.0	9.0	8.8

Trt	Quality 1-1/2" 9/22/76											
No	I	II	III	Ave	I	II	III	Ave	I	II	III	Ave
1	8.0	9.0	9.0	8.7								
2	9.0	9.0	8.0	8.7								
3	7.5	9.0	8.0	8.2								
4	9.0	9.0	7.5	8.5								
5	8.5	8.0	9.0	8.5								
6	9.0	9.0	7.5	8.5								
7	9.0	8.5	9.0	8.8								
8	9.0	8.5	8.0	8.5								
9	9.0	9.0	9.0	9.0								
10	8.5	9.0	9.0	8.8								

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