1975

Spring 1975 Conference Issue

Steve Cadenelli
Joseph Troll
R. N. Carrow
Robert B. Harris
John L. Strauss

See next page for additional authors

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Authors
Steve Cadenelli, Joseph Troll, R. N. Carrow, Robert B. Harris, John L. Strauss, and Gerald G. Williams
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Professionalism
Turf Research
Conference Schedule

SPRING 1975
CONFERENCE ISSUE

BETTER TURF THROUGH RESEARCH AND EDUCATION
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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EDITOR’S MAILBOX

Professionalism
by Steve Cadenelli

For a long time we as superintendents have been hearing about the importance of upgrading our stature in the golfing world. We have been told that by taking advantage of all avenues of education such as seminars, field days, and conferences, we will help ourselves towards professionalism. In this same regard we have been demanding higher salaries, fringe benefits, and the status that supposedly belongs to professionals. Yet there are responsibilities in being a professional, many of which are ignored at our gatherings.

Professionalism demands excellence and pride. It demands the common respect and courtesy due all speakers regarding attention, attendance and quiet. We cannot expect to be considered professional if we do not treat those who judge us as the same. In this same respect, if we expect professional consideration from our employers, we cannot allow the actions of a few to create an image which is indeed, non-professional.

Occurences such as what happened at last year’s Fine Turf Conference are unexcusable and detract greatly from our reputation. This filters back to our clubs and hurts us in many ways.

The time has come to accept these responsibilities if we are indeed, professionals. Unquestionably, the great majority of our group are professional in every sense of the word. However, there are a few who are not and who detract from us. Only as a group can we control ourselves thus influencing our groups image.

It is not my intention to put down socializing and good times at our gatherings. These events are looked forward to with enthusiasm and are a great form of relaxation. But it is time to exercise some self-restraint as well as peer pressure. If we are to expect professional salaries and professional status then it is time to act in such a manner.
A relatively mild winter with little snow cover (in some areas) always prompts questions concerning winter golf course play. There are many published articles covering this subject and all point out that winter play can cause severe injury to turf.

Play on frost covered turfgrass can rupture plant cells, resulting in death of the tissue. When the soil is partially or completely frozen, "scuffing" foot traffic can shear the plant top from the root causing kill. Soil that is wet from even a light thaw can compact from play. The presence of footprints in the green is often evidence of compaction. However, compacted soil is like an invisible enemy; it may not always be readily seen. Nevertheless it takes its toll. The following year the grass in the green becomes thin and yellow Poa annua and Knotweed often increase as a result of compaction. A shortened root system may occur and as a result the plant is unable to tolerate stress of any kind.

The decision to open or close the course should belong to the Golf Course Superintendent and his Green Committee, and the alternatives should be explained to the members. One somewhat expensive alternative to the problem is to provide winter tees and greens.

There are many other related causes of winter injury, some of which can be prevented and others that are not easily controlled. The following is a brief discussion of a few of them.

Snow mold as caused by fungi severely damages turfgrasses but most Golf Course Superintendents apply a preventative and/or control fungicide prior to the first snowfall.

Desiccation of turf, another cause of injury, occurs when the soil is dry, frozen or even saturated. When any of these conditions prevail, the plant cannot absorb needed water and it wilts. Drying of turfgrass lacking a snow cover often happens in our region in late February or March and is enhanced by drying winds. Soil should be watered in late fall, especially high spots that are subject to run-off, but should not be saturated. This will help to prevent desiccation of dry areas. Hauling of water for golf greens lacking a snow cover in February or March may be required.

A prolonged ice cover may result in winter injury to turfgrass. The specific reason for kill due to ice is not always apparent but removal of or punching holes through the ice will help reduce the injury. Topdressing in late fall tends to reduce the formation of ice. Ice that can't easily be removed mechanical means can be induced to melt by an application of either a dark topdressing material or a natural organic fertilizer.

Direct low temperature stress can result in death of grass plants; some species are more susceptible to this stress than others. Annual bluegrass is more prone to injury caused by low temperature than some bentgrasses. Grasses that are not "hardened off" and go into the winter succulent can succumb to sudden drops in temperature. Rapid thawing and freezing coupled with poor surface drainage often results in the death of turfgrass, especially Poa annua.

Golf Course Superintendents are well acquainted with most of the causes and prevention of winter injury. However, it is not uncommon to have years when Mother Nature prevails and winter injury occurs.

We again want to thank the clubs and the alumni who have contributed to the University of Massachusetts Turfgrass Research Fund. Progress reports and results of projects funded as such will appear in the Turf Bulletin. The present issue contains the one year results of our turfgrass variety trials.

CHIPCO
the most effective arsenal ever assembled to protect your turf

CHIPCO Spot Kleen
CHIPCO Microgreen
CHIPCO Turf Herbicide "D"
CHIPCO Spreader
CHIPCO Thiram 75
CHIPCO Crab Kleen
CHIPCO Turf Herbicide MCPP
CHIPCO Buctril
CHIPCO Turf Kleen

RHODIA INCORPORATED
AGRICULTURAL DIVISION
Somerset, New Jersey 08873
The Kentucky bluegrass variety trial area was seeded 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 split into 4 x 3 ft. subplots which received mowing height treatments of 3/4 and 1 1/2 inches. No irrigation was used and all plots were fertilized at 4 lbs. actual N/1000 sq. ft. per growing season. Plots were mowed twice weekly with clippings removed.

At the 3/4 inch mowing height (Table 1) superior cultivars were Nugget and K1-138. Other varieties that were generally satisfactory during 1974 include Victa, Continental, K1-131, Merion, K1-149, Baron, Adelphi, Parade, and K2-100. Delta ranked as inferior.

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<th>Cultivar</th>
<th>Quality Rating (9=ideal, 1=no turf)</th>
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<tr>
<td>Baron</td>
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<td>Merion</td>
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<tr>
<td>Birka*</td>
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<tr>
<td>Olympisp*</td>
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<td>P-142*</td>
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<tr>
<td>Arista*</td>
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<tr>
<td>Sydsport*</td>
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</tr>
<tr>
<td>WK-412*</td>
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*Seeded May 1974; all others seeded May 1973.
TURF BULLETIN

(Continued from Page 5)

were seeded in May 1974 ranked lower than those established in May 1973 due to severe fall panicum competition in the young turf stands.

When maintained at 1½ inch cutting height (Table 2) Merion, Vicita, Baron, Parade, KI-131, Continental, K2-100, and Pennstar exhibited satisfactory quality. Delta and Vantage were generally inferior.

Turfgrasses which demonstrated good early spring color included Delta, Park, KI-129, and Vantage. Nugget

<table>
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<td>Sydsport</td>
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<td>Wk-412*</td>
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</table>

*Seeded May 1974; others seeded May 1973.

had very poor color, while Merion and Continental were only fair.

A severe infestation of Helminthosporium leaf spot occurred in late spring. All Kentucky bluegrasses exhibited at least slight susceptibility (Table 3). Cultivars which had decidedly inferior resistance were KI-129, Vantage, Adelphi, Newport, and Aquilla.

In late summer dollar spot injury was evident on several varieties. Nugget, Aquilla, KI-138, KI-149, and KI-159 were most susceptible.

<table>
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<th>Cultivar</th>
<th>Color</th>
<th>Disease Ratings (0=none, 4=very severe)</th>
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*Seeded May 1974; others seeded May 1973.

THE MAGOVERY COMPANY, INC.
EST 1928 - INC. 1928
P. O. BOX 270, LAWNACRE ROAD, WINDSOR LOCKS, CONNECTICUT 06096
WINDSOR LOCKS 203-623-2508

41 MEADOW STREET
FAIRFIELD, CONNECTICUT 06430
(203) 255-2817

57 ALLEN STREET
SPRINGFIELD, MASS. 01108
(413) 733-6638

279 DALTON AVENUE
PITTSFIELD, MASS. 01201
(413) 443-4450
Perennial Ryegrass Variety Trial

1974, University of Massachusetts

By R. N. Carrow and J. Troll

The perennial ryegrass variety trial was established in May 1973, however a few cultivars were not seeded until September 1973. Each cultivar was seeded into 4 x 6 ft. main plots with each main plot split into two 4 x 3 ft. subplots for cutting height treatments of ¾ and 1½ inch. The plots were mowed twice weekly (with clippings removed) and received 4 lbs actual N/1000 sq. ft. per growing season. The area received no irrigation in 1973 or 1974. All treatments were replicated 3 times. Tables 1 and 2 contain the visual quality ratings and early spring color data for 1974.

At the ¾ inch cutting height the outstanding cultivars were a blend of Pennfine and Manhattan, Pennfine, a blend of Pennfine and Manhattan and Springfield, Manhattan and N7-157. When maintained at 1½ inch Pennfine, a blend of Pennfine and Manhattan and Springfield and Ensporta exhibited superior quality. During the mid-summer stress period, Pennfine and blends of Pennfine, Manhattan and Springfield demonstrated the highest quality turf.

No severe infestation of disease occurred during the 1974 growing season. Norlea and Pennfine had very good early spring color.

Table 2. Visual Quality Ratings and Early Spring Color for Perennial Ryegrasses Mowed at 1-1/2 Inches.

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<th>5/13</th>
<th>6/26</th>
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Sometimes it’s better to hear it from someone else...

Here’s what Berkley Carter of Tuckahoe Turf Farms, Slocum, R.I. has to say about

baron KENTUCKY BLUEGRASS
U.S. Dwarf Variety Plant Patent No. 3186

“Of all the bluegrasses, Baron is resistant to more diseases. I’ve had two different bluegrass fields side by side and Baron always shows more resistance. It holds up its color throughout the season with a minimum of water and fertilizer.”

“When I need a herbicide, Baron can take the shocks better without streaks or setbacks. It is an aggressive grass needing only minimum maintenance practices.”

“Baron comes up fast... that’s important to me. I want to see fuzz in 7 days so that the soil is protected as soon as possible.”

“It’s hard enough getting the seedbed ready. I’m not going to spoil everything with a poor quality seed. I don’t know why every sod grower doesn’t use Baron.”

“And your Jamestown Fescue is great too.”

Jamestown is perfect for a bluegrass blend, particularly Baron. It has great eye appeal and when sod is needed for sun and shade areas Jamestown/Baron really go well together.

One more comment from Berkley... “When you’ve got a good thing going – stick with it.”

There’s not much more we can add except that Lofts Pedigreed Seed Company or any authorized distributor is nearby wherever you grow sod.

Exclusive North American Grower and Distributor:

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Bound Brook, N.J. 08805 / (201) 356-8700

*Tuckahoe Turf Farms, growers of 600 acres of cultivated sod is one of the largest sod farms in New England.
Tall and Hard Fescue Variety Trial

1974, University of Massachusetts
By R. N. Carrow and J. Troll

The tall and hard fescues were seeded in September 1973. Plots were 4 x 6 ft. with 4 x 3 ft. subplots for mowing height treatments of 1½ and 2½ inches. All plots received 2.5 lbs N/1000 ft. 2 per growing season. Mowing was twice weekly and no irrigation was used.

Both hard fescues exhibited acceptable quality at the 2½ inch mowing height (Table 1, 2). At the low cutting height quality declined, especially in midsummer.

N4-60 and Kentucky 31 were the outstanding tall fescue cultivars at both cutting heights. Other cultivars which performed satisfactorily were Alta and Festal. Backfall exhibited inferior quality, especially in the spring.

Table 1. Quality Ratings of Tall and Hard Fescues Mowed at 1-1/2 Inch.  
<table>
<thead>
<tr>
<th>Cultivar</th>
<th>5/13</th>
<th>6/26</th>
<th>7/18</th>
<th>8/16</th>
<th>10/1</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaldis*</td>
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<td>5.3</td>
<td>6.7</td>
<td>6.5</td>
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<td>6.6</td>
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<tr>
<td>Karott*</td>
<td>6.7</td>
<td>5.3</td>
<td>6.2</td>
<td>6.7</td>
<td>7.3</td>
<td>6.4</td>
</tr>
<tr>
<td>Kent 31 + Alta</td>
<td>4.2</td>
<td>6.2</td>
<td>6.5</td>
<td>7.0</td>
<td>5.5</td>
<td>5.9</td>
</tr>
<tr>
<td>Alta</td>
<td>5.0</td>
<td>6.2</td>
<td>6.5</td>
<td>7.5</td>
<td>6.7</td>
<td>6.4</td>
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<tr>
<td>S-170</td>
<td>4.5</td>
<td>5.3</td>
<td>5.2</td>
<td>6.7</td>
<td>6.5</td>
<td>5.6</td>
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<tr>
<td>N4-60</td>
<td>6.7</td>
<td>6.5</td>
<td>7.3</td>
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<td>7.2</td>
<td>7.7</td>
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<td>6.9</td>
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<td>Festal</td>
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<td>5.5</td>
<td>6.7</td>
<td>7.3</td>
<td>7.0</td>
<td>6.4</td>
</tr>
<tr>
<td>Backfall</td>
<td>3.5</td>
<td>5.2</td>
<td>5.7</td>
<td>6.8</td>
<td>6.5</td>
<td>5.5</td>
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*Hard fescues

Table 2. Quality Ratings of Tall and Hard Fescues Mowed at 2-1/2 Inch.  
<table>
<thead>
<tr>
<th>Cultivar</th>
<th>5/13</th>
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<th>8/16</th>
<th>10/1</th>
<th>Average</th>
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<td>6.8</td>
<td>7.2</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Kent 31 + Alta</td>
<td>4.2</td>
<td>6.0</td>
<td>7.2</td>
<td>7.5</td>
<td>7.3</td>
<td>7.4</td>
</tr>
<tr>
<td>Alta</td>
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<td>6.7</td>
<td>6.3</td>
<td>6.8</td>
<td>7.0</td>
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<td>5.7</td>
<td>6.7</td>
<td>6.7</td>
<td>6.0</td>
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<tr>
<td>N4-60</td>
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<td>7.0</td>
<td>7.3</td>
<td>7.5</td>
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<td>6.8</td>
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<tr>
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<td>7.3</td>
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<tr>
<td>Backfall</td>
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<td>5.8</td>
<td>6.2</td>
<td>6.3</td>
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<td>5.8</td>
</tr>
</tbody>
</table>

*Hard fescues

Red Fescue Variety Trial

1974, University of Massachusetts
By R. N. Carrow and J. Troll

The red fescue variety trial was initiated in September 1973 with the seeding of 14 cultivars. Another 14 cultivars or blends were established in May 1974. Each cultivar or blend was replicated three times in 4 x 6 ft. main plots, which were split into 4 x 3 ft. subplots for cutting height treatments of ¾ and 1½ inch. Fertilization was at the rate of 2.5 lbs N/1000 ft. 2 per growing season. Plots were mowed twice weekly with clippings removed. No irrigation was utilized. Only limited data was collected on the May 1974 seeded cultivars, therefore, comments not be made on these varieties at this time.

At the ¾ inch mowing height Halifax, Atlanta, Golfrood and Jamestown exhibited satisfactory quality through out the year, (Table 1). K1-190 and Ruby were decidedly inferior. At the 1½ inch cutting height Dawson and Golfrood were superior, while Jamestown, Barfalla, Highlight, Scarlett and Atlanta were generally satisfactory, (Table 2). Cultivars which exhibited low quality much of the growing season were K1-190, K1-191 and Ruby.

Helminthosporium leaf spot infestation was quite evident in the spring and summer, (Table 3). Waldorf and Atlanta exhibited slight to moderate injury in the spring. In mid-July Ruby, Waldorf, K1-190 and K1-191 (Continued on Page 13)
1975 TURF CONFERENCE

"Better Turf Through Research and Education"

March 5, 6, 7, 1975
Highpoint Motor Inn Chicopee, Massachusetts

Sponsored by Massachusetts Cooperative Extension Service
Massachusetts Turf and Lawn Grass Council
Golf Course Superintendents Association of New England

WEDNESDAY, MARCH 5

—Morning—

11:00 Registration—Lobby

—Afternoon—

GENERAL SESSION
Hall of Fame
Chairman: Dr. Joseph Troll
University of Massachusetts/Amherst

1:00 Welcome
Dr. Randolph W. Bromery, Chancellor
University of Massachusetts/Amherst

1:15 Services for Turf Managers
Dr. Joseph Troll
Panel—
University of Massachusetts/Amherst
Extension, Dr. Edward K. Knapp
Assistant Director for Agriculture and
Community Resource Development
Research, Dr. John A. Naegle
Associate Director, Agricultural Equip-
ment Station
Golf Course Superintendents Association
of America
Dr. William E. Knoop
Director of Education
United States Golf Association—Green Section
Mr. William G. Buchanan
Agronomist

3:00 Break

3:15 Sub-airification of Greens
Mr. Frank Sirianni, Superintendent
Golf Course
Pennsylvania State University

4:00 Summary of Turf Research at University of
Massachusetts
Dr. Robert N. Carrow
University of Massachusetts/Amherst

4:30 Massachusetts Turf and Lawn Grass Council
Membership Meeting

4:45 University of Massachusetts Turf Alumni Meeting

—Evening—

Free—A good time to look up old friends.

THURSDAY, MARCH 6

GOLF COURSE SESSION
Hall of Fame

—Morning—

Chairman: Dr. Robert N. Carrow
University of Massachusetts/Amherst

9:30 How to Survive in 1975
Mr. Alexander M. Radko
Eastern Director
USGA Green Section
Panel—
Mr. Michael Leary, Supt.
Montammy Country Club
Mr. Charles Martineau, Supt.
Whippoorwill Club
Mr. Allen Grogan, Golf Committee Chairman
Baltusrol Golf Club
Mr. George Osburn, Grounds Chairman
Concord Country Club

11:00 Secondary and Micronutrients—Use and Abuse
Dr. Lindsay Brown
International Minerals & Chemical Corporation

11:45 Lunch

—Afternoon—

1:00 Using Water Correctly and Effectively
Dr. James Watson, Vice President
Toro Company

1:45 Pine Valley Automatic Watering Systems
Mr. Eb Steiniger, Supt.
Pine Valley Country Club

2:30 Dry Spots and Wetting Agents
Dr. John Madison
University of California/Davis
THURSDAY, MARCH 6
ALTERNATE SESSION
Room A, B, C
—Morning—
Chairman: Mr. Charles Mruk
Hercules Inc.

9:30 Seed and Fertilizer Regulations
Mr. James Cassidy, Asst. Director

10:15 Strange Name Kentucky Bluegrasses in
Lawn Turf Seed Mixtures
Dr. Robert W. Schery, Director
The Lawn Institute

11:00 A Modern Approach to Lawn Maintenance
Dr. Robert Miller
Chem-Lawn

11:45 Lunch

—Afternoon—

1:00 Tree Establishment and Fertilization
Dr. Robert J. Schramm, Jr.
University of Connecticut

1:45 Maintenance of Recreational Areas
Mr. Fred Galle
Callaway Gardens

2:30 Break

2:45 Pesticides for Use on Turf Areas other than Golf Courses
Mr. William E. Dugan
Kerr-McGee Chemical Corp.

3:30 Athletic Fields
Dr. W. L. Parks
University of Tennessee

—Evening—
Room A, B, C

7:00 Banquet
Dr. David J. Magidson
University of New Hampshire
"Contexts and Confusions"

FRIDAY, MARCH 7
GOLF COURSE SESSION
Hall of Fame
Chairman: Dr. Joseph Troll
University of Massachusetts/Amherst

9:30 How to Get the Most from Soil Conditioners and Activators
Dr. Eliot C. Roberts
University of Rhode Island

10:00 New Concepts in Topdressing Putting Greens
Dr. John Madison
University of California/Davis

10:45 Purr-Wick and USGA Green Section Methods of Green Construction
Panel—
Purr-Wick
Dr. William Daniel
Purdue University
Mr. Larry Runyan, Supt. Parks
Kansas City, MO.
USGA Green Section
Mr. Stanley Zontek, Agronomist
USGA Green Section
Mr. Robert Phipps, Supt.
Shorehaven Golf Club

CONFERENCE PLANNING COMMITTEE
Golf Course Superintendents Association of New England
Thomas Curran
Massachusetts Turf and Lawn Grass Council
Charles Mruk
University of Massachusetts
Joseph Troll
Robert N. Carrow

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Cooperative Extension Service, University of Massachusetts, United States Department of Agriculture and County Extension Services cooperating.

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Together, we can cover a lot of ground.

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KENTUCKY BLUEGRASS
BONNIEBLUE
PENNSTAR
FYLKING
NUGGET

FESCUES
SYDSPORT
PRATO
MERION

RYEGRASS
CREEPING RED
PENNLAWN
CHEWINGS
KOKET

KENTUCKY BLUEGRASSES
BONNIEBLUE
PENNSTAR
FYLKING
NUGGET

CROWNVETCH
Excellent erosion control when the use of turfgrass is impractical, especially on steep slopes and embankments. Its hardy plants crowd out weeds, require almost no maintenance, and never have to be mowed. Get Stanford's Penngift, Chemung or Emerald.

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Sod Food (12-4-8) (professional formula)
Lawn Food (10-8-3) (ureaform organic nitrogen)
Lawn Food (25-5-10) (with Nitroform", the slow-release nitrogen)
Organic (4-6-2) (100% natural organic nitrogen)
Weed and Feed (10-6-4) (lawn fertilizer with 2,4-D and Silvex)
Crabgrass Killer (10-6-4) (lawn fertilizer with pre-emergence crabgrass killer)

Plus — a complete line of wild bird feed and cage bird seed.

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P.O. Box 366/Buffalo, N.Y. 14240/Phone (716) 825-3300

15 CONVENIENTLY LOCATED PLANTS AND WAREHOUSES
were severely thinned by *Helminthosporium* at both cutting heights. Other cultivars moderate to severely infested were Wintergreen, Pennlawn and Barfalla at the low cutting height and Halifax, Atlanta, Wintergreen, Scarlett and Jamestown at the high height.

In June dollar spot injured several of the cultivars. Most seriously affected were K1-190, Waldorf and Barfalla.

Table 2. Visual Quality Ratings of Red Fescue Cultivars Mowed at 1-1/2 inch.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Quality Ratings (9 = ideal, 1 = no turf)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruby</td>
<td>6.2 6.0 4.8 5.0 6.0 6.6 5.6</td>
<td></td>
</tr>
<tr>
<td>Dawson</td>
<td>7.2 7.7 7.2 6.7 8.2 7.4</td>
<td></td>
</tr>
<tr>
<td>Halifax</td>
<td>6.7 7.5 4.7 5.2 7.3 6.3</td>
<td></td>
</tr>
<tr>
<td>Atlanta</td>
<td>5.8 6.8 5.8 6.2 7.3 6.4</td>
<td></td>
</tr>
<tr>
<td>Highlight (A)</td>
<td>5.8 6.8 6.5 6.3 7.0 6.5</td>
<td></td>
</tr>
<tr>
<td>Golfrood</td>
<td>6.0 6.5 7.3 7.8 8.0 7.1</td>
<td></td>
</tr>
<tr>
<td>Wintergreen (B)</td>
<td>7.2 6.8 5.8 5.5 6.3 6.3</td>
<td></td>
</tr>
<tr>
<td>K1-190</td>
<td>6.7 6.8 5.0 4.2 4.5 5.4</td>
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</tr>
<tr>
<td>K1-191</td>
<td>5.8 7.2 4.5 5.2 5.8 5.7</td>
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</tr>
<tr>
<td>Waldorf</td>
<td>5.2 7.0 4.7 6.0 7.8 6.1</td>
<td></td>
</tr>
<tr>
<td>Scarlett</td>
<td>6.3 7.0 5.2 6.3 7.0 6.4</td>
<td></td>
</tr>
<tr>
<td>Jamestown (C)</td>
<td>6.0 7.0 5.7 6.8 7.5 6.6</td>
<td></td>
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<tr>
<td>Pennlawn (D)</td>
<td>6.5 5.8 5.7 5.3 6.8 6.0</td>
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<tr>
<td>Engine*</td>
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<tr>
<td>Barfalla</td>
<td>6.5 7.3 6.0 6.3 7.2 6.7</td>
<td></td>
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<tr>
<td>Erika*</td>
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<tr>
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<tr>
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<td>A+C*</td>
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<tr>
<td>A+E*</td>
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<td></td>
</tr>
</tbody>
</table>

* Seeded May 1974, all others seeded September 1973.

Table 3. Disease Ratings for Red Fescue Cultivars (0 = none, 4 = very severe).

<table>
<thead>
<tr>
<th></th>
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<tbody>
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<td>0 0 1.3 0.7 0</td>
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<td>1.3</td>
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<td>0.3</td>
<td>1.0</td>
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<td>1.0</td>
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<td>1.0</td>
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<td>Engine*</td>
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</tr>
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<td>Barfalla</td>
<td>0 0 1.7 1.3 2.0</td>
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<td>D+B*</td>
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<tr>
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<tr>
<td>A+C*</td>
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<tr>
<td>A+E*</td>
<td>- - - - - -</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Seeded May 1974, all others seeded September 1973.

TUCKAHOE
TURF FARMS
Indian Corner Rd.
Slocum, R.I.

Merion Blends
Penncross Bentgrass
Big Roll Sod System
Sod Palletized
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By Dr. John L. Strauss
Taralan Corporation

Phosphorus is called the key to life. No cell is living unless it contains phosphorus. Phosphorus in the form of acid is also the key to a successful spring fertilizer season. No tonnage will be manufactured without it.

The short supply of phosphoric acid for domestic use and the tight situation with rail cars will necessitate that top management practices be employed to meet customer demands for fertilizer.

The following points may help channel your thoughts into a positive plan of action in which both you and your customers will be satisfied, even with the prospect of a restricted phosphoric acid supply.

Some universities, especially in the Midwest, are stating that the phosphate level of the soils have reached a level where no damage would be done to crop yields if fertilizer phosphate was curtailed or even eliminated in a year. This may be the year for fertilizer suppliers to do this.

Instead of applying a fertilizer with a 15 percent P₂O₅ content, talk the farmer into taking one with a lower P₂O₅ content of 10 percent. For example, by shifting from a 5-15-30 suspension to a 3-10-30 suspension, 750 tons of P₂O₅ would be stretched from 5,000 tons of final product to 7,500 tons of final product.

Using this principle on your entire product line, more of your customers could be served, you will save your tonnage base in a year of limited supply of raw material and many of the universities would consider this as agronomically sound.

Another point: Starter fertilizer requires the greatest quantity of phosphate on an analysis basis and this could quickly drain your phosphoric acid supply. Accordingly, restrict your starter sales and push for the earlier-applied plowdown or discedin fertilizer of lower phosphate content. As you cut back on the phosphate promotion, take up the slack in total nutrients by increasing the potash or nitrogen applications or both.

This would be an excellent year to expand your additive business. Apply crop protection chemicals and micro-nutrients as fertilizer is sprayed on the land. Spraying a mixed fertilizer on the surface with a herbicide which is disced in can still provide some starter effect from the incorporated phosphate.

Point three: In those areas where starter fertilizer is a “must,” suggest to your customers that they change from a starter application rate of 200 pounds per acre to the lower rates of application of “pop-up.” This will stretch your fertilizer to cover from three to four acres more. The quick-emergence effect will still be noted if the fluid fertilizer is placed within an inch of the seed.


Using Waste Heat in Agriculture

By Gerald G. Williams
Director of Agricultural Development
Tennessee Valley Authority

The unused heated water discharged from power plants represents a source of energy with a tremendous potential for economic development. For example, a nuclear power station such as the one being constructed by TVA at Browns Ferry on the Tennessee River will require about 1.8 million gallons per minute of condenser cooling water which will be discharged at a temperature of 25 to 27° F. hotter than intake water. This creates about 22 billion Btu's per hour that must either be dissipated into receiving streams by diffusion and/or into the atmosphere by cooling towers.

This huge amount of energy is being considered by TVA as a resource, and possible development opportunities in agriculture or aquaculture are being studied. These
include (1) heating and cooling greenhouses, (2) extending the growing season by soil warming, and (3) fish farming.

A heat transfer mechanism using hot water for heating and cooling greenhouses has been developed at Oak Ridge National Laboratory. This design will be tested in a pilot (research scale) greenhouse by TVA at Muscle Shoals, Ala. The greenhouse — approximately 25 feet by 100 feet — is under construction. Plans are to use this system for a much larger demonstration-scale complex at the Browns Ferry nuclear site. Major production emphasis will be upon high-value horticultural crops such as tomatoes, cucumbers, and lettuce.

Production of horticultural crops in fields with subsurface heating by means of a network of buried pipe circulating heated water appears promising. Experiments are being conducted at Muscle Shoals using heat cables to simulate underground warm water pipes. Results of two years’ data show that the early harvest yields can be increased substantially, while giving an early market advantage for high-value crops.

Several divisions within TVA are presently coordinating a catfish production demonstration with a private firm that is using warm water from the TVA Gallatin Steam Plant near Nashville, Tenn. By passing warm discharge water through concrete raceways, the growing season had been increased considerably, reducing the time required to produce a marketable fish.

Beneficial uses of waste heat will solve some but may not solve all of the heat disposal problems of power stations. In any case, a very great potential does exist to use this energy for agricultural development purposes.

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You Can Make It Easier To Collect Soil Samples

By Robert B. Harris
Vice Chairman
Harris Laboratories, Inc.

Every fluid fertilizer dealer needs a complete soil testing program for his customers, yet the difficulty in collecting samples often stops the dealer cold. How can you make the job easier? There are several ways, including using the right equipment the right way, accurately projecting your cost, advance scheduling, and assigning responsibility.

First, as in any job, you’ve got to have the right equipment. Any equipment you use for collecting soil samples should be chrome plated, stainless steel, or plastic (never galvanized, rusty iron, or other metals that will interfere with laboratory analysis). There are three general types of sampling equipment: non-power (or hand); power; and fully automated.

Most dealers utilize non-power equipment because it is relatively inexpensive. However, non-power probes require considerable effort unless you are sampling very soft soils. This effort can be substantially reduced by improving your technique in using hand equipment.

First, recognize the limitations of non-power equipment. Unless the unit is an auger type (like a very long brace and bit), it is not designed for use on frozen or very hard soils. If the probe is short (less than waist tall), it is designed for occasional sample collection on very soft soil.

For any volume of samples (more than 20 a year is a good rule of thumb), you should have a soil probe that reaches your waist. Such units usually cost in the area of $40.00 each. The tip of a hand probe is very important. It is flared to force a larger diameter opening than the diameter of the probe tube. This means that

POWER SOIL SAMPLING equipment makes the job a lot easier. However, don’t force the auger into the soil, let it “float” down. With this kind of equipment a sample can usually be collected in less than 30 seconds.

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friction resistance will only occur at the tip, and not along
the whole length of the probe.

This principle of the tip cutting your effort in using
hand probes will work only if the probe is pushed straight
into the ground. If pushed at an angle, one side of the
probe will rub, greatly increasing friction. Of course,
the tip should be kept sharp for easier penetration.

Use your body weight over a hand probe (much
as you would with a post hole auger). Place the handle
into your stomach or chest and then bend at the knees with
your full weight forcing the probe into the ground.

Most manufacturers will supply probes with a foot
jack that can be used like a spade, but this technique
actually throws you off balance and only takes advantage
of a small percentage of your weight. Using a good hand
probe with your full body weight correctly over the top
can save your back and arms a great deal of strain.

Never hammer a probe into the soil. Not only are
you likely to damage the probe, but also you’ll often find
you have turned the probe into a stake and removing it
may be almost impossible without digging it out with a
shovel.

If your soils are very hard, or if you sample frozen
soil, or if you collect more than 50 soil samples a year,
you’ll probably find that power equipment is worth con­
sidering. Most hand-held power units operate on 12 volts
d.c. Power can be obtained from your pickup, from a
dry-cell, or a regular automotive battery carried in some
other vehicle. Complete units usually cost in the neighbor­
hood of $250.00 although costs can vary considerably based
on the options you select.

Of course, the power units greatly speed the sample
collection process. Most are basically 12-volt drills with
special augers and sample collection containers. Since they
are auger units, they shred the soil sample which allows
easier mixing of the various probes taken in an area.

FULLY AUTOMATED soil samplers are expensive, but
make sample collecting as easy as driving over the field.
Be sure to check where the auger is aiming before start­
ing the unit.

When using power equipment, make certain that you
do not force the auger into the soil. If you do force it,
one of two undesirable things is likely to happen. First,
the bit may catch solid, thus placing a tremendous “kick”
on your hands and wrists. Second, the bit may work
just like a screw and screw itself into the soil. Most d.c.
motors are not reversible so the auger will have to be
dug out of the soil with a spade.

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To properly use a power probe, stand on the sides of your sample collection container and place the tip of the auger just above the soil in the center of the container. Have a loose grip on the handle of the drill, turn it on, and slowly (with only a little downward pressure) let the auger penetrate the soil (it is almost a “floating” sensation).

The soil will then be easily augered up into your sample container. When you've reached the desired depth, leave the unit on and extract it from the soil. Even done slowly and carefully, the whole operation will usually take less than 30 seconds.

Dealers carry power equipment into the fields by a wide variety of means. Some use dry cells on a backpack and walk the fields. Others use a wet battery carried on a motorcycle, three-wheeled utility power cart, snowmobile, or an all-terrain vehicle. Many hook the unit into their pickup, mount the drill and auger on the bumper, and drive into the fields.

While obviously more expensive than hand equipment, the power units greatly speed sample collection, take the heavy labor out of sampling, allow you to sample unusual areas and at any time of the year (frozen ground particularly) when non-power is not practical, and probably assure better samples of an area than you will with hand equipment.

At the “top of the line” in sampling equipment are automated units that mount on the truck, jeep, or ATV and operate at the push of a button. These units cost over $1,000, but are used by many dealers who collect a large number of samples each year (usually over 200 samples a year are needed to justify such a unit). Some units are mounted permanently on the vehicle and require substantial alteration, while others are removable and require little or no change in the vehicle.

These units have the distinct advantage that the operator never has to leave the driver's seat of his ve-
vehicle. The potential customer can ride along to mix and bag the samples and, of course, serve as a captive audience for conversation about products.

The automated sampling units do require normal maintenance. Care must be taken when entering fields through ditches since the auger may be slightly lower than the truck body and hit high center. Some dealers have found it advisable to mount a braced steel "knocker" bar under the cab, just ahead of the auger for the automated sample. This bar knocks over obstacles like frozen corn stalks before they can bend the sampling unit.

When using automated equipment, always open the door or the window and observe the spot the auger will penetrate before initiating the sampling cycle. Probing through a cow pie, rocks, or excessive stubble can distort the eventual laboratory reading on your sample.

Using the right equipment in the right way greatly reduces your work in collecting soil samples. However, many dealers still seem to underestimate the cost of collecting samples. You can roughly figure your costs by taking the cost of sampling equipment and dividing by the number of samples you plan to collect in three years (a normal life for good sampling equipment).

Then add the labor costs for a man to drive to the field, collect the samples, and return (this figure goes down as your sampling equipment becomes more automated). Add gas and maintenance for the vehicle and overhead (taxes, insurance, etc.) for the employee to reach a final figure.

You might want to compare that figure against custom rates for soil sample collection. Harris Laboratories provides all equipment and personnel to collect soil samples at the rate of $200 per eight-hour day. Terrain and

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weather have substantial impact on the number of samples collected, but usually we can collect 25 samples (or 200 probes) per day. That rate is $8.00 per soil sample collected.

Collecting a good soil sample is expensive. It's also an easy task to put off by saying you're too busy now, but can get to it next month when things slow down. That practice usually leads to no sample collection, no soil test results, and no guide to accurately allocate your limited fertilizer.

That can be avoided by advance scheduling and assigning responsibility. Decide today who you are going to collect samples from, then when you're going to collect. Decide who's going to pay for the samples and begin calling customers to set actual dates. Schedule now for fall and early winter, leaving one week out of four open for recovering from bad weather.

Sure, you don't have anyone in the plant who can do the job. They're all too busy doing something else. In some cases that's true, but look carefully to be sure. Remember that with good equipment the job is easier and faster and with good advance scheduling you have a continual benchmark of progress.

If you absolutely cannot find someone in your plant, then consider hiring a retired person in the community. They can be paid on a "per sample" basis and often prove to be an excellent person to assign the total task of sample collection. Other options for part-time employees can be used (high school students, housewives, etc.), but these are often more difficult to schedule and control.

It is extremely important to select one person and specifically assign them the sampling responsibility.

These steps can all help you make soil sample collection easier. Collection of the sample is the first step in establishing a good soil analysis program for your customers. Make a commitment to a program today. It pays.

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