LAWN INSTITUTE

Harvests

Volume 30 Number 2 JULY 1983

CONTENTS

THE HARVEST MIX

(AN INTRODUCTION TO THIS ISSUE OF HARVESTS)

Harvests Volume 30, Number 2 (July 1983) follows The Lawn Institute Annual Membership and Board of Directors meetings held in San Francisco on June 28. Reports of this meeting are featured in Directors Dialogue and Quarterly Program Report sections.

More GCSAA Convention reports are reviewed and the Score Card section is devoted to the 1983 Midwest Regional Turf Conference. The timeliness of these topics makes clear the reason professional turf managers rate these educational conferences high year after year.

More on "How Green is Green" is presented in Readers Forum section. Dr Lloyd Callahan of the University of Tennessee presents a look at the value of turfgrasses in The Volunteer State. Dr. A. Martin Petrovic sent in a 1977 report on the turfgrass industry in New York state. These data provide an interesting comparison.

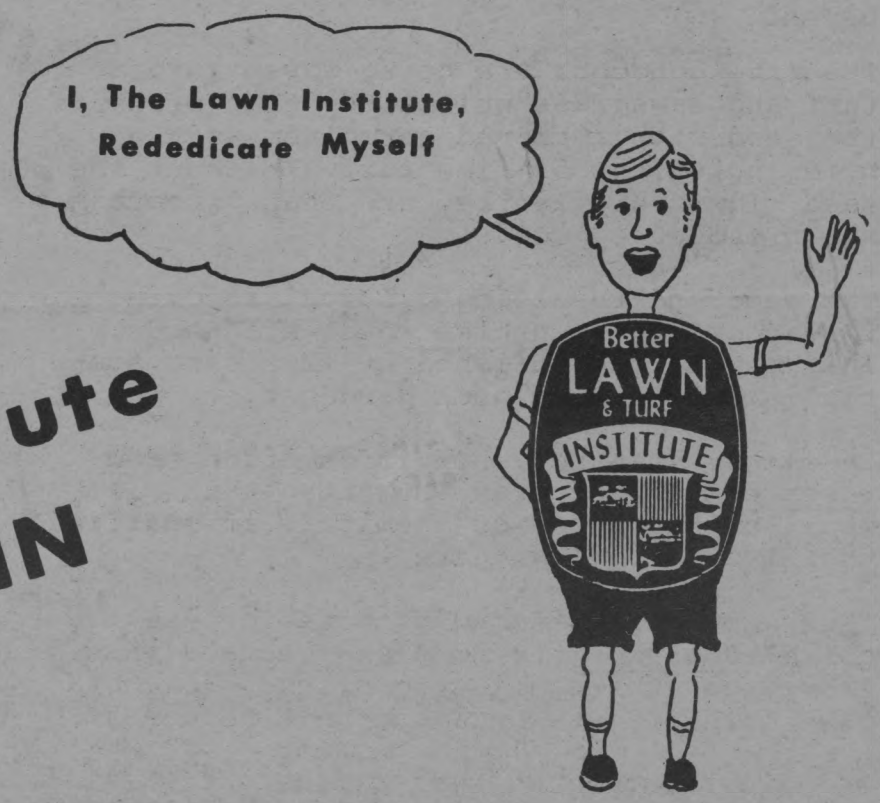
A backlog of material from Threshing The Journals has accumulated. Some of these reports are included in this issue.

The Lawn Institute Pitch (LIP) and Research Synthesis sections will be included in the next issue.

Have a good green summertime.

Director's Dialogue

(EDITORIAL ON LAWN INSTITUTE AND RELATED TOPICS)



The Lawn Institute BORN AGAIN

Dr Robert W Schery's 1982 Director's report entitled "The Institute's First Quarter Century: An Historical Perspective" described the development of an organization whose time had come during the early 1950's. Early progress and achievement placed The Lawn Institute at the cutting edge of a new era for turfgrass management and science. A time unlike any before it and unmatched in the generation of new concepts leading to quality turf and lawngrasses.

Now, some twenty five years later, the time is right for a rebirth of The Lawn Institute. A new dedication to the enhancement of our environment. A new emphasis on quality of out-of-doors life at home, throughout the neighborhood and on play and sports fields and golf courses wherever they may be. A country capable of making the technological achievements we have, can and must provide for the recreational enjoyment of its people in a green world of living plants. The mission of The Lawn Institute is directed towards achieving the best in lawns as a major component of this green world, and the lawn and turf industry is making great progress in providing grasses, equipment, fertilizers and chemical products that make turf and lawngrass care more effective.

worthy contribution.

The Lawn Institute—BORN AGAIN Cont

Five Key Concepts

The Lawn Institute - born again - has identified five key concepts that are fundamental for meeting the challenges of the future. As described in the 1982 report "The New Boy on the Block Looks to the Second Quarter Century", these are:

- seed
- professionalism
- research
- education
- public relations.

These five concepts are not new. It is the combination of the five and the perspective generated from the combination that is important for us during the 1980's and beyond.

The five concepts are being woven into a turf and lawngrass philosophy that presents the seed with improved germplasm as the basic ingredient of fine turf. Without the seed, lawns are little more than crabgrass and broadleaved weeds.

The seed and resulting grasses are cared for according to professional standards. This may be accomplished by lawn care specialists or by the home gardener.

In either instance, new information from research is required and often this will mean new equipment or chemicals or modified techniques for lawn care.

These new products and methods for use require education to some degreee and this is viewed as a continuing process for both lawn care professional and home gardener.

The final component that rounds out this philosophy is public relations. Public is people and people are the beneficiaries of lawn and sports turf. People are important to the turfgrass industry and our relations with them will determine how successful they will be in meeting lawn care expectations. As a by-product, the industry may measure how successful it has been. Even The Lawn Institute may look with some satisfaction upon increased public awareness concerning relationships between lawns and environmental quality.

Program Notes

During 1982-1983, emphasis has been placed on program development to best fit the philosophy related to the five key concepts just outlined. Brief notations concerning several programs and projects may help to serve as examples of new Lawn Institute direction.

Who We Are and What We Do

A brochure entitled Who We are and What We Do was released Fall 1983 to help present the history and describe the current mission of The Lawn Institute. This folder is continuing to introduce the organization to those who may be interested in our program and services. In order for us to be of assistance, people must know who we are and what we do.

Lawn Institute Harvests

The newsletter, Better Lawn Harvests, received a new format with Volume 29 Number 3 (October 1982 issue) and a name change to Lawn Institute Harvests with the introduction of a tabloid format for Volume 29 Number 4 (January 1983 issues). The new format features twelve sections organized as General Topics or Technical Topics. Various sections are included or omitted from specific issues depending on availability of material and on space limitations. The twenty four page tabloid includes about as much copy per issue as the thirty page mimeograph released previously.

A bulk rate mailing permit was obtained and newsletters are being distributed without use of a protective envelope. The mailing list has been increased from just under 200 to over 800 with major emphasis being placed on having Harvests available to turfgrass research and education leaders. Because of this effort, The Lawn Institute is becoming better recognized as an organization contributing to the advancement of turfgrass science.

Press Kits

The usual Early Spring Press Kit was delayed in its release and finally become a Late Spring/Early Summer Press Kit. A revision of the mailing list increased the cool, humid region contacts to 1670. The previous list of about 1000 included addresses other than those in the cool, humid region. In addition, there are 554 names and addresses throughout the southern states (fourteen states) including both humid and arid regions for which a separate mailing is planned for the future. At a current cost of about $1.80 per kit mailed, additional funding will be necessary prior to expanding Press Kit coverage into southern states.

The Lawn Institute—BORN AGAIN Cont

The Late Spring/Early Summer Press Kit featured 19 sheets, 34 sides. A survey resulting in a 15 % return of those contacted was generally favorable. New contacts with Cover Story editor for USA Today and with several radio stations indicated that the mailing list update and revision was worth-while.

Fall 1983 should see a computerization of the Press Kit mailing list so that future changes will be handled accurately and speedily.

Lawns, Gardens and Pools- 1983

Twenty two articles of varying length on lawns were written for the 1983 Lawns,Gardens and Pools. This release in early spring to some 3,000 newspaper and newsletter editors provides information appropriate for the start of the gardening season. Since only seven percent of those responding to our survey receive Lawns, Gardens and Pools it doesn't seem that there is much of an overlap between their mailing list and ours.

I Speak for the Lawn

The Late Spring/Early Summer 1983 Press Kit introduced an animated grass plant who speaks for the lawn. Professor Lawrence S. Dickinson at the University of Massachusetts used to urge his students to listen to the little grass plant speak. Learn from what it's trying to tell you. Although highly unscientific in its technical aspects, this method is most effective in practice and used widely by professional turf managers. Now, The Lawn Institute speaks for the lawn. We will be interested in seeing the extent to which this approach is picked up and used by garden writers and communicators.

In the months ahead, other living components of the landscape will be given faces and names as we attempt to tell about landscape ecology and environmental quality right there around the home. Much practical lawn care information will be a part of this educational effort.

LISTS

Lawn Institute Special Topic Sheets were introduced with the Late Spring/ Early Summer 1983 Press Kit. Sixteen of these sheets were released. They provide essential functional information on a wide range of topics. The series will be expanded and further developed during 1983-1984.

Trade Journal Articles

Major writing emphasis was placed on the development of LISTS and on the creation of an "I Speak for the Lawn" concept in addition to conventional Press Kit material and on a new format for Harvests during 1982-1983. A contribution was made to 1983 Lawns, Gardens and Pools and the following three articles were published-

The March 1983 issue of Lawn and Garden Marketing contained an article entitled "The Politics of Landscape Horticulture" by Eliot C Roberts.

The March 1983 issue of Lawn Care Professional featured an article by the editors entitled "Overseeding: A Practice that has Come of Age". The Lawn Institute provided resource material.

The May 1983 issue of Lawn Care Professional introduced a new Seed Facts department with an article "The Seed is Basic" by Eliot C Roberts.

Landscape Ecology

Fourteen articles by Dr Robert W Schery have been assembled and reprints included in a folder entitled Landscape Ecology. These articles provide up-to-date information on the importance of lawns as components of the landscape. They are available upon request to the headquarters office in Pleasant Hill, Tennessee.

Lawn Institute Logo and Seal of Approval

Use of the Logo and Seal of Approval is not uniform by members of The Lawn Institute. Some do not use it at all. Others use the Logo on stationary. The Seal of Approval is used by some firms on the seed package and on tech-sheets describing the seed. The Logo is used in some advertising. Written material for news release and for trade journal articles carries the Logo when submitted for publication. Seldom is this used in the final publication. Additional effort is required to build a linkage between The Lawn Institute's research and educational effort and high quality seed available from member firms.

The Lawn Institute—BORN AGAIN cont

Membership

Membership in The Lawn Institue leveled off at fifty firms and individuals for 1982-83. Although the Executive Committe considered the matter of increasing membership, no real effort was made to implement suggestions and proposals discussed. 1983-1984 will feature more activity in this area. We have much to offer prospective members in addition to their interest in and support of our goals and objectives.

Turf Research and Education Conferences

The Lawn Institute contributed papers to the educational programs of the following conferences in 1982-83-

- New York State Turfgrass Conference; Rochester, NY;
- Tennessee Turfgrass Association Annual Conference; Nashville, TN;
- Midwest Regional Turf Conference; West Lafayette, IN;
- Arizona Turf and Landscape Conference; Tucson, AZ.

The following topics were developed for presentation at these and other meetings-

- Turfgrasses for Athletic Uses;
- Low Maintenance Lawns - Are They the Future ?;
- Lawn Seed Fit for a Global Market;
- Grasses That Fit the Climate;
- Turfgrass Germplasm Explosion;
- Lawngrass Seed- A Cultivar Clinic;
- Starting Grass Seed;
- The Lawn Institute.

In addition, The Lawn Institute participaed in the following regional and national conferences -

- Soil Conservation Society of America Annual Meeting; New Orleans, LA;
- Atlantic Seedsmen's Association Meetings; Williamsburg, VA;
- American Society of Agronomy Meetings; Anaheim, CA;
- Oregon Seed Growers League; Portland,OR;
- Golf Course Superintendents Association of American Fifty fourth International Turfgrass Conference and Show; Atlanta, GA.

Consultations with the following firms and organizations contributed substantially to the development of current perspectives related to The Lawn Institute and its mission -

- The Jacklin Seed Company; Post Falls, ID;
- E F Burlingham & Sons; Forest Grove, OR;
- Turf Seed Research Farm; Hubbard, OR;
- Ag Services Corporation; Salem, OR;
- Great Western Seed; Albany, OR;
- Northrup King and Co; Tangent, OR;
- Pickseed West; Tangent, OR;
- International Seeds; Halsey, OR;
- Oregon State University Seed Laboratory; Corvallis, OR;
- Western Washington Experiment Station; Puyallup, WA;
- Northrup King & Co; Minneapolis, MN;
- Department of Ornamental Horticulture; University of Tennessee, Knoxville, TN;
- Department of Agronomy, Virginia Polytechnic Institute and State University; Blacksburg, VA;
- Lofts Seed Co; Bound Brook, NJ;
- USDA Research; Beltsville, MD;
- USDA Plant Variety Protection Office; Beltsville, MD;
- Department of Agronomy, University of Maryland; College Park, MD;
- Musser International Turfgrass Foundation; College Park, MD;
- Chemlawn Corp; Columbus, OH;
- O M Scott & Sons; Marysville, OH;
- Opryland Hotel and Park; Nashville, TN;
- Nissan Motor Manufacturing Co; Smyrna,TN.

PRIORITIES FOR 1983-1984

The Lawn Institute has entered its second quarter century, not so much with a new mission, but with new definitions of who we are and what we do. Our goal is the enhancement of environmental quality through development of time tested lawns for a more beautiful America. We view the American public as supportive of this effort and willing to make a reasonable commitment towards its achievement. 1983-1984 program priorities will focus on the ease and enjoyment associated with lawn care and the enormous value to all of us from either direct or indirect contact with sports turf. Knowledge of lawngrasses and ecology amplifies this enjoyment. The Lawn Institute is in the communication business and we are dedicated to helping all who garden and appreciate lawns and sports turf. We hope to be in touch during 1983-1984.

Association and Society Reports

(PRESENTATIONS BASED ON KEYNOTE ADDRESSES AND ASSOCIATION AND SOCIETY SPONSORED CONFERENCES)

More GCSAA Conference Research Reports

Of the many reports presented at the 1983 Golf Course Superintendents Association educational conference in Atlanta, three were reviewed in the last issue of Harvests. Seven others are presented here in brief.

GRASSES

Three presentations are summarized as follows:

- Genetic Engineering of Turfgrass;
- Bentgrass Update;
- Perennial Ryegrass Update.

GCSAA Research Project Report-
Genetic Engineering of Turfgrasses

Dr William Torello
University of Massachusetts, Amherst, MA

Dr Torello looked into his crystal ball and reported on the prospects for cell and tissue culture yielding new turfgrasses from current research sponsored by The Golf Course Superintendents Association of America. What is being accomplished today is based on results of basic biological research over the past twenty to twenty five years.

Genetic engineering is simply the transfer of genes from one cell to another using cell and tissue culture techniques. The result is new genetic variation within turfgrasses that cannot be produced in nature. In this respect, it is clear that tissue culture will never replace classical plant breeding involving cross pollination. However, using genetic engineering techniques to construct genes and chromosomes synthetically for transfer into living cells provides a new means of developing plants with specific desirable growth characteristics.

Standardization of procedures is critically important. Starting with a whole plant, a few cells from a growing point are selected. These are placed on a growth medium that stimulates the development of callus tissue. The exact compostion of the growth medium (inorganic nutrients; organic nutrients such as carbohydrates, amino acids and vitamins; plant hormones such as auxins and cytokinins; and agar) is important in the creation of unorganized tissue (callus) made up of a mass of undifferentiated cells. First, callus must be initiated, then its development must be maintained, then a new plant must be generated back from the callus. This latter step is often the most difficult. All three require a high degree of environmental and media formulation control and sanitation. Once callus tissue has formed this may be subcultured and treated in various ways to induce mutations or to modify the genetic make up of the cells. To date, techniques have been studied for bluegrasses, fine fescues, ryegrasses and alkali grass. Both Yorktown II perennial ryegrass and Ram I Kentucky bluegrass produce callus tissue containing millions of cells. Some of these cells have mutations that are beneficial; others have no practical value. The challenge for the future is the development of new desirable types.

GCSAA Conference CONTINUED

Bentgrass Update

Dr C Richard Skogley
University of Rhode Island, Kingston, RI

Dr Skogley described the bentgrasses as among the best grasses suited for New England. Across the country from east to west and from north to south they are well respected for development of high quality golf turf.

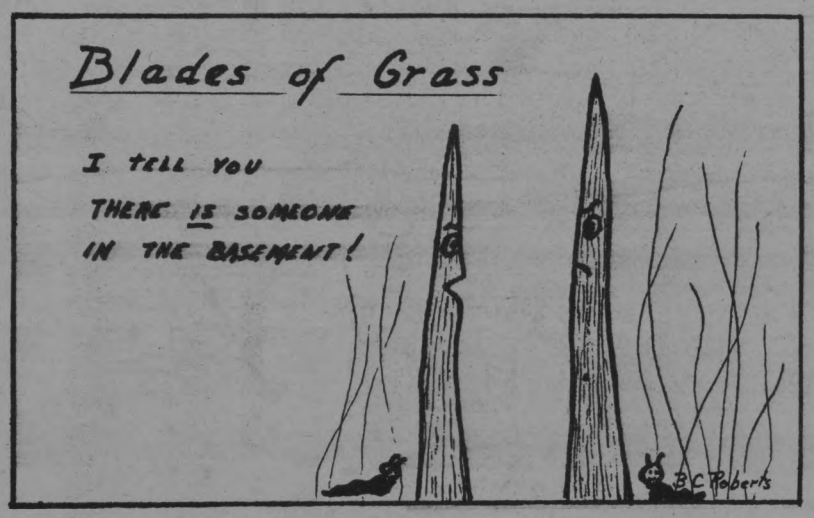
Management of bentgrasses on golf greens has been subject of much research over the years. Perhaps it's time to stop fighting bentgrasses in New England lawns; instead, join them and use them. In many instances, the gardener has created problems for bentgrasses that need not be.

Of thirty six species of Agrostis, only 3, creeping, colonial and velvet bentgrasses are used for fine turf. Great variation exists in nature. Research in Rhode Island is concerned with development and evaluation of new types.

Perennial Ryegrass Update

Dr C Reed Funk
Rutgers University, New Brunswick, NJ

Dr Funk reported that thirty million pounds of Manhattan perennial ryegrass seed are now used annually. Since its release in 1968, the new turf type perennial ryegrasses have really found an important place in lawns and sports turf. Regal and Pennant have improved insect resistance. Elka and Loretta are more resistant to crown rust. Manhattan II produces denser turf. Manhattan, Omega and Yorktown II have improved cold tolerance. Also reported as excellent cultivars are: Birdie, Citation, Derby, Diplomat, Pennfine, Palmer, Prelude, Gator, Premier, Blazer, Fiesta, Manhattan and Barry.



PEST MANAGEMENT

Four presentations are summarized as follows-

- Integrated Pest Management;
- Fungicide Formulation: Efficiency
- Anthracnose Update;
- Red Thread Update.

Integrated Pest Management Perspectives

Dr Robert Shearman & Dr Arthur H Bruneau
University of Nebraska, Lincoln, NE

Dr Victor A Gibeault
University of California, Riverside, CA

Dr's Shearman, Bruneau and Gibeault joined forces in a discussion on how to increase the effectiveness and efficiency of pesticides so that a reduction in dependency on chemicals might lessen hazards to the environment, including non target life and people. Integrated Pest Management (IPM) was presented as an interdisciplinary approach to plant protection. It is important to know both plants and pests in terms of identification, life cycle, and economic threshold. This requires frequent inspections and evaluations of the turf and lawngrasses.

IPM approaches involve the following:
- regulatory - quarantines and species exclusion;
- genetic - selection of correct species and variety for location;
- cultural - mowing height and frequency of fertilization;
- physical - traps and other means;
- biological - competition among organisms, natural controls;
- chemical - pesticide use.

IPM strategies feature a systems approach that includes: teaching, research, extension, industry. In order to make IPM work, coordination of effort is needed. Great progress is being made.

Fungicide Formulation: Efficiency

Dr Houston B Couch
Virginia Polytechnic Institute and State University, Blacksburg, VA

Dr Couch, while studying a control measure for which there was no disease, became interested in relationships between dry granules and water. He noted surface active granular materials were not as effective as they should be (4 to 6 times less effective). He related this to nozzle size and gallons delivered per one thousand square feet (from 0.5 to 34 gallons).

GCSAA Conference CONTINUED

Three diseases were studied, melting out of Kentucky bluegrass, Rhizoctonia solani and Sclerotinia dollar spot. Spray recommendations generally call for applications of fungicide at four to five gallons per one thousand square feet. Most effective control in these new studies was obtained with two gallons per one thousand square feet. It is important to know the fungicide being used, the amount required per one thousand square feet, the amount of water needed, the pressure in the system and the nozzle size. Some observed resistance to fungicides may be actually inadequate control because of the wrong amount of water and wrong nozzle size.

Anthracnose Update

Dr J M Vargas, Jr
Michigan State University, East Lansing,MI

Dr Vargas described a system of disease forecasting that was tested on incidence of anthracnose from June to September. Normally, four applications of fungicide are thought to be required during this period. A study of this disease indicated that air temperature, humidty, and leaf wetness were most important in creating favorable disease conditions. Three days at any one time with proper conditions will stimulate disease activity. A fungicide application provides control for about three weeks. With the use of computer recommendations from an infection model, control of anthracnose was obtained with two sprays. Effort to keep foliage dried off during periods favorable for infection paid off. At times of peak disease prediction, Bayleton could be used effectively up to four days following the prediction.

Red Thread Update

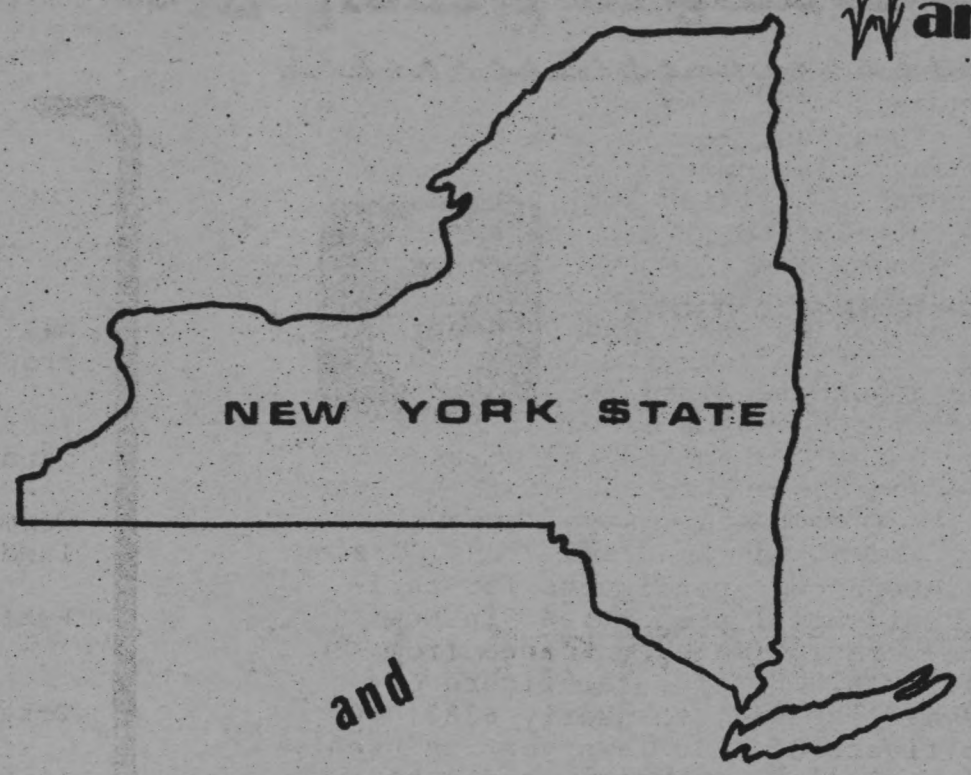
Dr Noel Jackson
University of Rhode Island, Kingston, RI

Dr Jackson described his work and that of other plant pathologists concerned with red thread. Fine leaved fescues and perennial ryegrasses are attacked by this fungus. Actually, there is more than one fungus involved. At least one that produces red thread and one or more that produce pink patch. Red thread produces strom or horns while pink patch does not. Pink patch usually grows out within a twenty four hour period. These are diseases of poorly nourished turf. Applications of nitrogen usually eliminate symptoms. Late in the season, such treatments may not be effective. Fungicide control is often not predictable. Pink patch is more difficult to control. Red thread is easier to control. Bayleton has given good results in Rhode Island tests.

TURFGRASS RESEARCH PLOTS SHOW DIFFERENCES IN COLOR AND TEXTURE WHEN GRASSES ARE GROWN UNDER THE SAME ENVIRONMENTAL CONDITIONS. SUCH REPLICATED STUDIES ARE ESSENTIAL BEFORE RECOMMENDATIONS CAN BE MADE CONCERNING THE BEST USE OF A NEW SELECTION.

Readers' Forum

(NEWS AND VIEWS)



HOW GREEN I$ GREEN IN

State turfgrass survey reports from New York and Tennessee provide an opportunity to compare recent data on the value of turf and lawngrasses in these two different parts of the country. Material provided by Dr A Martin Petrovic, Department of Floriculture and Ornamental Horticulture at Cornell University (Ithaca NY 14853) is presented here in condensed form. For additional information, contact Dr Petrovic. Tennessee data was provided by Dr Lloyd Callahan, Department of Ornamental Horticulture and Landscape Design, University of Tennessee (Knoxville TN 37901).

New York

The investigation of turfgrass land use acreages and selected maintenance expenditures across New York State was designed to (1) obtain representative data on turfgrass acreages in New York State , and (2) initiate a survey of economic implications of turfgrass maintenance expenditures in New York State.

The Land Use and Natural Resources Inventory of New York State (LUNR), housed at Cornell University's Resource Information Laboratory, served as a base for the study. It was possible to use the Inventory to identify categories of land use involving turfgrass, then to assign a priority level to each category, and to develop formulae to assess typical amounts of turfgrass associated with a particular land use. To obtain current figures on categories not directly available through LUNR, contacts were established by telephone with resource people at Cornell University, private and commercial organizations and some government offices of New York State at Albany, as well as some units of federal government located in New York State.

The findings of the investigation revealed nearly 1,200,000 acres of turfgrass in New York State. This included turfgrass maintained at a high level of intensity and that which is more roughly maintained. Nearly 3/4 million acres of turfgrass were found to be on residential properties, over 80,000 on golf courses, 80,000 on parks and recreational land, almost 68,000 acres in commercial development, and over 45,000 in educational facilities, over 42,000 associated with highways, and nearly 30,000 acres at airports.

How Green Is Green ? CONTINUED

ECONOMIC IMPLICATIONS

Annual maintenance expenditures for turfgrass on residential properties in New York State were estimated to range from almost $191,000,000 (if a low figure of $50/lawn/year is used) to nearly $382,000,000 (if a figure of $100/lawn/year is used). For institutional, commercial, and public lands, different low and high figures were respectively assigned to each on a per acre/year basis. It was estimated that institutional land turfgrass maintenance expenditures range from a low figure of $24 million to a high of nearly $38 million; commercial lands from a low of $78 million to a high of almost $114 million. Public lands turfgrass maintenance expenditures are estimated to be at over $20 million for the low figure to nearly $62 million for the high.

TOTAL MAINTENANCE EXPENDITURE
OF TURFGRASS IN NEW YORK STATE - 1977

	A*	B*
Residential properties	$190,859,250	$381,718,500
Institutional lands	24,009,600	37,990,050
Commercial lands	78,270,886	113,869,386
Public lands	20,585,200	61,755,600
Total	$313,724,936	$595,333,536

A* is a representative figure of the lowest values obtained in this survey for maintaining turfgrass.

B* is a representative figure of the higher values obtained in this survey for maintaining turfgrass.

LAND DEVOTED TO TURFGRASS
IN NEW YORK STATE - 1977

Categories Surveyed	Number of Acres
Residential properties	763,437
Commercial development	67,792
Golf courses	80,255
Sod farms	5,675
Educational facilities	45,385
Parks & recreational land	80,000
Highways	42,200
Cemeteries	27,000
Health facilities	5,000
Correctional facilities	1,171
Military lands	2,034
Airports	29,518
Religious institutional lands	7,000
Water supply facilities	3,000
Barge canal system	1,600
Water control structures	5,000
Sewage treatment facilities	2,500
Solid waste disposal areas	12,000
Raceways	1,000

Total number of acres of turfgrass in New York State is 1,181,567

1982 UPDATE OF THE ANNUAL MAINTENANCE
EXPENDITURE OF TURFGRASS IN NEW YORK STATE

The 1977 findings were used to estimate the 1982 expenditure for turfgrass maintenance for the various land use categories. It was determined that the higher value of $600 million was a more realistic estimate of the maintenance expenditure than was the lower value.

The 1982 value reflects a 12 % per year inflationary adjustment. The figure does not include the value of equipment replacement which is substantial. Therefore, the turfgrass industry in New York State is a billion dollar a year agricultural production and service industry.

1982 Estimate of Maintenance Expenditure of Turfgrass in New York State:

Residential properties	$672,900,000
Institutional lands	66,900,000
Commercial lands	200,800,000
Public lands	109,200,000
Total	$1,049,800,000

How Green Is Green ? CONTINUED

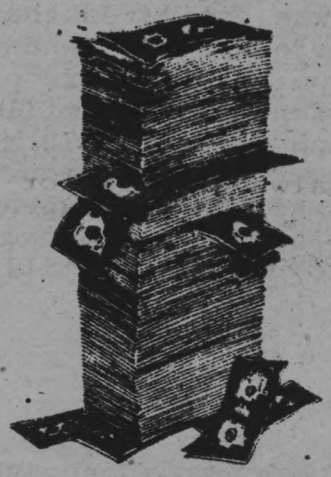
Tennessee

A national suvey estimate conducted between 1956 and 1965 on annual turfgrass maintenance expenditures showed a total of $4,325,794,086.00. Residential lawns comprised 69.4%, highways 10.9%, cemeteries 8.4%, and golf courses 5.5%. All other turfgrass use areas comprised the remaining 5.8% Tennessee's share of this expenditure estimate was $86,515,882. These expenditures constituted taxable income revenues for each state. As of 1983, this 4.3 billion dollar national industry has more than doubled with Tennessee maintaining at least a proportional share.

Tennessee now has approximately 40 turfgrass sod growers, over 250 golf courses, 29 state parks, 10 national parks and parkways, and a vast interstate and highway system with turfgrass medians and roadsides. The estimated acreage in commercial and specialized turf is 22,000 for golf courses and 4,000 for sod farms. There are 8 golf courses in our state parks, comprising over 1,000 acres of the approximately 81,418 acres in state parks. National parks, parkways, monument areas and cemeteries in Tennessee comprise over 532,069 acres.

Based on the figures from the 1956 to 1965 survey, the estimated residential home lawn maintenance expenditures alone are approximately $60,042,022 and golf course expenditures are approximately $4,758,374. However, a 1983 annual maintenance budget for golf courses in Tennessee is approximately $12,500,000, more than 2 1/2 times the 1956 to 1965 survey estimates. Todays value of the turfgrass sod on golf courses alone is over $23,000,000. Gross sales from sod growers is over $6,000,000.

Tennessee also grows most of the bermudagrass seed and all of the lespedeza seed used on highway right-of-ways. The largest annual revenue producing area is the maintenance of home lawns and sale of seed, sod, fertilizer, chemicals and equipment which in 1983 approximates $156,109,257.



$ $ $ $ TOTAL PROGRESSIVE REVENUES FOR KEY TURFGRASS AREAS IN TENNESSEE $ $ $ $

	National (1956-1965)		Tenn (1956-1965)	Tenn(1983)*
TOTALS	= $4,325,794,086	(%)	$86,515,882 =	$235,038,719
Lawns	= 3,002,101,097	(69.4)	= 60,042,022 =	156,109,257 #
Hwys	= 471,511,556	(10.9)	= 9,430,231 =	24,518,600 #
Cem.	= 363,366,704	(8.4)	= 7,257,334 =	18,859,068
Golf Crs	= 237,918,674	(5.4)	= 4,758,373 =	12,500,000 #
Others	= 250,896,056	(5.8)	= 5,019,921 =	17,051,794
Sod farms	= (not included)		= =	6,000,000

* - 2.6 X TN 1956-65

- Known to be low

Compared with leading state agricultural commodities, this would rank the Turfgrass Industry in the State of Tennessee at least fourth, but probably third.

QUARTERLY PROGRAM REPORT

(INSTITUTE PROGRESS AND ACHIEVEMENT)

The Lawn Institute as an Affiliate Member of the American Seed Trade Association congratulates ASTA on its 100th Anniversary. Annual membership and board of directors meetings of The Institute are scheduled with ASTA each year. Reports of these meetings reflect program progress and achievement.

ASTA'S Centennial Convention 1883 - 1983

William T Schapaugh, ASTA President, traced 100 years of Seed Trade from the Empire State to the Golden Gate. He described this as a period influenced strongly by two forces - Freedom and Excellence. Freedom to compete within a free enterprise system of fair trade and fair rules. Excellence through leadership and high standards involving public and private exchanges to form what has become a tradition. These forces have resulted in a seed trade prepared for the changes that are ahead. Change always calls for leadership in both research and business practices, and will involve new high tech expertise. The years ahead will shape our institutions and formulate ground rules for all agricultural pursuits.

Roy A Edwards, ASTA Past President, reviewed One Hundred Years of the Seed. This, a message of creation, a message of survival, emphasized the importance of the Green Revolution to all people. The value of public and private research to preserve seed and to shorten the time required to improve seed and to develop a modern system for improvement is well recognized in agricultural circles. Public understanding and support are near at hand.

Vice President Louis N Wise of Mississippi State University spoke of the contribution made by Land Grant Universities and particularly Mississippi State in degree granting and short course programs. These were described as excellent examples of cooperation between public and private interests. Interests that have made the American farmer the chief beneficiary. Matters of information and communication are of concern to all involved in seed trade and the researcher and educator are where the action is now and will be for years to come.

Happy 100th Anniversary ASTA !

Summary of the 1983 Annual Meeting of The Lawn Institute

The Lawn Institute Annual Membership and Board of Directors meetings were held in conjunction with the American Seed Trade Association's 100th Anniversary Convention in San Francisco the end of June.

Norman Rothwell of Lindsay, Ontario, Canada was elected to a third term as President of the Institute. His leadership has been important in the relocation of headquarters facilities from Marysville, OH to Pleasant Hill, TN and in assisting with the transition from Dr Schery's directorship to that of Dr Roberts. The following Executive Committee and Board of Directors will serve for 1983-1984:

Executive Committee:

President - Norman Rothwell- N M Rothwell Seeds, Lindsay, Ontario, Canada;

Vice President - Robert Peterson - E F Burlingham & Sons, Forest Grove, Oregon;

Secretary-Treasurer - Robert Russell - J & L Adikes, Inc, Jamaica, New York;

Committee Members:

Doyle Jacklin - Jacklin Seed Company, Post Falls, Idaho;

Howard Schuler - Northrup King & Co, Minneapolis, Minnesota;

Harry Stalford - International Seeds Inc, Halsey, Oregon

Board of Directors: In addition to members of the Executive Committee:

Gil Barber - Southern States Cooperative, Richmond, Virginia;
Jim Collins - Full Circle, Inc; Madras, Oregon;
Dave Doerfler - Oregon Fine Fescue Commission, Salem, Oregon;
Jay Glatt - Turf-Seeds Inc, Hubbard, Oregon;
Bill Hill - George W Hill & Company, Florence, Kentucky;
Drew Kinder - Whitney-Dickinson Seeds Inc, Buffalo, New York;
Ben Klugman - Twin City Seed Company, Minneapolis, Minnesota;
Jon Loft - Loft's Seed Company, Bound Brook, New Jersey;
Ed Mangelsdorf -Mangelsdorf Seed Company, St Louis, Missouri;
Cliff Matilla - Merion Bluegrass Association, Seattle, Washington;
Scott Patterson - Pioneer Hi-Bred, Turf and Forage Division; Savage Minnesota;
Mike Robinson - Pickseed West, Inc, Tangent, Oregon;
Bob Wetsel - Wetsel Seed Company, Harrisonburg, Virginia;
Francis Wolf - Oregon Highland Bentgrass Commission, Salem, Oregon;
John Zajac - Garfield Williamson Inc, Jersey City, New Jersey.

The Executive Committee approved the following members for the 1983-1984 Variety Review Board:

Jerry Pepin - International Seeds -Chair
Leah Brilman - Jacklin Seed
Howard Kaerwer - Northrup King
Richard Hurley - Loft's Seed
Bill Meyer - Turf Seed
Drew Kinder - Whitney Dickinson Seeds

Reports of the Variety Review Board, the Executive Committee and the Director are presented as separate items in this issue of Harvests.

Presidential Comments by Norm Rothwell

The Lawn Institute during the past year has been characterized by four E's, one F and two G's.

New energy, eagerness, efficiency and effectiveness have been brought to bear on all aspects of the program. Past accomplishments have provided a sound basis for the future of our Institute with its focus on communications among members of the turf and lawngrass industry and between this great industry and the gardening public. In the year ahead, we look forward to growth as an organization and to program greatness as we continue to meet the challenges of the 1980's. We thank you Bev and Eliot for your most

Executive Committee Report

The Lawn Institute Executive Committee met in Williamsburg, VA on November 3 and again in Chicago, IL on March 23. Throughout the 1982-83 year, starting in July, a Monthly Report to Executive Committee members has kept them informed of office activities, programs and projects. Matters such as liaison with other organizations, program priorities, special project proposals, variety review, logo and seal of approval use, committee structure and membership have been considered in some detail by the Executive Committee.

Since most organizations are dedicated to their own specific objectives and goals, and of necessity concentrate in these areas, it is not easy to develop effective liaison. This is understood. Our first step has been one of informing others about us - who we are and what we do. Some progress is being made in working more effectively with other groups.

Program and project priorities are necessary because of limited funds. Major emphasis has been placed on programs within the cool, humid regions of the country, while studies are being made of best ways and means for becoming more active throughout the southern region. An effort has been made to introduce The Lawn Institute to a wider range of turfgrass scientists and practitioners. Expansion of Harvests mailing list has helped. Basically, a nonprofit research and education business league must be actively involved with the entire industry if it is to represent the seed trade effectively.

Special project proposals are numerous and worthy of consideration. We are pleased that an opportunity to contribute seed money, as one of four financial sponsors of the new "Compendium of Turfgrass Diseases" prepared by Dr Richard W Smiley, was of assistance to The American Phytopathological Society in the release of this publication.

Changes in cultivars listed by The Lawn Institute are recommended by The Variety Review Board. Forty eight cultivars: 18 bluegrasses, 7 fine leaved fescues, 5 turf type tall fescues 13 turf type perennial ryegrasses and 5 bentgrasses and special purpose grasses were recognized. Increased activity by the Board will result in changes for 1983-84.

Considerations of how to encourage and administer an expanded use of The Lawn Institute logo and seal of approval were fruitful. Such use constitutes a membership benefit that should be meaningful. New guidelines have been proposed and will be developed during 1983-1984

Quarterly Program Report CONTINUED

The committee structure for decision making is recognized as time consuming and generally inefficient. An organizational structure that minimizes this approach has been adopted by The Lawn Institute. The Executive Committee has responsibility for representing the interests of the Board of Directors and the membership. Lines of communication with the Executive Committee are always open for input on any item or topic.

Membership in The Lawn Institute has been stable for the past several years. No major effort has been made to attract new members. This topic remains on the agenda as it should. Increased interest in the organization has been evident in recent months and it seems likely that Supporting Memberships will become more popular. An additional membership classification has been suggested and this will be studied during 1983-1984.

Annual Report of The Lawn Institute Variety Review Board

Dr G W Pepin of International Seeds and chairman of The Lawn Institute Variety Review Board presented the following forty eight cultivars to be listed by the Institute for 1983-1984. These were approved at the recent Annual Meeting in San Francisco and will provide the basis for educational and public relations programs during the months ahead.

- J and L Adikes Inc; 182-12 93rd Ave, Jamaica NY 11423
  - Kentucky bluegrass - Adelphi
  - Perennial ryegrass - All*Star

- E F Burlingham & Sons Inc; P O Box 217, Forest Grove OR 97116
  - Kentucky bluegrasses - Birka, Bonnieblue, Majestic, Sydsport
  - Chewings fescues - Banner, Koket
  - Turf type tall fescue - Falcon
  - Perennial ryegrass - Pennant

- Full Circle, Inc; P O Box 49, Madras OR 97741
  - Kentucky bluegrass - Merit

- International Seeds Inc; P O Box 168, Halsey OR 97348
  - Kentucky bluegrasses - Enmundi, Vantage
  - Chewings fescue - Highlight
  - Creeping red fescue - Ensylva
  - Turf type tall fescue - Houndog
  - Perennial ryegrasses - Derby, Elka, Regal
  - Creeping bentgrass - Emerald
  - Poa trivialis - Sabre

- Jacklin Seed Company; W 5300 Jacklin Ave, Post Falls ID 83854
  - Kentucky bluegrasses - Eclipse, Glade, Fylking

- Loft Seed Company; P O Box 146, Bound Brook NJ 08805
  - Kentucky bluegrass - Ram I
  - Hard fescue - Reliant
  - Turf type tall fescues - Clemfine, Rebel
  - Perennial ryegrass - Yorktown II

- Mangelsdorf Seeds Inc; P O Box 327, St Louis MO 63166
  - Kentucky bluegrass - Arboretum

- Merion Bluegrass Association; 12341 25th Ave NE, Seattle WA 98125
  - Kentucky bluegrass- Merion

- Northrup King Company; 1500 Jackson St NE, Minneapolis MN 55413
  - Creeping red fescue - Ruby
  - Perennial ryegrass - NK 200

- Oregon Highland Bentgrass Commission; P O Box 3366, Salem OR 97302
  - Colonial bentgrass - Highland

- Pickseed West Inc; P O Box 888, Tangent OR 97389
  - Kentucky bluegrasses - America, Nugget, Touchdown
  - Chewings fescue - Agram
  - Turf type tall fescue - Mustang
  - Perennial ryegrasses - Blazer, Fiesta
  - Colonial bentgrass - Exeter

- Pioneer Hi-Bred; Turf & Forage Division; P O Box 346, Savage MN 55378
  - Kentucky bluegrass - Monopoly
  - Chewings fescue - Waldorf
  - Creeping bentgrass - Prominent

- Turf-Seed Inc; P O Box 250, Hubbard OR 97032
  - Perennial ryegrasses - Citation, Omega

- Whitney-Dickinson Seeds Inc; P O Box 250, Buffalo NY 14240
  - Perennial ryegrass - Manhattan II

Notes On Where the Action Is

COMPENDIUM OF TURFGRASS DISEASES

The spring and summer seasons are critical times for lawn disease identification and control. The Lawn Institute was one of four financial sponsors of the Compendium of Turfgrass Diseases prepared by Dr Richard W Smiley of Cornell University. This 102 page booklet is an authoritative review of turfgrass diseases around the world. It contains 185 full color photographs and 66 illustrations of turf diseases for easy identification and diagnosis. The handbook format features both descriptive language and technical terminology for easy use in either field or office.

Looking ahead at turfgrass diseases will be more understandable with this compendium as a reference. Copies are available for $15.00 from the American Phytopathological Society. Order yours from APS Books, 3340 Pilot Knob Road, St Paul MN 55121.

FALL PLANTING COUNCIL PLANS

FALL IS FOR PLANTING
TREES • SHRUBS
LAWNS • BULBS

Looking ahead towards Fall 1983, the best season for planting lawns and woody ornamentals will be here before we know it. A program developed by national, regional and state nurserymen's associations through The Fall Planting Council is dedicated to increasing public awareness of plant material availability and up-to-date methods and materials for planting and care of trees, shrubs, lawns and bulbs.

For more information contact:

The Fall Planting Council
5 Shawsheen Ave
Bedford MA 01730
617/275-3112

ARTICLES PUBLISHED

- The May 1983 issue of Lawn Care Professional (Volume 2 Number 4) carried our first article in the new "Seed Facts" department entitled "The Seed is Basic" pages 16,17,18 and 19.

- The June 1983 issue of Seed World (Volume 121 Number 7) carried the article "Achieving the Perfect Sports Turf" pages 76 and 78.

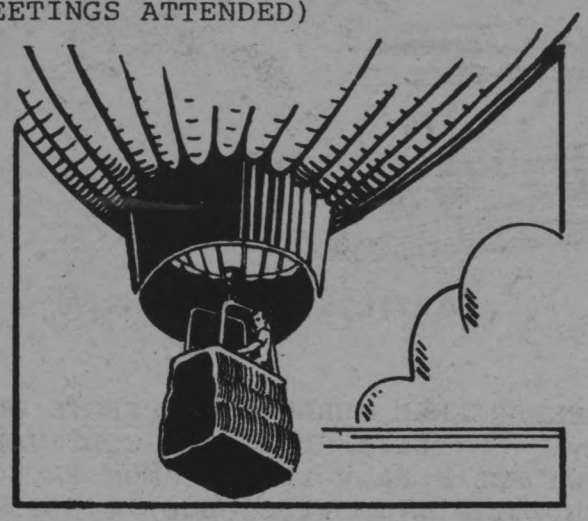
- The June 1983 issue of Lawn and Garden Marketing (Volume 22 Number 5) carried an article "Shaping and Coloring the Public Message" pages 6,7,8 and 40 by Wendall J Burns. This described the focus and interrelationship of six organizations including American Association of Nurserymen, Gardens for All, All America Selections, Bedding Plants Inc, Imported Holland Bulbs and The Lawn Institute.

'Man's mind,
STRETCHED
TO A NEW IDEA,
Never goes back
TO ITS ORIGINAL
DIMENSION'

OLIVER WENDELL HOLMES

ITINERARY

(TRAVEL, MEETINGS ATTENDED)



The Second Quarter (April-June) featured one major trip each month. Contacts made and meetings attended were helpful in program development for The Lawn Institute.

- April 21 - Meetings with research and education specialists at O M Scott, Marysville OH.

Dr John Long scheduled tours and seminars for a full day of orientation. The O M Scott research effort has an international reputaion in the area of Turfgrass Science. A combination of excellent facilities, staff and program coordination make this program highly effective. The new headquarters office building and adjacent arboretum are indeed a landscape asset to Marysville.

- May 4-6 - Arizona Turf and Landscape Conference, Tuscon AZ.

Dr Bob Kneebone and his colleagues at The University of Arizona presented an excellent Conference program with major emphasis on growth conditions in the arid southwest. The Tucson region has a water deficit. Lawns are being made smaller or eliminated in favor of desert landscaping. Research on water conservation and limited use for lawns and turf is serious business. The future for warm season, arid and salt tolerant species of grass seems much superior to that for cool season species. Since some ninety percent of the U S bermudagrass seed production is in the Arizona - Southern California region, Robert G Sackett, Executive Secretary of The Arizona Crop Improvement Association officed at the University of Arizona, is a key person when it comes to warm season turfgrass seed matters. Meetings with Bob Sackett and Bob Kneebone provided an initial orientation for us in this area.

- June 26-30 - American Seed Trade Association 100th Annual Convention, San Francisco CA and The Lawn Institute Membership and Board of Directors Meetings (June 26).

Reports of these meetings are presented elsewhere in this issue of Harvests.

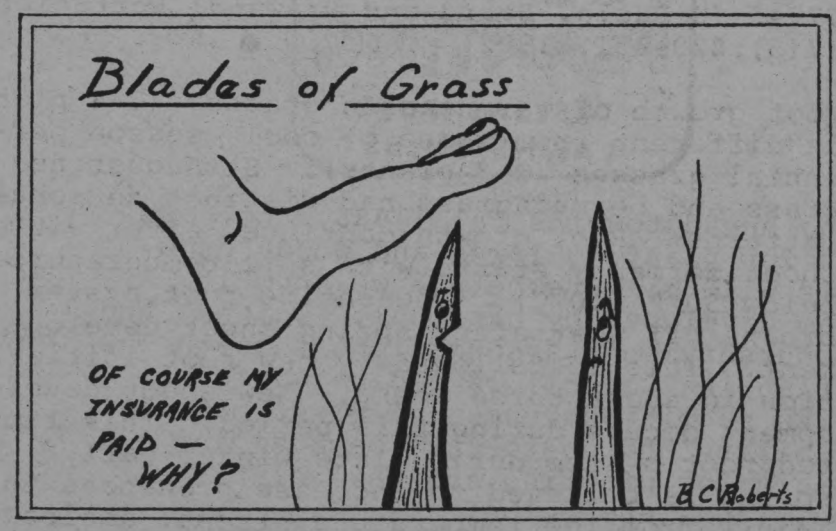
Looking Ahead

(PLANS FOR THE FUTURE)

During the Third Quarter (July - September) travel will be limited to attendance at two professional meetings in the Northeast. These are:

- Soil Conservation Society of America, Hartford CT July 31-August 3;

- American Society of Agronomy, Washington DC August 14-19.



THREADING THE JOURNALS

(REVIEW OF CURRENT TURFGRASS RESEARCH LITERATURE)

Brief reviews of eight research reports published in HortScience and four from Weed Science follow. A publication citation is provided for use in obtaining additional information.

CREEPING BENTGRASS, KENTUCKY BLUEGRASS AND ANNUAL BLUEGRASS SEED GERMINATION RESPONSE TO ELEVATED TEMPERATURE
University of Guelph, Guelph, Ontario Canada (Eggens and Ormrod) HortScience 17(4):624-625. 1982.

Seedling survival and competitive ability depends on the speed of germination and on the rate of seedling growth. These are affected by temperature. For example, creeping bentgrass germinated well at 104°F (40°C) day and 86°F (30°C) night. Kentucky bluegrass did not germinate at this temperature, and had a lower germination at 93°F (34°C) day and 82°F (28°C) night than at 77°F (25°C) day and 64°F (18°C) night. Annual bluegrass was affected even more adversely by high temperatures. These temperature responses have been correlated with reseeding of lawns during summer months. Bluegrasses are more difficult to establish than bentgrasses during this period.

KEY EVENTS IN THE SEASONAL ROOT GROWTH OF BERMUDAGRASS AND ST AUGUSTINEGRASS
Texas A & M University, College Station TX 77843 (DiPaola, Beard and Brawand) HortScience 17(5):829-831. 1982.

Root growth of warm season grasses (C-4 plants) is different from those of cool season perennial grasses (C-3 plants). St Augustinegrass and bermudagrass had distinct seasonal patterns. Root growth continues after winter shoot dormancy starts with soil temperatures below 50°F (10°C). The entire root system browns off just after spring shoot development. This is followed by new root initiation in about three weeks. New shoot development occurs during this period. This limited root system during late winter-early spring is believed to increase proneness to injury from low temperature stress, desiccating winds, traffic, diseases and insect pests. (Editors Note: This new information may be important in helping to explain abnormal transitions from overseeded cool season to warm season grasses.)

PREEMERGENCE HERBICIDE EFFECTS ON FOUR KENTUCKY BLUEGRASS CULTIVARS
Iowa State University, Ames IA 50011 (Christians) HortScience 17(6):911-912.1982.

Baron, Enmundi, Newport and Park Kentucky bluegrasses were treated with bensulide, DCPA and oxadiazon preemergence herbicies. Bensulide and oxadiazon reduced root growth about the same in all cultivars. Newport and Baron rhizomes and overall turf quality were adversely affected by oxadiazon. Bensulide did not injure rhizomes or lower turf quality. DCPA treatments produced no cultivar differences. Selection of the most effective herbicide within limits of tolerance of the lawngrasses to be treated is important.

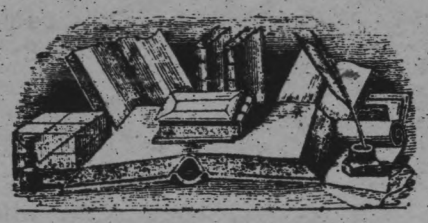
DICLOFOP FOR GOOSEGRASS CONTROL IN BERMUDAGRASS PUTTING GREENS
University of Hawaii, Honolulu HI 96822 (Murdock and Nishimoto) HortScience 17(6): 914-915.1982.

Goosegrass is a serious weed of turfgrass, particularly on golf greens. Diclofop is a relatively new herbicide that has caused injury to red fescues, Kentucky bluegrasses and colonial bentgrasses. Investigations in Hawaii on common bermudagrass and on Tifdwarf bermudagrass indicate excellent tolerance of the bermudagrass to the herbicide and a high susceptibility of goosegrass under putting green conditions.

FREEZING RESISTANCE AND COLD ACCLIMATION IN TURFGRASSES
University of Minnesota, St Paul MN 55108 (Rajashekar, Tao and Li) HortScience 18(1): 91-93.1983.

Cool season turfgrasses are among the hardiest herbaceous plants. Cultivars of perennial ryegrass, Kentucky bluegrass and red and chewings fescues were tested for freezing resistance of leaf, crown and root tissues. A comparison was made of cold-hardened and nonhardened plant parts. The nonhardened leaf and crown tissues of all cultivars survived temperatures below 15°F (-9.8°C). After acclimation at 41°F (5°C) under short days for at least six weeks, the maximum increase in hardiness was noted in Wintergreen chewings fescue which survived -16°F (-27°C). Fall acclimation is important in the preparation of lawns for overwintering.

THRESHING THE JOURNALS CONTINUED



EFFECT OF WATER STRESS ON IN VITRO HEAT TOLERANCE OF TURFGRASS LEAVES
Colorado State University, Ft Collins CO 80523 (Becwar, Wallner and Butler) HortScience 18(1):93-95.1983.

Kentucky bluegrass, perennial ryegrass, red fescue and weeping alkaligrass seedlings were grown under moisture stress prior to tests for heat tolerance of leaf blade segments. The moisture stress did not increase heat tolerance of turfgrass leaves. Other factors must be related to the commonly observed and widely accepted practice of letting moisture stress develop slowly within a lawn as a means of increasing drought resistance of the turfgrasses.

MORPHOLOGICAL RESPONSES OF CYNODON AND STENOTAPHRUM TO CHILLING TEMPERATURES AS AFFECTED BY GIBBERELLIC ACID
Texas A & M University, College Station TX 77843 (Karnok and Beard) HortScience 18(1): 95-97.1983.

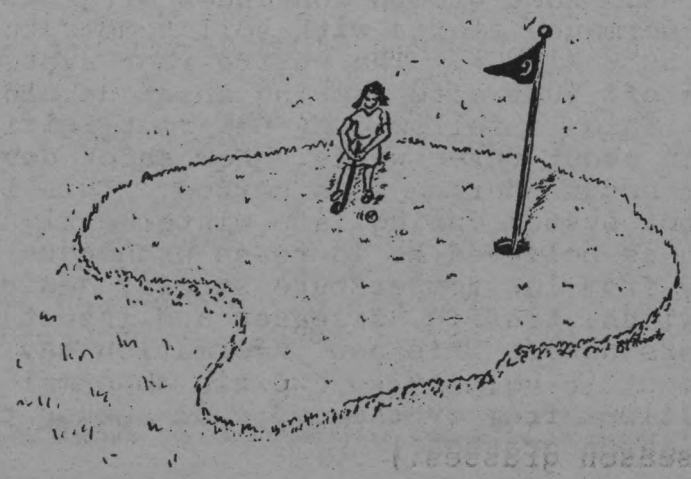
As cool autumn temperatures reach 50°F (10°C) to 60°F (15°C), warm season perennial grasses enter dormancy as evidenced by discoloration of foliage. Ormond bermudagrass is chill-tolerant while Pee Dee bermudagrass is chill-sensitive. Floratam St Augustinegrass is chill-tolerant and Texas Common St Augustinegrass is chill-sensitive. These grasses were chilled for fourteen days at 45°F (7°C) day and 41°F (5°C) night. Treatments of gibberellic acid were imposed. Horizontal leaf blades and stems exposed to light developed visual symptoms of injury first. Bleaching and/or the development of purple pigmentation was observed within three days of chilling. Wilting was followed by formation of watersoaked lesions and finally by total necrosis. The gibberellic acid treatment stimulated shoot development of both bermudagrasses but did not have this effect on St Augustinegrasses. Purple pigmentation in leaf blades and stems of bermudagrass was almost completely prevented by the gibberellic acid. Chilling injury symptoms in St Augustinegrasses were amplified by the gibberellic acid.

THATCH ACCUMULATION IN KENTUCKY BLUEGRASS CULTIVARS AND BLENDS
University of Nebraska, Lincoln NE 68583 (Shearman, Bruneau, Kinbacher and Riordan) HortScience 18(1):97-99.1983.

Sixty Kentucky bluegrass cultivars and experimental lines and twenty four bluegrass blends were evaluated for tendency to form thatch during a five year test period. Increasing nitrogen fertilization had no effect on thatch. More vigorous cultivars had a greater tendency to thatch. Cultivars with greater cell-wall content formed more thatch. Accumulation of thatch in bluegrass blends was in the order of the mean thatch formation for the individual cultivars. NuDwarf, Rugby, Delta, Park, Pennstar, South Dakota, Fanfare, Aquila, Parade and Enoble produced least thatch in these tests.

OXADIAZON TREATMENTS ON OVERSEEDED PUTTING-GREEN TURF
University of Georgia, Experiment GA 30212 (Johnson) Weed Science 30: 335-338.1982.

Oxadiazon was used in the spring to control goosegrass without injuring bermudagrass turf overseeded with common ryegrass and with Medalist VI perennial ryegrass. The ryegrass was severly injured, thus resulting in a poor transition between cool and warm season grasses. The combination of bensulide and oxadiazon applied as a single treatment at 6 pounds per acre (6.7 kg/ha) plus 1.5 pounds per acre (1.7 kg/ha) controlled goosegrass as effectively but did not injure the turf so that the transition to bermudagrass was uniform.



THRESHING THE JOURNALS CONTINUED

RESPONSE TO ETHOFUMESATE OF ANNUAL BLUEGRASS AND OVERSEEDED BERMUDAGRASS
University of Georgia, Experiment GA 30212
(Johnson) Weed Science 31:385-390.1983.

Annual bluegrass often becomes a serious weed pest when bermudagrass is overseeded in the fall with a cool season grass. Ethofumesate controls annual bluegrass when applied in October and again in November. These treatments reduce the quality of overseeded perennial ryegrass slightly. Injury is not permanent and the turf recovers fully. The spring transition of ryegrass back to bermudagrass is good.

TOLERANCE OF BERMUDAGRASS PUTTING GREENS TO HERBICIDE TREATMENTS
University of Georgia, Experiment GA 30212
(Johnson) Weed Science 31:415-418.1983.

Weed control on bermudagrass putting greens often calls for applications of herbicides annually in March or in March plus August. Bensulide has delayed early spring growth less than any other herbicide and has not adversely affected turf quality during the growing season. Oxadiazon, applied twice each year, severly retarded turf growth and reduced the quality of the bermudagrass. Napropamide and prosulfalin treatments have reduced root growth of bermudagrass.

INFLUENCE OF HERBICIDE ROTATION TREATMENTS ON SPECIES COMPOSITION OF WEEDS IN TURFGRASS
University of Georgia, Experiment GA 30212
(Johnson) Weed Science 30:548-552.1982.

Summer and winter annual weeds can be controlled effectively with selected treatments in bermudagrass turf. However, when several weed species are present in the same turf area, it is likely that selected herbicides may not control all the weeds. For example, in these tests, oxadiazon increased common chickweed, spurweed and thymeleaf sandwort; bensulide increased corn speedwell and DCPA increased hop clover and spurweed. Where herbicides were used to control crabgrass or goosegrass, the weeds not controlled increased rapidly except where oxadiazon was applied for three consecutive years.

MEMBERSHIP IN THE LAWN INSTITUTE

Any person, firm, partnership or corporation active as a lawn and turf seed producer, processor or merchandiser or otherwise interested in advancing the educational and research objectives of The Lawn Institute is eligible for membership. Our brochure, Who We Are and What We Do, provides information on educational and research objectives.

Membership Benefits

- Through support of turfgrass education and research, an improved understanding of lawngrasses and their culture creates lawns for a more beautiful America.
- Up-to-date research information is available for you use from our office.
- Lawn Institute Harvests quarterly newsletter serves as a means of regular communication between our office and all members across the country and Canada.
- Proprietary and Sponsoring members display the corporate emblem and seal of approval as appropriate in promoting cultivars or products approved by Review Boards of The Institute.
- All members display attractive membership certificates.

FOR MORE INFORMATION WRITE TO:

Eliot C Roberts, Director
The Lawn Institute
P O Box 108, Pleasant Hill
Tennessee 38578-0108

or call: 615/277-3722

(PRESENTATION OF RESEARCH DATA AND CONCLUSIONS FROM TURFGRASS FIELDDAYS AND CONFERENCES)

Midwest Regional Turf Conference Speakers Share Knowledge

State and regional turf conferences across the country have an important role in the presentation of new information as well as in the placement of these new concepts in proper perspective alongside existing knowledge. Among the leaders nationally is the Midwest Regional Turf Conference, traditionally held at Purdue University in West Lafayette, Indiana. The following six topics were noted to be especially timely and rated high on our score card:

- Roots, Maintain What You Have;
- Research Needs of the Lawn Care Industry;
- Learning Through Soil Testing;
- Technology and Seed Production;
- Experiences with Roundup and Reseeding;
- Attitude: Where Are You ?

Roots, Maintain What You Have

Dr Donald White
University of Minnesota, St Paul, MN

Dr White presented not only an up-to-date technical review of root research, but also spoke philosophically of the little grass plant and our relation to it. The following comments are well worth remembering:

- Grass is the forgiveness of nature.
- If you are successful in turf management, look for improved practices but don't change just for the sake of change. Don't fix it if it works.
- Help the grass to grow better when conditions are better for grass growth. Do not push the grass when growth conditions are poor.
- Growth at any given time is related to the accumulation of many factors.
- Do not try to correct symptoms, rather correct causes. A symptom is merely an expression of something wrong. A symptom does not tell what is wrong.
- Correct the condition furthest from the optimum first. Then consider other conditions.

Roots are very important in the growth of turf and lawngrasses. The following points are important for regular review.

- Spring and summer roots are the result of practices and conditions last fall and winter.
- Sixty percent of roots are sloughed off (lost) during the year, much of this during warm summer weather.
- Roots grow in soil temperatures as low as 34° F. Ground may be frosted on top but roots grow below.
- Photosynthesis continues at a good rate in the fall even at low temperatures- 40-50° F.
- Below 50° F respiration is relatively low so there is a net carbohydrate gain. Thus, fall is a good time for root growth.
- Roots follow gradients from low to high for soil water, nutrients and air.
- The amount of water controls the passage of both air and nutrients. Thus, water is a key management tool.
- Root competition between trees and grass is significant. Many tree roots are well outside the tree drip line.
- A rain shadow exists under the tree - water there. Fertilize the tree outside the drip line.
- Thatch interferes with water movement and thus has an effect on root growth.
- Fertilizer balance effects root growth. Nitrogen stimulation of growth reduces carbohydrate reserves and reduces roots.
- Nitrogen application late in the fall does not stimulate growth of anything but roots.
- Nitrogen application in mid fall will stimulate growth of both foliage and roots some.
- Fall nitrogen applications should show in the development of higher quality turf up to mid June without any real flush of growth.
- Phosphorus, potassium, sulfur, iron and zinc are all important in root growth. Soil tests help identify deficiencies.

Roots, Maintain What You Have cont.

- Syringing cools the plants down during hot weather but should not moisten the soil.
- Frequent watering helps destroy soil structure at the surface. This should be avoided.
- All herbicides have a potential negative impact on roots under environmental stress.

With all this in mind, how does a gardener or turf manager respond when the grass starts to wilt ? No question, the plants need water. But, they may also need more and deeper roots.

Research Needs of the Lawn Care Industry

Dr David Martin, Director of Research
Chemlawn Corporation, Columbus, OH

Dr Martin analyzed several research areas in which more information is required by the lawn care industry. Four target programs include fertilization, weed control, insect control and disease control. In addition, there are equipment needs to be met, growth regulators to perfect and pH adjustments to work out.

Water soluble nitrogen sources, like urea, and slow release nitrogen materials, like the methylene ureas, require more study to better control burn, surge of growth and residual release. New materials for both dry and spray application that produce quick greening of the foliage and safety of application are sought. The search is on for ways and means to improve nitrogen utilization by the turf. Green color and dense cover, not excessive growth, are the objectives. Freedom from phytotoxicity, regardless of environmental conditions, is a must. Needs for micronutrient formulations must be evaluated.

Annual grass weeds, such as crabgrass and foxtail, and broadleaved summer annual weeds, such as knotweed,spurge and oxalis, should be made easier to control with herbicides. Selective herbicides with more residual would be useful. Herbicide application techniques may be improved. Education, mainly, is required to overcome improper application techniques, such as miscalculations, incorrect fill and improper trim and overlap. Effects of heavy rain or irrigation, herbicide degradation, removal of herbicide with clippings and wind drift need to be better related to the weed control process.

The southern mole cricket, along with billbugs, sod webworms, chinch bugs and grubs require further study. Another good insecticide that is sprayable, quick in action with well worked out time of application would be desirable.

Disease control for yellow patch requires more study in cool, humid regions. The matter of seeding different species in previously diseased areas is not always a simple matter. Some results are more patchy in appearance than was the diseased turf.

Finally, emphasis must be placed on the adequacy of research facilities and on maintaining open lines of communication with university research.

Learning Through Soil Testing

Dr Paul Rieke
Michigan State University, East Lansing, MI

Dr Rieke described soil testing as one additional tool that helps in the establishment and maintenance of fine turf. A soil test determines how great is the nutrient supplying ability within root zones. With turf and lawngrasses, yield of clippings is not of interest. Quality cover is. A soil test can predict nutrient needs; specify the amount of lime required to bring the soil to a desired pH level;and aid in trouble shooting, such as might be related to concentrations of heavy metals.

Soil tests depend on three requirements for accuracy: representative sample, dependable laboratory and accurate interpretation of results for recommendations.

Soil sampling tools are designed to make the task easy. These remove cores of soil to the proper root zone depth. Several samples are taken from a given area and mixed to provide a uniform random sample. Records are kept so that the sample and area of origin may be easily identified. Different samples are packaged separately, labeled and mailed or delivered to the laboratory.

Since most turf roots are within a three inch zone from the surface, this sample depth is desirable. Thatch, if present, should be sampled separately. As many as fifteen random samples for a given area will help in creating a good representative mixture for the soil test. If samples are to be air dried before packaging, be certain that they do not become contaminated with fertilizers or liming materials. When sampling year after year, the same time of year should be selected. Be careful not to sample after use of lime or fertilizer. Sample as often as needed to provide a clear understanding of the changes taking place in the soil.

Learning Through Soil Testing cont.

Do-it-yourself soil test kits are available. In order for these to be successfully used, the tester must gain experience through frequent use. In a soil test laboratory, three out of every twenty four samples are checks to provide quality control. Test methodology is compared and recommendations are compared. Well qualified chemists and plant scientists staff these facilities. It's difficult for a do-it-yourself tester to duplicate this level of accuracy.

The soil test laboratory will issue computer print out sheets with test data and recommendations. The following results may be listed:

- pH, buffer pH, lime requirement;
- phosphorus, potassium, calcium and magnesium in pounds per acre, parts per million or milliequivalents per liter;
- nitrate nitrogen;
- soluble salts;
- iron, manganese, zinc, copper, boron;
- other heavy metals.

Finally, the recommendation for each sample tested is provided.

Several factors influence soil test results. The following are particularly important:

- soil textural considerations - amounts of sand, silt and clay;
- soil pH differences;
- soil depth differences;
- soil slope differences (soil classification);
- grass clipping deposits or removal;
- watering influences - quality of irrigation;
- use of lime or gypsum.

Technology and Seed Production

Dr Leah Brilman, Director of Research
Jacklin Seed Co, Post Falls, ID

Dr Brilman described the high level of technology required in turf and lawngrass seed production. Determinations of seed yield potential require three steps:

- First - yield plots with small rows; data on variety yields is recorded;
- Second - yield plots with production rows
- Third - space planted breeder blocks to evaluate uniformity and obtain high quality breeder seed.

Kentucky bluegrasses have a high degree of apomixis which helps keep plants uniform. Off types are eliminated.

Turf plots are of limited value because the true test for turf qualities must be determined in the various market areas of the country. Shade tolerance trials are conducted. Low maintenance trials, involving fertilizer use, watering and mowing help to establish limits of tolerance to many variables. Many species are compared, including Canada bluegrass, hard fescue and sheeps fescue. Also, reclamation species and wild flowers and forbs are worked with. A basic understanding of growth characteristics is lacking with many of these species. Besides yield and harvesting studies, data is often lacking on use of herbicides, particularly new chemicals. Some materials that are used on turf cannot be used in seed production because of injury to the seed. Aminotriazol resistance of grasses is included as one of the desirable traits looked for in breeding studies. New varieties of Chewings fescue and colonial bentgrass, both from Ireland, are resistant to this chemical.

Insect resistance, such as for sod webworm, is an important breeding objective. All-Star and Pennent perennial ryegrasses have new resistance from fungal endophytes. This is also found in the tall fescues.

Ergot is a limiting factor in seed production some years. Sclerotia replace seeds in the seed heads. This decreases yield, raises the inert level, and increases cost of cleaning. A control needs to be found for this fungus disease. In additon, breeding and selection have the objective of developing grasses that can avoid infection.

In the meantime, field burning is practiced to help gain some measure of control for rodents and insects as well as diseases. Field burning trials involve thirty seven varieties of bluegrass. A search is also being made for types that can be productive

Technology and Seed Production cont.

without burn. Growth regulators can be used to some extent to cut back on burn. Lodging must be controlled. Varietal dependent characteristics interact with growth regulators. Where burning is not required, residue disposal has to be considered. It has low feed value. Regulation of burning through controls established by local weather stations helps in maintaining good public relations.

Current and new production practices and techniques are being compared. At Jacklins, the crop is swathed to dry, combined, collected in trailers, deposited in radar pits at the plant, boxed, stored and cleaned. Breeder seed is boxed in the field.

It takes ten years at least to develop a new cultivar. The odds are close to one new cultivar for each five hundred entries. Thus, the best value to be had in landscape development is high quality proprietary lawn seed.

Experiences with Roundup and Reseeding

Gary Kitchel
E-Z Lawn Corporation, Richmond, IN

Mr Kitchel reported four years of experience using Roundup and reseeding. The following nine reasons are most often given for lawn failure leading to reseeding:

- thatch
- species imbalance
- improper varieties to start with
- weeds
- diseases and insects
- mechanical damage
- chemical damage
- neglect
- abuse

None of these require a change in grade that would involve complete reconstruction.

The importance of informing the customer of what to expect in the renovation process was emphasized. The following information should be provided -

- state problems that caused the deterioration of the existing lawn;
- stress the ease of renovation compared with reconstruction, such as:
  - a much shorter process,
  - less labor required,
  - minimum erosion or mud,
  - support some traffic during the process,
  - no stones and weeds,
  - no mulch needed,
  - eliminates competition between grasses and weeds,
  - chemical kills all vegetation.
- Explain features of Roundup -
  - translocated throughout the plants,
  - nonvolatile,
  - no root up take,
  - low toxicity,
  - no residue,
  - two to three ounces per gallon of water per one thousand square feet is required,
  - small areas may be treated with hand sprayers.
- Explain all steps -
  - Spray operation takes place when grass and weeds are actively growing. Water and fertilize before spray, if necessary.
  - Skip one mowing before spray.
  - Spray ten days before scheduled date of seeding.
  - Do not spray when rainfall is expected within six hours.
  - Do not spray when grass and weeds are stressed.
  - Do not spray in winds in excess of five miles per hour.
- Explain all cautions-
  - Do not walk from treated to non treated areas.
  - Cloudy weather slows results.
  - Protect non target areas from spray drift.
  - Calibrate equipment carefully.
- Explain what to expect following Roundup
  - Not all old turf will be completely gone at the end of ten days, but the chemical will have done its job.
- Explain about seeding-
  - Select recommended seed mixture;
  - remove excess debris, if necessary;
  - fertilize and lime, if necessary;
  - use a slit seeder to get seed in contact with the soil;
  - make slits in two directions to form a diamond pattern;
  - irrigate to speed up establishment, if necessary.
- Explain what to expect following seeding-
  - Two weeks after seeding,a bluegrass fine leaved fescue mixture will be on the way up.
  - Three weeks after seeding, the lawn will still look very thin.
  - Six weeks after seeding, the lawn will start looking good.
- Explain cost-
  - Fair charge about $120 for 3,000 square feet with $40 for each additional 1,000 square feet.

Attitude: Where Are You ?

Andy Bertoni
W H Cleary Corporation, Northfield, MI

Andy Bertoni is a good thinker and when he speaks, there are always pearls of wisdom shining through.

"Where are you ?", asked Andy. A reply might specify latitude, longitude and even altitude. We should be able to spot the precise location - right ? Wrong ! Attitude tells more about where we are than any other measure. Andy related attitude to each of the following:

- Be the best at what you do.
- Be as perfect as you can within human standards.
- Be understanding that you may not be misunderstood.
- Let your face reflect a good positive attitude.
- Your attitude influences attitudes of others.
- Attitude determines that the man that knows how will always have a job, but the man who knows why will be his boss.
- The four most important aspects of employment in decreasing order of importance are:
  - appreciation
  - fringe benefits
  - security
  - wages.
- Show appreciation- compliment your associates.
- Remember to:
  - enjoy every day,
  - make them good days,
  - don't be a loser,
  - take pride in everything.
- In so doing, your attitude will determine not only where you are, but also where you're going.

FINE BENTGRASS LAWNS ARE A TRADITION IN MANY PARTS OF THE COUNTRY. THESE SPECIAL PURPOSE GRASSES PROVIDE THE ULTIMATE IN CLOSE CLIPPING AND UNIFORM LEAF BLADES TO CARPET THE LAWN. THE BEAUTIFUL HOME SHOWN IS LOCATED AT THE OCEAN FRONT IN NARRAGANSETT, RHODE ISLAND AND FEATURES EXETER COLONIAL BENTGRASS. HIGHLAND COLONIAL BENTGRASS IS ALSO RECOGNIZED BY THE LAWN INSTITUTE VARIETY REVIEW BOARD.

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P. O. Box 108
Pleasant Hill, Tennessee 38578-0108

Bulk Rate
U.S. Postage
PAID
Pleasant Hill TN
Permit No. 3

Lawn Institute Harvests is published four times a year by The Better Lawn and Turf Institute. The headquarters office address is P.O.Box 108, Pleasant Hill, Tennessee 38578-0108. Phone: 615/277-3722. Inquiries concerning all aspects of this publication may be addressed to the headquarters office.

The Better Lawn and Turf Institute is incorporated as a nonprofit business league formed exclusively for educational and research purposes concerned with agronomic, horticultural and landscape concepts.

Lawn Institute Harvests serves as a quarterly newsletter for members. It also provides a means of communication between Turfgrass Seed and Allied Industries and other organizations and individuals with research and educational interests.

Editor: Eliot C Roberts, PhD

Associate Editor: Beverly C Roberts, MA

Printer: Crossville Chronicle (Tennessee)