

# B E T T E R L A W N - - H A R V E S T S

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## "THANKS TO YOU, IT'S WORKING"

As we end a successful 1973, the Institute staff wishes to thank each and every supporter for the help to and the confidence shown in the Institute during the year. Because of the fine organizational efforts of Secretary-Treasurer Robert Russell, the switch to proprietary sponsorship has operated flawlessly. We are much indebted to Bob, too, for spending valuable "Adikes time" seeing that tax collectors and similar ilk are properly held at bay. President Osburn's fine administrative talents have been well displayed, as at the unusually efficient annual meeting held in Atlanta. We thank members one and all for a most pleasant 1973, and wish everyone a memorable 1974.

--- The Staff

## MAGAZINE STORIES THIS QUARTER

During the quarter these stories have been prepared, published or reprinted for distribution:

Better Crops with Plant Food	-- "Great Lawngrass Revival"
Club Management	-- "Lawn Grass Fallout: A Boon to Clubs"
Family Handyman	-- "Now Is The Time To Get Your Lawn into Shape"
The Gardener	-- "High Fever Over Cool Lawns"
Golfdom	-- "Emerald, New Progress on the Bentgrass Front"
Home & Garden	-- Garden Guide: "New Lawngrass Explosion"
Horticulture	-- "Lawngrasses for Special Places & Purposes"
Horticulture	-- "Rally 'Round the Ryegrasses"
Park Maintenance	-- "How New Varieties Fit Lawn Maintenance"
Park Maintenance	-- "Tailored Turf Maintenance"
Plants & Gardens (Brooklyn Bot.)	-- "A New Lawn: Step-by-Step"
Plants & Gardens (Brooklyn Bot.)	-- "Buying Lawn Seed"
Resort Management	-- "Lawns at the Ready"
Supplement	-- Various lawn stories

## VARIETY REVIEW BOARD ACTION

Chairman Doyle W. Jacklin of the Institute's Variety Review Board reports that applications for acceptance of Majestic Kentucky bluegrass and Koket Chewings fescue have been acted upon and varieties approved for listing with other leading cultivars on the Institute list of recommended varieties.

OHIO TURFGRASS CITATION

The Institute, through its director, was honored at the recent Ohio Turfgrass Foundation "Conference and Show" at Cincinnati. Dr. Schery could not be present at the banquet when the presentation was made, but a plaque was sent the Institute office, Marysville, reading: "Robert W. Schery, in recognition of professional excellence, the Ohio Turfgrass Foundation, 1973." We are gratified to have the Institute programs so well recognized.

"SUPPLEMENT" READIED

In conjunction with several other associations (nurserymen, Nat. Chem. Assoc., swimming pool, fertilizer), the Institute has shared in the preparation of a "Lawns and Gardens" Supplement for the spring of 1974. Production is in the hands of the William C. Pflaum Company, Washington, D. C.

Dr. Schery prepared for the spring issue 20 pages of medium to brief stories suitable for newspaper use. Pflaum issues these as a "clip sheet," in newspaper column width, ready for insertion directly into offset publications. Seven photos to illustrate the stories were included, with captions in support of the items. Mr. Pflaum informs us that normally between 1 and 2 thousand requests for photographs result, a stockpile of which are maintained by the Pflaum Company for servicing requests.

The "Lawns and Gardens" Supplement is sent to newspaper editors throughout the country (approximately 3,000). In addition several hundred county agents of the USDA receive copies. Daily and weekly papers account for most of the distribution. The "Supplement" should be particularly useful to smaller journals lacking editors experienced with gardening. Copies also go to syndicates and special interest magazines, including trade magazines.

A previous Harvests mentioned that interest has run high in the lawn stories furnished previous years by the Institute for the Supplement (through ASTA). In 1974 the Supplement will be expanded from the usual 10 printed pages to 12.

PK UNDERWAY

The Institute's own spring press kit is in the formative stages. Approximately 38 titles will be included. With paper hard to secure, production delays commonplace, and mailing efficiency uncertain, the Institute is making an early start on the PK not due out until late winter.

PRESS KIT PICK-UP

Overleaf are some sample clippings showing informational pick-up from the Institute press kit. Most of these were incidentally noted in Ohio papers; we do not subscribe to a clipping service because of cost. Mention in nationally syndicated columns assures widespread exposure.

# Trees Overwhelm Lawn Grasses

use of cool weather and nutrients by leaching. there is no loss of

By GEORGE E. CREED  
Publishers Hall Syndicate

Trees affect grass growing beneath them in two important ways: by depriving it of adequate sunshine and by competition between their roots and those of the grass plants for plant food and moisture.

And there may be a third way, too, as Dr. Robert W. Schery of the Lawn Institute reports. He says, "New evidence suggests that more is involved when a lawn-grass is shaded than just competition for plant food."

**GARDEN: SUPERIOR LAWN PRODUCTS Etc.**

## Homeowners Want Grass

By IRWIN and MARTHAS JONES  
Dispatch Garden Writers

In the Latest Public Lawn Information which we recently received from Dr. Robert W. Schery, director of The Lawn Institute, Marysville, Ohio, he writes that he believes that the majority of homeowners will be more particular than in proper maintenance of their lawns and that they will expect superior results from lawns.

**TO DO THIS WEEK**

### Dead Plants Removed After Killing Frost

Watch garden writers, and Martha Jones say after the first killing frost all dead vegetables and tender plants should be removed and put on the compost pile after removing seeds.

They also suggest: Leaves should not be permitted to accumulate on your lawn as they will damage the turf. They will be a good mulching material or they can be

**GRASSES ARE** created which are more resistant to insects and diseases and more drought-tolerant than most of the older standard varieties. Soon after the presidential patent protection signed crops into law the seed houses obtained from

• Lawns should be mowed as long as the grass is growing. Long grass will be difficult to mow in spring.

• It is not too late to fertilize your lawn. High nitrogen fertilizer will be available in the next few weeks. High nitrogen fertilizer will be available in the next few weeks.

## Weather Blamed For Seed Prices

By EARL ARONSON  
AP Newsfeatures

The price of lawn seed is going up just as it is that of many things, but the main reason is the weather, rather than labor, fuel and equipment — which, however, are factors. While the East was having an overabundance of rain, the Northwest was having severe drought just when bluegrass, fescue and perennial ryegrass fields were maturing. Dr. Robert W. Schery of the Lawn Institute describes the Northwest as the nation's "breadbasket."

IN SOME drylands, fields a complete loss; elsewhere yields were reduced.

### Bluegrass Stays Green in Autumn

Bluegrass lawns generally stay green longest in autumn. Bluegrass does not suffer from light freezes and in most parts of the country only the leaf tips singe until after Christmas. Few turfs are hardier and more self-reliant than Kentucky Bluegrass.

ages and higher prices. On the plus side, weather intensified trend already underway. Tailored lawngrass bred for disease attractiveness, and density, are increasingly popular.

Another problem is antipollution years past severe burned annual vest. This is a serious means of other lawn grass.

WITH RE other lawn grass, smoke, because it turns up, adequate and does not green up. Despite other turf grasses are green, 5,000 sly

# Now is time to make that new lawn

By PAUL R. YOUNG  
Garden Writer

the time to make a seed. Such a mixture or used alone Here's a brief rundown of lawn grasses being offered in this area. BLUEGRASSES. These are the basic lawn grasses. They are our basic lawn grasses. They are our basic lawn grasses.

**Fertilizers**  
Apply on the lawn without problems. It will not burn grass even if over-applied.

**Getting Good Turf**  
Schery emphasizes the most desirable qualities of grasses. PROPER sowing is an important part of lawn care. Though high percentages of seed mixtures of FINE FESCUES. Texture blends well with bluegrass, and the crested daisy is an important lawn grass. Europe Found New Bluegrass Varieties

The search for outstanding new bluegrass varieties began in Europe several years earlier than in America because the United States lacked varietal protection legislation until 1971. Three fine performers from Europe — Aristocrat and Sydsport — now are this country's valuable bluegrass lines for top quality blends.

Bluegrass mixtures widely planted in America top lawns from Tennessee northward. A broad range of varieties ensure seed blends for

**Minimal Care Gets Attention**  
For minimal care lawns, the experts advise natural Kentucky bluegrass or traditional varieties such as Abrotretum, Kenblue and

such as first, Illahee, urea, also are direct sowing like bal- w lot excess- co in hot

thing about the different grasses available to them, in mixture or used alone Here's a brief rundown of lawn grasses being offered in this area. BLUEGRASSES. These are the basic lawn grasses. They are our basic lawn grasses.

THE HOME LAWN HANDBOOK

The Home Lawn Handbook, a special printing from Plants and Gardens, was published by the Brooklyn Botanical Gardens during October. The Botanic Garden handbooks are sold as inexpensive references (\$1.50 each in recent years) as a source of information to a relatively inexperienced gardening public. This handbook was under the guest editorship of Henry Indyk, Rutgers University, and contained twenty-one chapters by guest authors, including the opening two chapters by Dr. Schery in behalf of the Institute.

As is inevitable where various authors contribute, some unevenness of presentation occurs. A minor but persistent irritation was the insistence of the Botanic Garden editors not observing the Agronomy Society "rule" about combining "grass" with its prefix (i.e. blue grass instead of bluegrass), while authors were equally insistent on the opposite. The result has been inconsistency and the appearance of sloppy editing.

On the whole, however, the book will be a valuable information source for people likely to see little else (though we are grateful to editor McGourty for recommending Schery's A Perfect Lawn in his opening comment). The first two chapters by Dr. Schery include "A New Lawn -- Step-by-Step," largely a picture sequence; and "Buying Lawnseed," a commentary on what constitutes quality lawnseed (the final statement reads, "The purchaser must take the responsibility for --- quality blend consisting of Kentucky bluegrasses, fine fescues and perennial ryegrasses."). Subsequent opening chapters are "The Lawn and Its Soil," "Soil Tests in Lawn Fertilization," "Lawns Need Fertilizer and Lime," "Lawns and Water," "First Aid for Failing Lawns," "Instant Lawns from Sod," "Lawns in Shade and on Steep Slopes," all by well-known authorities.

The second third of the book opens with what is probably the strongest chapter, a lengthy presentation of "Diseases of the Home Lawn" by Dr. Cole, Pennsylvania State University. The magazine found funds enough to include ten full color photographs depicting some of the more familiar lawn diseases. Cole's presentation is pleasantly realistic, pointing out that fungicidal control of disease is often uncertain and even more frequently economically dubious. He would seem to favor cultural control where possible. Each of the diseases is described according to symptoms, after which cultural control is reviewed, and where feasible chemical control.

Other pest chapters are good, too. Dr. Streu, Rutgers University, in discussing "Injurious Insects of Lawngrasses" profits from a dozen informative line drawings of familiar insect pests. Similarly, Dr. Duich, Penn State University, discussing "Weed Control in Lawns" benefits from over a dozen drawings and several tables. As with diseases, the approach to weed control is conservative and realistic, with recognition that pesticides are only part of the answer.

The final third of the handbook is somewhat less cohesive, dealing with thatch, cool season lawngrasses, "Questions and Answers on Zoysia in the North," southern turfgrasses and their maintenance, equipment, climatic map, etc. Although all other chapters are presented as units, for some reason the editors split the pages for southern grasses (Burton on "Lawngrasses for the South," and Youngner "And Their Maintenance") into an upper and lower half, something of a nuisance for those using the book as a reference, and contributing to a confusion of subject matter in the latter part of the handbook (where there is some repetition and less careful scientific editing such as misspellings to boot).

THE HOME LAWN HANDBOOK Continued

The Home Lawn Handbook should prove to be a valuable, permanent reference of nation-wide scope. It is inexpensive enough so that any inexperienced homeowner concerned with establishing or maintaining a lawn can afford a copy, and simply enough expressed as to be understandable to everyone. The Brooklyn Botanical Garden is to be congratulated upon this updating and reissuance of the popular lawn handbook first published in 1956.

CLUB MANAGEMENT STORY APPEARS

The November issue of Club Management carried the Institute story "Lawngrass Fallout -- A Boon to Clubs." The story was accompanied by an insert (with map) that listed named varieties of Kentucky bluegrasses, fine fescues, perennial ryegrasses and bentgrasses. There were two photographs, one comparing plugs of the new perennial ryegrasses with recognized bluegrass varieties, and another comparing disease-ridden common bluegrass with an improved cultivar.

The story opened speaking about the "turfgrass revolution" of recent years, and how common types of grass are giving way to improved cultivars. The attributes making the improved cultivars valuable for golf establishments are discussed. Particularly of interest is the new breed of perennial ryegrasses. Of course bentgrasses have quite a place in the golf course world, and those on the Variety Review Board list of acceptances are discussed. Maintenance with modern products is suggested, -- "respond well to tailored procedures such as gradual-release fertilization (ureaform such as Nitroform) --"

FOR PARK MAINTENANCE PROCEEDINGS

A story built around Dr. Schery's presentation to the Park Maintenance "Institute" in Memphis, November 7, was prepared for the Proceedings of that conference under the title "How New Varieties Fit Lawn Maintenance."

The story summarizes the recent history of fine turf varieties, leading to the Variety Review Board listings given in a reprint circulated to the conference. While park maintenance people may not have budget enough for the more intensive care that new varieties deserve, certainly they should have the "know how" that enables them to benefit the turf through proper mowing, fertilization, and so on.

Outstanding features of the new turfgrasses are tolerance to disease and low growth. Quality of seed is better than ever before, as well. Naturally, this will be a bit more costly with new varieties, since they are chosen for turf quality rather than seed yields. The story continues, "Fortunately, seed is so minor a cost in establishing turf (compared to labor involved ---) that I doubt if anyone would want to sacrifice quality --- in favor of a stemmy seed yielder."

As a summarization, the story concludes, "I think you will be pleased with their new cultivars performances, and with the ample selection (there is something to satisfy most personal tastes or specific needs)."

FERTILIZER STORY

"The Labor-Saving Plant Food," by Dr. Schery, with Institute identification, appeared in the October issue of Weeds Trees & Turf magazine. Two photographs taken on the grounds indicate the steady vigor and improved appearance which comes from ureaform fertilization as compared to more frequent "feast-and-famine" feeding with soluble nitrogen. The article opens, "The picture at the left --- is a bluegrass lawn that annually receives 8 pounds of nitrogen per 1,000 square feet. All of it is applied as BlueChip ureaform (UF) at one time ---. The picture at the right --- receives only soluble nitrogen --- in spring and late summer ---." The article ends with this offer, "For more details, send a self-addressed stamped envelope to the Lawn Institute ---."

PK PICK UP

The October 17 Seed Trade News carried the Institute item, "Lessened Lawn Thatch." We have had appreciable inquiries concerning the last sentence of this story, "Interestingly, Texas research shows that turf fertilized with gradual-release nitrogen thatches less than new lawns receiving soluble fertilizer."

The October 24 issue carried the item, "Retardants for Lawns Don't Replace Mowing." This story ends with the admonition, "Dense sod can be maintained with new low-growing Kentucky bluegrasses, fine fescues, bentgrasses and perennial ryegrasses, even at relatively low mowing heights."

Still another pick up in the October 24 issue was, "Velvet Bentgrass is Exquisite."

PARK MAINTENANCE "INSTITUTE"

Dr. Schery, on behalf of the Institute, presented "How New Varieties Fit Lawn Maintenance" to the Park Maintenance gathering in Memphis, November 7. About 400 were in attendance, chiefly grounds custodians for institutions such as small colleges and multi-purpose parks. Following the formal presentation speakers were asked to make themselves available for a "feedback" session where those interested in a particular subject might ask questions. Dr. Schery was opening speaker on the morning program, and the subsequent "feedback" lasted until noon. A great deal of interest was shown in the new perennial ryegrasses, especially for use in football fields. Attendees were from all sections of the country.

An epitomization of the formal talk should appear in the Proceedings of the "Institute." Dr. Schery pointed out that change and improvement is inevitable, with Merion leading the fine turfgrass parade into the age of modern urbanization. Varieties developed at leading research centers were discussed in general, and the particular attributes of new varieties that make them useful for grounds maintenance mentioned (primarily disease resistance, low growth and good wear). Tailored lawn care materials (such as ureaform) have kept pace with the needs of the grass, and, although seed this year has been in somewhat short supply and costly, the usefulness of the new varieties and the quality of their seed more than compensates for increased cost by the pound.

An exhibit hall with more than 70 booths was sold out well before the meeting, the majority of exhibitors showing mowing or other mechanical equipment.

KICK OFF MEETING WITH USDA

The committee organized by Doris Watson, Hercules, met on October 11 with a triumvirate of USDA people that included Claude W. Gifford, Director of Communications; Theodore R. Crane, Chief of Special Reports Division; and Kate Alfriend, from the Office of Information. Dr. Schery attended for the Institute, along with various society, publication and industry representatives. The possibility of reinstalling some sort of USDA-sponsored "Lawn and Garden" program similar to that begun a few years ago was the topic of conversation. A subsequent meeting was scheduled for November 8 to more fully look into details. The first session was devoted chiefly to feeling out USDA on willingness, and Director Gifford in turn asked about support that might be expected from industry. No commitments were made, but ideas were exchanged and USDA reminded of non-farming (homeowner) responsibilities.

PRESENTATION TO OHIO SEED DEALERS

Dr. Schery spoke on the program of the Ohio Seed Dealers Association Annual Meeting, in Columbus, Ohio, on November 19. He was asked to review "Lawn Institute Activities." Slides were shown, and the reprints "Keeping Up with Lawngrass Varieties" and "Challenges, Opportunities Face the Lawnseed Industry" distributed as handouts.

The presentation traced trends within the last several decades, begun by Merion and currently involving the many cultivars on the Institute's Variety Review Board list. The Institute has adapted itself to changing situations, and has gradually built confidence and a professional reputation that is widely recognized, in spite of insufficient funding for staff specialists.

The many activities of the Institute were reviewed, including tie-ins to tangential activity (roadsides, golf courses, textbooks, etc.). Rising costs in the seed production (pollution control, etc.), and the lower seed yields of the better proprietary varieties, were mentioned as causes for the trend towards higher lawnseed prices.

NEW GARDENING EMPHASIS

Judi Loomis, Coordinator for "Gardens for All, Inc.," a non-profit community-garden activity, has asked for the cooperation of the Institute and Dr. Schery in further publicizing the program. "Gardens for All" has been highly successful in encouraging the young and old, particularly in the Burlington, Vermont area, to take up gardening, -- mostly vegetable and flower gardening, however, rather than lawn building. The non-profit association is funded through Garden Way Manufacturing, and through various donations of citizens and businesses. National publicity has been given the movement.

Ms. Loomis writes, "Your help is needed to give Gardens for All national stature. We would like to include you as an honorary member of our Board of Directors. Although we would like your help, advice and whatever publicity you can give --- essentially this would be --- without any obligation on your part ---. Your name will appear on our letterhead as one of several gardening enthusiasts who are honorary members of our Board of Directors."

Members might want to lend what support is possible to this effort towards increasing enthusiasm about gardening.

WEED SEED STUDY

The Institute circulated to selected specialists on its board of advisors, listings of weed seed found by Seed Technology to be frequent in commercial seed. We are hoping to gain information as to just which species are most important in lawns regionally.

INSTITUTE REPUTATION GROWS

Exemplifying word-of-mouth recommendation the Institute enjoys, inquiries were received in just a few days from locations so distant as New Zealand and Japan, and from various industrial firms across the continent. For example, the American Consulate General at Osaka recommended us to Shigematsu Ltd. of Japan; the Massachusetts Horticultural Society to the industrial construction firm, Jackson and Moreland International. While it is costly in time and postage to answer all such inquiries individually, it is nice to feel that the Institute is performing a service having international influence.

TALKS REQUESTED

Dr. Schery, on behalf of the Institute, has tentatively accepted invitations to appear on the programs of the Iowa Golf Course Superintendents' Association and a Garden Center Symposium in Wisconsin during the first quarter of 1974, transportation and the fuel shortage permitting.

REPRINTS MAILED

The offer editor Sample included in the October Weeds Trees & Turf, "The Labor-Saving Plant Food," has resulted in numerous requests serviced at no cost to the Institute.

PHOTO REQUESTS HONORED

S. Williams, Alabama, requested photographs for the turf industry section of his book, Ornamental Horticulture for Secondary School Programs. It will be used as a textbook for careers in ornamental horticulture. Mr. Williams was sent several photographs, for which the Institute will be given credit.

William Meacham, New York, requested and has been provided several photographs for a forthcoming book, one section of which deals with lawn maintenance and equipment. Mr. Meacham was editor for Home Garden magazine prior to its being merged into Family Handyman.

DR. SCHERY ACCEPTS APPOINTMENT

Upon invitation of Dr. R. R. Davis, President of the Crop Science Society of America, Dr. Schery has accepted appointment as Liaison Representative between the CSSA and the Institute of Ecology. It seems in the Institute's best interests to have its Director furthering the contacts between the practical side of crop production (lawn keeping) and its esthetic and environmental usefulness.

REQUEST FROM INDIA

"I shall be grateful if you could send us literature on different turf-grasses together with a seed exchange list . . ." ---

Dr. T. N. Khoshoo, National Botanic Gardens  
Lucknow, India

THANKS FROM NATIONAL ACADEMY OF SCIENCES

"Dear Dr. Schery: Thank you very much for your recent response to my questionnaire ---. The information --- will be most useful in our deliberations."

John H. Perkins, Principal Staff Officer

USDA RESPONDS

"Dear Dr. Schery: Thank you for sending me the various reprints on the establishment and care of lawns. This material will be very helpful to me, and I appreciate your thoughtfulness in sending it.

"I hope that we can develop a worthwhile lawn and garden program that would be supported by the industry and be of benefit to the public ---"

Claude W. Gifford, Director of Communication

THANK YOU

"Dear Bob: I would like to thank you on behalf of the Ohio Seed Dealer's Association for the excellent presentation you gave on the Review of the Lawn Institute Activities."

Charles A. Walk, Executive Secretary

BROOKLYN HANDBOOK

"We hope you will agree with us that the issue is one of the best in the Botanic Garden series ---"

"On behalf of the Garden please let me express our appreciation to you for being a part of this timely endeavor. The Handbook will be the first introduction to lawn care for many new gardeners around the country, and we expect it to be a standard in the Brooklyn series for years to come."

Frederick McGourty, Plants and Gardens

PM THANKS

"Dear Bob: I want to thank you very much for the excellent presentation you made at the National Institute. I know that many people are much more aware of the resources of the Lawn Institute and now have a personal tie with it.

"We certainly hope that we can continue our close association with your work and will welcome information at any time."

Erik Madisen, Park Maintenance Magazine

TECHNICAL SECTIONTURFGRASS DIVISION AGRONOMY PAPERS

With the 1973 Agronomy meetings being held in Las Vegas, Dr. Schery did not attend for personal review of the papers presented. However, the gist of the research reported can be gained from the "Agronomy Abstracts" distributed. Papers referring to turfgrass fertilization are reported separately, but no particular theme runs through remaining presentations. Many of the papers have little practical pertinency, at least for seeded grasses.

Chemical treatments received attention at Purdue University, and the University of Florida. In Indiana glyphosate at 2-3 pounds a.i./A set back quackgrass in bluegrass, but did not give complete control. Sodco bluegrass and Manhattan ryegrass newly seeded into plots treated a few days previously with glyphosate (2-4 pounds/A rate) germinated satisfactorily. Treatment of Fylking bluegrass with the growth regulators Ethrel and Sustar gave reduced plant height and reduction in rhizomes; Ethrel (but not Sustar) increased tiller number and root length.

Carboxin and Gibberellin were tested in Florida for extension of the growth of Tifdwarf bermudagrass during cold periods. Carboxin gave a growth response for 4-6 weeks; Gibberellin did likewise, but reduced turf quality due to excessive internode elongation.

At the University of Missouri carbohydrate differences in bermuda and zoysia grasses were poorly correlated with winter survival, but the cold-hardy Meyer zoysia had twice the starch content of less hardy bermudas.

Common sense reports from Virginia on establishing vegetative cover for roadsides, showed excellent results from UF at around 300 pounds per acre. Proper soilbed preparation and mulching are helpful. Also from VPI putting green air porosity was investigated, with the not surprising conclusion that fine soil particles are carried to the deeper layers under irrigation, and reduce pore space there.

At Michigan State University, physiological investigations with tagged metabolites showed reduced uptake, variations in respiration, and increased incorporation of some products into protein, when Merion bluegrass is grown at higher temperatures. Carbohydrate content, photosynthetic and respiratory responses, were investigated under a range of temperatures. Influence of nitrogen on certain diseases showed both snowmold and stripe smut to be encouraged by heavy feeding, more so at low mowing than tall.

Not surprisingly, turfgrasses having an abundance of cell walls and structural materials showed better wear, in research conducted at Michigan State. Tensile strength of the leaf and leaf width contributed to wear tolerance, as did fibrous and lignified cells. Manhattan ryegrass rated best for wear followed by tall fescue and Merion bluegrass, with fine fescues and *Poa trivialis* at the lower end of the scale.

Heat tolerance of creeping bentgrass was scrutinized at the University of Arizona. Cohansey and Nimisilla showed the greatest tolerance, while Toronto did poorly. Temperatures of around 120° F. for 30 minutes caused protein breakdown in susceptible cultivars; many cultivars recovered from topgrowth kill at temperatures above 100° F. Subsurface irrigation resulted in poor color, apparently because of waterlogged rootzone pore space.

TURFGRASS AGRONOMY PAPERS (Continued)

A study by Mazur and Hughes dealt with the influence of fungicides on nitrogen mineralization in the soil. Benomyl, dyrene and maneb all reduced nitrification rates, maneb most severely (for up to 16 weeks). However, when applied to golf green turf there was no adverse affect from any on soil nitrification.

Beltsville investigators examined thatch accumulation in Kentucky bluegrass. No matter the management (treatments ranged from clipping removal through aerification to various additives), no significant difference in thatch accumulation occurred from 1964 to 1969. The next three years, clipping removal and liming for a pH of 7 helped in thatch control. Aerification and thinning reduced thatch, but adding organic materials (Milorganite) increased thatch. Letting clippings remain did not increase thatch in aerified or thinned turf, or when a wetting agent was applied; in fact turf quality increased significantly where clippings were not removed (at least during drought, and when disease was not damaging).

At Rutgers grasses were sowed to plots with a pH range from very acid to mildly alkaline; most plants grew better when lime was added. However, red fescues were more productive under acid conditions; Kentucky bluegrass and perennial ryegrass did best under slight acidity; legumes mostly failed under acid conditions. Magnesium additions were beneficial to ryegrasses, but slightly detrimental to bluegrasses and fescues.

What with the current emphasis on variety identification, investigators at the USDA Beltsville, are seeking microstructure identification features. Electron microscope configurations of surface wax seem helpful for determining difficult-to-identify cultivars.

Several papers dealt with southern turfs, primarily vegetatively propagated. At Athens, Georgia, the unpredictable loss of centipedegrass was checked out, something aggravated by liming and high mowing. Rotary tilling was effective in reducing thatch. Fungicidal treatment of seed did not improve the stand. In another study applications of pronamide aided centipede establishment.

In California growth retardant did not aid winter seeding of ryegrass into bermuda. Creeping red fescue and Highland bentgrass introduced into the bermudagrass persisted to make "evergreen lawns," and are suggested for southern California turfs to eliminate the need for annual overseeding. Herbicides were helpful for control of *Poa annua*, but vertical mowing increased the weed population in spite of herbicide application.

TURFGRASS FERTILIZATION REPORTS

Among the varied presentations to the Turfgrass Division of the Agronomy Society, several related to fertilization. It appears worthwhile to consider these together, the summaries being picked up from the printed abstracts:

Several papers dealt with slow-release nitrogen. At the University of Illinois IBDU was found to transform rather quickly to urea and ammonia, with significant nitrate not showing for several weeks. After eight weeks pH had dropped one unit below the level at time of treatment.

TURFGRASS FERTILIZATION REPORTS (Continued)

Volk and Horn, Florida, compared several sources of slow-release nitrogen. Here IBDU did not show early cold weather depression, but unlike UF had "shot its wad" and did not exhibit later rejuvenation. Response from organics (including manure and digested sewage sludge) was clearly inadequate. Two other Florida papers compared urea, UF, and IBDU in southern Florida, on bermudagrass. Twelve pounds of nitrogen per M was felt inadequate for good quality, 24-36 pounds being recommended. IBDU was not as satisfactory as other sources at medium particle size. Nitrate in the soil solution was eventually similar with all materials.

Pennsylvania research compared coated fertilizer, as well as UF and IBDU. Again IBDU was a bit quicker initially; coated fertilizers were slow to start (though picking up after about six weeks); "initial response from UF was slow, but residual effects were apparent ---." Pennsylvanians also tested nitrogen on Merion bluegrass, and found "slow-release sources reduced carbohydrates --- when temperatures were highest." A paraffin-coated urea stimulated growth early in the season more than the other materials, "resulting in a severe depletion of carbohydrates prior to warm weather," which should be conducive to hot-weather loss.

At VPI (Virginia), it was found that the nitrogen rates had little influence on the roots and rhizomes of Merion sod the first year, but increased them the second. Most roots and rhizomes were found in the top inch of soil.

FIELD BURNING AND BLUEGRASS SEED PRODUCTION

Present and impending restrictions on field burning has stimulated research on just how burning influences seed production. Three separate reports were given about this at the 1973 convention of the American Society of Agronomy, by Canode et al of Washington, Chilcote et al of Oregon State, and Elling of Minnesota.

Canode reports seed yield reduction of 70-90 percent where no treatment is undertaken; a 25-40 percent decrease occurs with mechanical removal but no burning. Even the little residue which remains after mechanical removal encourages elongation of a basal internode, resulting in fewer tiller primordia and rooting in the "thatch" rather than the soil.

Chilcote finds much the same thing with red fescue, -- primarily a decrease in fertile tillers when burning is abandoned. Mechanical removal increased seed yield, but not so much as did burning. Shading was quite detrimental. Apparently field burning exerts its beneficial influence on seed yields by favoring tiller number and condition in autumn, and may possibly influence floral induction as well.

Elling tried numerous treatments involving burning, raking, torching, desiccation, etc., in northern Minnesota. As in the Far West, removal of plant residues was beneficial to seed production. Most economical, and most efficient for Park bluegrass, was burning in July. With some of the elite bluegrass varieties, desiccation of the foliage followed by burning was preferable.

INSTITUTE CULTIVAR PLANTINGS

1973 has been one of the strangest years for the Institute grass plantings in the 18 years the grounds have been maintained. Eighteen months of abundant, well-spaced rain and mild weather (through December 5 at least) have had striking consequences. Bentgrass has been heavily favored, and for the first time in many years is showing up as patches in some bluegrasses and fescues. Strangely, however, *Poa annua* has not been as prolific as usual, possibly being overwhelmed by the bentgrass? A number of the cultivars, invaded by bentgrass, may have to be replanted in 1974.

With mild weather into December, grass has looked great. Almost all of the fine fescues were outstanding in early December. The majority of the Reed Funk bluegrass hybrids retained beautiful winter color, -- especially Galaxy, Majestic and Bonnieblue. Perennial ryegrasses have been almost as good but their real test awaiting survival through the first months of 1974.

Surprisingly, there has been very little disease on the Institute grounds. Yet, just 30 miles away at Ohio State University, disaster (particularly in the form of dollar spot) struck this summer. Stripe smut has so far not made serious inroads on Merion or other cultivars at the Institute.

SUBTLE SEED QUALITY DIFFERENCES

Interest has been growing in factors affecting seed quality beyond the usual mechanical ones. Reduced enzyme activity, insufficient stored food, protein coagulation in the embryo, degeneration of the nuclear and mitochondrial membranes, and degradation of cellular membranes, are some of the recognized causes for loss of seed quality. Such degenerative processes carry through to reduced yields, not only because of stand reduction, but because seedlings are weak competitors, grow slowly, flower later, and are "generally inferior," according to Andrews, Mississippi, in a report to the Seed Production and Technology Division at the recent Agronomy meetings.

Abernethy et al, Arizona, found range grasses to perform better when seeds and seedlings had "high energy levels" (measured by ATP content). Seed of heavier test weight showed greater "energy charge," not surprisingly beneficial to germination and seedling establishment.

LAWN DISEASE ECOLOGY

A report issued by Dr. Jackson and his associates from Rhode Island reflects the changing attitude about fungicidal turfgrass protection that results from the new systemic fungicides. " --- competition among microbes provides a system of checks and balances that determines the population of disease-inciting fungi. --- changing conditions may tip the balance in favor of the turfgrass pathogens ---." The report indicates that certain fungicides do tip the balance in favor of certain diseases. Difolatan . . . encouraged dollarspot, as the systemic fungicides did leafspot. Widespread use of systemic fungicides seems to be increasing the incidence of Pythium blight. In Rhode Island turf quality progressively decreased where systemic fungicides were used, unless supplementary protectants were used to check specific diseases such as leafspot.

VARGAS ON STRIPE SMUT

Dr. J. M. Vargas, Michigan State, in an article appearing in the November Weeds Trees and Turf, gives discouraging news about stripe smut, increasingly serious on bluegrass turf (particularly Merion and Windsor).

Vargas believes that there are constantly mutating strains of stripe smut, such that no variety is assuredly resistant to the disease. Stripe smut is systemic, and spreads through the tiller and rhizome buds. Systemic fungicides control it temporarily, but don't eradicate the disease, their use increases susceptibility to leafspot. Smut is most active in the cool wet weather of spring and autumn, but its effects show up in dead grass when this is under strain in summer and winter.

With increasing incidence, and no permanent, economical control, the situation is not encouraging. Vargas advises, "--- (choose) stripe smut resistant Kentucky bluegrass cultivars --- and then blend three or four of these together." Vargas believes that such blending will slow down the development of races of stripe smut able to attack the resistant cultivars.

FERTILIZER LOSS FROM LAWNS

The Institute often receives inquiry wondering whether fertilizer applied to a lawn contributes to pollution. A paper presented to the Soil Science Society by Wisconsin researchers outlined tests of nutrient runoff related to water infiltration. As might be expected, rain soaked into the soil less well where soil layering occurred (35 percent less insoak where the lawn showed soil discontinuity). With less insoak, more runoff occurred, and consequent carrying away of fertilizer if heavy rain came soon after application. Fertilizer loss was not excessive, however, ranging from 1 percent to 18 percent. When the lawn was watered at an appropriate rate after fertilization, ahead of an intense storm, nutrient losses were reduced to 1.7 percent of the fertilizer applied.

MORE ABOUT C<sub>3</sub> AND C<sub>4</sub> PLANTS

Research from the University of Georgia reported to the Agronomy meetings dealt with Photosynthate Translocation and Distribution. Four-carbon species were more efficient in removing tagged carbohydrates from the foliage (average 54.2 percent) than three-carbon ones (average 31.4 percent). However, crabgrass, a C<sub>4</sub> species, was below average (27.1 percent), and bermudagrass, also C<sub>4</sub>, a little below average (49.4 percent).

NITROGEN IN RUNOFF WATER

With emphasis on anti-pollution these days, the question often arises as to how important fertilization is in enriching runoff water. A study by USDA researchers, in Iowa, was reported to the Soil Science Society at the Las Vegas meetings, in which it was shown that approximately as much nitrogen is carried away from a fertilized watershed as is contributed naturally through rainfall. A little more and six pounds of nitrogen per acre is supplied in precipitation.

ANOTHER INSTANCE OF SYNERGISM

Research by Ball et al, Alabama, reported to the Crop Science Society, showed that an ineffectual chemical (kylar) and a mildly effective one (gibberellin), increased flowering and seed yields markedly when used in combination. Seed yields of clover were increased by over 60 percent.

BETTER GRASSES TOLERANT

A study on "Differential Response of Ditch-bank Grasses to Herbicides" in Montana, was reported in the September issue of Weed Science. Kentucky bluegrass, fine fescue, and to a certain extent redtop, were more tolerant of the treatments than reed canary grass, quackgrass or smooth brome. The main herbicide tested was amitrole-ammoniumcyanate. But fine fescue also proved quite tolerant to dalapon. Kentucky bluegrass was the species most tolerant of pyriclor.

BENEFIT FROM THATCH?

The Tea Research Association of India suggests that one of the advantages of an organic mulch is the release of carbon dioxide as decay proceeds. Might there not be some advantage to a lawn from decomposing thatch, through enrichment of the carbon dioxide near the lawngrass leaves?

ALL-SAND GREENS

Through the years specifications have evolved towards more durable, less expensive golf greens. Modern thinking (at least in California) suggests an unamended, fine sand green. Maintenance is simplified on all counts except nutrients; fertilization has to be more carefully watched, since there is scant nutrient-holding capacity. But researchers comment, "Nutrition is not a problem on a fine sand green - - - unless you choose to make it so." They add, "There are several excellent, slow-release and/or coated fertilizers presently available that, when correctly used, do an excellent job." This research is summarized in the summer issue of California Turfgrass Culture (Vol. 23, No. 3).

SLOW-RELEASE FERTILIZATION AND THATCH

Considerable comment was stirred by a press kit item mentioning a report from Texas, that thatch accumulated less in bermudagrass turf under slow-release fertilization. This research is amplified upon in the September-October Agronomy Journal, in an article reported by Meinhold et al. Differing sources of nitrogen were utilized, as well as potassium, fungicides, clippings collection and other variables. In general, a high level of nitrogen increased thatch accumulation (30 percent), while an organic treatment (Milorganite) increased microbial activity slightly. Fungicides seemed to decrease thatch (possibly because growth was somewhat stalled), and, surprisingly, microbial activity was increased. The authors conclude, "This study suggests that the use of slow-release N fertilizer applied at a level that maintains acceptable aesthetic turf quality may reduce thatch accumulation, whereas high rates of soluble N fertilizers accelerate thatch accumulation."

PURDUE UNIVERSITY FIELD DAY

A report from Dr. Daniels summarizes the Midwest Turf Field Day held at Purdue University September 24. Here are some of the conclusions:

Conventional crabgrass preventers have continued to perform reasonably well after six years of repeated use at the recommended rates. A new experimental, A-820, was exceptionally good this year, giving 100 percent control at 4 pounds/A. Crabgrass infestation was heavy in 1973, and none of the materials seemed injurious to turfgrass.

For general broadleaf weed control, a base of 2,4-D is recommended, which may be "souped up" with lesser quantities of MCPP and dicamba. This is essentially a do-it-yourself substitution for the patented Trimec.

As to diseases, bluegrasses suffered severely from dollarspot (the same as at Ohio State University, but not on the Institute grounds), while leaf spot was bad in late spring. There was some rust in August. Fusarium roseum and Ophiobolus have been in evidence. No particular enthusiasm is expressed for fungicidal treatment.

Sod webworms were "fierce" in certain lawns, especially where growth was heavy; entomologists suggest Dursban, Baygon, Diazinon and Aspon. Zoysia is finding favor in "touchy" climates, especially for golf courses. Monsanto's Roundup (glyphosate) showed great promise as a gradual kill for unwanted turf prior to renovation.

Manhattan ryegrass remained outstanding "equal or better than Pennfine." Fine fescues that rhizome more prolifically are being sought; PURF-1 is being considered for production by the Alumni Seed Improvement Association (which already handles Sodco bluegrass). Purdue interest in a promising dwarf bluegrass has been set back due to its lack of competitiveness. Elite bluegrasses are recommended for adequately tended turfs, with a "common" type to be included for poorly tended turf.

Observations continue on nitrogen fertilization, growth regulators, root-zones, and Poa annua control, although nothing dramatically new was reported.

URBANIZATION IMPACT

A novel study by University of Wisconsin researchers related to comparison of natural soil (the University of Wisconsin Arboretum), with conditions that result after urbanization (yards and lawns). Eighty percent of the lawns were found to have undergone marked disturbance, primarily the result of fill operations. Front lawns were more frequently and severely disturbed than backyards. Lawns, as compared to natural conditions at the Arboretum, usually show a higher pH, especially near the surface. Watering with hard water may be the chief cause. Phosphorus and potassium levels are somewhat higher in lawns than in natural soil, no doubt due to fertilizer applications. Nitrogen shows no difference, however, apparently its application being balanced through removal of clippings and by leaching. Surprisingly little difference was noted considering the soil profile as a whole. This report was presented to the Environmental Quality Division, of the Agronomic section of the Agronomy Society at Las Vegas, by J. H. Huddleston.

POA ANNUA PUZZLE

Except for a brief span in late August, the last year has been a very wet one for the Institute grounds. The soil was saturated through most of the winter of 1972-73, spring and early summer of 1973. It has been a "bentgrass year"; spots of volunteer bent are showing up where not before seen. The same is true for shallow rooted annuals such as crabgrass, in places where it has not been seen for the last 18 years.

Now for the puzzler. Conditions such as these would seem to be made to order for *Poa annua*. Yet, during 1973, we have seen less *Poa annua* than ever before. At times *Poa* has been quite prevalent in the irrigated plots, especially those low-mowed for bentgrass. As of October, hardly any *Poa annua* was visible on these plantings, or anywhere else on the grounds where it might have been expected to volunteer! What was there about a rainy year, and a mild winter, that checked *Poa annua*, when just the opposite well might have been anticipated?

LAWN FERTILIZER AND POLLUTION

A study made by Michigan State University, "Movement of P from Septic Drain Fields and Lawn Fertilizers through Soils to Surrounding Waters," was presented at the Agronomy Society Meetings in Las Vegas. Perhaps the most interesting conclusion, relating to the frequent accusation that lawn fertilization is a material factor in water pollution, is the "potential input of P from the septic systems was greater than the input from fertilizer." On organic and sandy soils, "Phosphorus from the septic effluent moved through the soils into the lake."

SIDURON EFFECTS

California research, reported in the September-October Agronomy Journal, relates to siduron toxicity in turfgrasses. This pre-emergence chemical was applied to both bermudagrass and bluegrass at light rates, under a wide range of temperatures and light intensities. As little as one ppm of siduron was toxic to bermudagrass under all environmental conditions, but Merion Kentucky bluegrass was not affected under any test conditions. Shoot growth of bermudagrass was more affected than root growth. Toxicity was slightly less at lower temperatures than high, and at low light intensity than high. Root growth of bermudagrass was greatest at 20° C., bluegrass at 15° C.

CANADIAN TURF PUBLICATION

OSECO Ltd., continues its excellent informational program in behalf of turfgrass with the November Accent on Grass. This four-page foldover is well printed and attractively edited. Lead story in the second issue was a review of roadside seeding and maintenance in Ontario. Other items were a review of Michigan State University turfgrass research, a golf course success story, and an interesting review of the new Toronto zoo, (many acres of which will be seeded for "naturalized" animal habitation). Gabe Eros is pictured receiving the award for "best grass" (Highlight fescue) at the Royal Winter Fair.