

BETTER LAWN--HARVESTS

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JACKLIN ASSUMES PRESIDENCY

George Osburn, nominated as Institute President at the Houston meetings, subsequently found it necessary to resign from this office, so that Vice President Doyle Jacklin became acting President until a special meeting of the executive committee, meeting in Marysville on September 5, could officially act upon Mr. Osburn's resignation and confirm a full slate of officers. Since Mr. Osburn could not be persuaded to reconsider, his resignation was accepted with regret, and much appreciation for understanding leadership during the previous two years. Mr. Jacklin was confirmed as new President, Mr. Gordon Miller (Stanford Seed Company) was named new Vice President, and Mr. Robert Russell continues as Secretary-Treasurer.

Since there was some question about the legality of motions voted at the Houston meeting, in which individuals other than trustees participated in the voting on items for which the constitution calls for trustee resolution, most actions taken there were reaffirmed except for a few questions thought to need further study (which were referred to committee for study and later action). The board of trustees, as renominated and confirmed, consists of: James L. Carnes (International Seeds, Inc.), Michael Harshbarger (Ag. Alumni Seed Impr. Assn., Inc.), Alan Hick (Northrup, King & Co.), Doyle W. Jacklin (Jacklin Seed Company), James Jenks (Jenks-White Seed Co.), Robert Lierman (Silverton, Oregon), Peter S. Loft (Lofts Pedigreed Seed, Inc.), Edward F. Manglesdorf (Edw. F. Manglesdorf & Bro.), Gordon Miller, (Stanford Seed), George E. Osburn (Hercules Inc.), Robert J. Peterson (E. F. Burlingham & Sons), Norman Rothwell (N. M. Rothwell Seeds), Robert A. Russell (J. & L. Adikes, Inc.), Swede Townsend (Whitney-Dickinson Seeds, Inc.), and Kent Wiley (Pickseed West).

As in the past, the executive committee will consist of the officers, plus appointments by the chairman. The executive committee for the year ahead consists of Doyle Jacklin, Gordon Miller, Robert Russell, George Osburn, Jim Carnes and Alan Hick. The need to restudy membership categories, as voted at Houston, was referred to a committee headed by Mr. Carnes, following an analysis of the by-laws by the secretary (with a memorandum of suggestions as to how membership categories might be simplified and brought up to date).

Realizing that inflation and increasing costs are today a "way of life", a budget committee consisting of Director Schery and the President and Treasurer was appointed, in an attempt to foresee requirements as much as possible. The Variety Review Board, as appointed by then President Osburn in Houston, was confirmed, with Dr. Gerald Pepin Chairman, Messrs. Kaerwer, Jacklin and Russell members. No formal action was taken concerning the proposed Product Review Board (as reported out at Houston by Chairman Skaptason), pending further consultation with Mr. Skaptason concerning points of definition (principally minimum participation requirements).

The Executive Committee voted to establish an "award of merit", to be conferred yearly on a recipient who has "done the most for the advancement of turfgrass research". It also voted to assemble a pool of small seed packages at the Marysville headquarters, which could be provided to qualified testing stations upon request. All Institute members who are sponsors of a proprietary variety are asked to send at least a half dozen 1 pound bags of good quality seed to Marysville, amply in time for winter requests.

With the exceptions noted, in essence the Executive Committee (meeting in Marysville on September 5) reaffirmed the Houston decisions. A summarization of the Houston "annual meeting" from the Director's notes follows, for the record.

SUMMARIZATION, LAWN INSTITUTE ANNUAL MEETING

JULY 2, HOUSTON, TEXAS

(Secretary Russell's tape recording will constitute the "official" minutes of the meeting.)

ATTENDING - George Bean (Stanford Seed), Jim Carnes (International Seeds), Alan Hick (Northrup King), Ted Howard (Scotts), Doyle Jacklin (Vaughan-Jacklin), William Jeffers (Oliger Seed), Peter Loft (Lofts Pedigreed Seed), Gordon J. Miller (Stanford Seed, Plymouth Meeting), George Osburn (Hercules), G. W. Pepin (International Seeds), Robert J. Peterson (Burlingham), Norm Rothwell (N. M. Rothwell Seeds), Skip Skaptason (PBI Gordon), Donald Stein (Loft-Kellog), John Zajac (Garfield Williamson), Peter Zuelzer (John Zuelzer & Son).

HIGHLIGHTS - Treasurer Russell distributed a thorough-going financial report, appended to the file copy of this summarization. The Institute's financial position was improved over a year ago, with a modest addition to reserves.

President Osburn extended welcome to trustees, and commended Institute activities during the year. He asked Director Schery to review the year's activities: this report appears in full in the 22:2 (July, 1975) issue of Harvests. Exhibits of Institute presskits (and some of the clippings resulting therefrom), sample reprints, issues of Harvests, booklets being considered for re-issuance, the joint "Supplement", etc., were circulated as examples of specific activities.

Dr. Pepin, Chairman of the Variety Review Board, presented his report for the year, appended to the file copy. He noted that five varietal applications

SUMMARIZATION, LAWN INSTITUTE ANNUAL MEETING (Continued)

were received during the fiscal year, of which four were approved (Plush and Touchdown bluegrasses, Yorktown and Derby ryegrasses). He pointed out that as progress continues in creation of new varieties, some concern arises about comparative quality of older varieties, and about the total number of acceptances. Suggestions for handling the situation include: setting higher quality standards, periodical "pruning" of lesser varieties, and the setting of minimum production levels. In the ensuing discussion it was felt that a preferable way to keep varietal acceptances within bounds would be for the proprietary firm to withdraw older, less valuable varieties as newer, more promising ones are entered. Among other considerations, good economic reasons exist for not terminating an older variety prematurely. President Osburn acknowledged that these suggestions would be given attention by the executive committee.

The report from Mr. Skaptason, Chairman of the Product Review Board Study Committee, was of high interest and subject to lengthy discussion. A copy of the proposal is appended to the file copy of this summary. The preamble notes fulfillment of last year's charge to the committee, which after much deliberation recommends an Institute "badge of merit" for products other than lawnseed. A seal so denoting would appear on advertising and promotional material concerning products or services that qualify. The opportunity would be open only to firms maintaining full membership in the Institute. A product or service must fulfill a specific, identifiable need; be safe and reliable for the inexperienced user; and bear clear, effective directions for use. Adequate test data and samples of material are to be furnished the Director of the Institute, and (once approval is granted for use of the seal), there must be no misuse of it upon penalty of disciplinary action. The seal user would pay a royalty equal to one half of one percent on net sales, but not less than \$500 nor more than \$10,000 in any designated twelve month period. Payments would be held confidential.

Mr. Hick wondered about the specific minimum and maximum figures. Mr. Osburn stated that these were arbitrary, but seem to represent an attractive range in keeping with receipts from proprietary turfgrasses. It is not the Institute's intention to get involved in large-sum operations, but rather to enhance its image of quality with an on-going program that would require neither additional staff nor testing facilities. Mr. Russell questioned the availability of this seal to any "full member", and it became apparent that membership categorization was badly in need of clarification and up-dating. The committee proposal was amended on motion by Carnes, seconded by Loft, to indicate that \$50 dues constituted "full membership"; additionally, of course, the \$500 minimum would apply (in effect requiring payment of at least \$550 for opportunity to utilize the seal). After considerable further discussion, in which Mr. Russell expressed misgivings about so low "an entry fee", the question was moved by Skaptason, seconded by Jeffers, and approved by voice vote without dissent.

President Osburn requested discussion as to wishes of the Board for continuance of the joint "Supplement" sent mainly for small newspapers. Mr. Loft asked Director Schery to express his opinion. Dr. Schery stated that he felt it was an inexpensive way to reach an audience not always on the mainstream of Institute

SUMMARIZATION, LAWN INSTITUTE ANNUAL MEETING, (Continued)

publicity, provided that costs are shared with other associations as in the past. The Lawn and Turfgrass Division of ASTA contributed equally with the Institute to the cost of the Supplement, but had not yet considered the matter for the year ahead. It was the consensus that the Executive Committee would make a more specific decision after learning what, if any, participation could be expected from ASTA. [ASTA subsequently sent a cost-sharing contribution]

Mr. Osburn asked Mr. Hick to report upon the field burning problem in Oregon, towards which the Institute contributed \$1000 during the fiscal year. Mr. Hick mentioned that there will be increasingly severe restrictions, but that a three year extension was voted that would allow time for developing alternative measures before complete phasing out of burning. He indicated that in another eighteen months there might be additional need for support of an informational campaign.

Mr. Skaptason moved, seconded by Mr. Hick, that a committee be appointed to study revision of membership categories. This was voted unanimously, and President Osburn promised that action would be taken in the near future.

ELECTIONS AND APPOINTMENTS - Acting for Nominating Committee Chairman Townsend, Mr. Jacklin reported out a slate of candidates proposed for election as Trustees for the ensuing fiscal year. These were: James Carnes, Michael Harshbarger, Alan Hick, Doyle Jacklin, James Jenks, Robert Lierman (Highland Bentgrass Commission), Edward Mangelsdorf, Gordon Miller, George Osburn, Robert Peterson, Robert Russell, Skip Skaptason, E. R. Townsend, and Kent Wiley. There being no nominations from the floor, Mr. Jacklin moved election of these trustees, seconded by Carnes, voted unanimously.

The nominating committee further offered as candidates for office, to be elected from among the trustees: George Osburn, President; Doyle Jacklin, Vice President; Secretary-Treasurer, Robert Russell. There being no additional nominations, the slate was accepted by acclamation.

President Osburn thereupon made the following committee appointments:

Executive Committee: the officers, and Messers. Carnes, Hick, and Skaptason. These gentlemen will act for the Board on an interim basis.

Variety Review Board: President Osburn explained that the Variety Review Board had now completed its first three-year cycle, in which the chairmanship rotated among the technical representatives. To start a new cycle, he had asked present members to continue another year, under the Chairmanship of Dr. Pepin. Messers. Doyle Jacklin and Howard Kaerwer will serve as technical representatives; Robert Russell, as commercial representative.

Product Review Board: President Osburn felt that the new Product Review Board should be given considerable thought. He asked Mr. Skaptason, who had so effectively chaired the study committee, to accept the chairmanship. He asked Mr. Skaptason for his suggestions as to members. Mr. Skaptason stated that he hoped a diversity of interests might be represented, covering as broad a product

SUMMARIZATION, LAWN INSTITUTE ANNUAL MEETING, (Continued)

field as possible. In addition to himself (as one primarily interested in chemicals), he suggested Mr. Loft (who had also served on the study committee, and represented primarily seed interests), plus someone who might have as his chief interest still a different product line (such as fertilizer). Director Schery and President Osburn are "ex officio" members. Mr. Osburn appointed Mr. Loft, and will name the remaining member after further consideration of candidates.

The next annual meeting was voted to be held in conjunction with the ASTA meetings in Los Angeles, the week of June 30, 1976.

QUARTERLY RELEASES

During the quarter the following items were prepared, in press or reprinted for distribution:

American Horticulturist	"Lawn Basics"
Home & Garden Supply Merchandiser	"Lawns Come Into Their Own"
Horticulture	"Autumn Care For Lawns"
New York Botanical Garden Journal	"A Man-Made Ecosystem - Your Lawn"
Prentice Hall	"Lawn Keeping"

TELEVISION APPEARANCE

September 10 Dr. Schery made his seasonal appearance on WEWS-TV, Cleveland, (the "Morning Exchange" hour). The format was much as in the past, - the showing of a few slides, followed by discussions with the MCs, winding up with questions telephoned in by the listening audience. As in the past, the switchboards quickly jammed, attesting to the high interest in lawns.

Emphasis was given soilbed preparation, and the seeding of new lawns at this time of year. The station again kindly made the offer of reprints to those sending into the Marysville office a self-addressed stamped envelope, our gratis "advertising". Within the next few days over 300 requests for informational reprints were received, a highly effective and inexpensive way of reaching consumers.

SIGNIFICANT DEVELOPMENTS AHEAD

Plans are laid for publication of a soft-cover book on lawns, having an "ecological flavor". Dr. Schery had been hoping for an inexpensive equivalent to A Perfect Lawn (Macmillan has shown no interest in issuing this as a paperback), and feels the new book will prove a good vehicle for presenting the "lawn story" in a readable way at a popular price. We'll keep you advised.

Countryside Press has bought rights to the old T.F.H. stable of publications, which included 10 Frequent Lawn Problems and Selecting Lawn Grasses by Dr. Schery. The publisher wants to combine these in an updated revision of small book-length to be offered for reading-rack sale at about 89 cents. The book will utilize 16 pages of full color.

SCHOOL REQUEST

A request from Cedar Ridge High School, New Jersey, asked for illustrations and literature for the horticulture classes. A series of "portrait" reprints, and a booklet Selecting Lawn Grasses was immediately sent.

APPEARS IN AMERICAN HORTICULTURIST

The Institute Story, "Lawn Basics", appeared in the October issue of the American Horticulturist, the respected magazine of the American Horticultural Society of Mount Vernon, Virginia. President Cathey had originally asked for a lengthier "definitive" presentation, but the editors abbreviated this to fit a four page format (plus a full page of color). Included is a boxed insert listing Variety Review Board acceptances. The story opens with review of how "grasses" become "lawngrasses", and the improvements that have resulted in recent years. Discussion of care is abbreviated. Reprints have been ordered, and it is felt that the item will make an attractive, handy, all-inclusive handout.

STORY IN HORTICULTURE

"Autumn Care For Lawns" appeared in the October issue of Horticulture magazine, along with some "humorous" sketches by one Jon McIntosh. The story opens with the admonishment that this is a season for Kentucky bluegrass, fine fescues, perennial ryegrasses and bentgrasses. Fertilization, bolster seeding and weed control are discussed. The story further advises, "Fresh lawnseed is no guarantee of a better lawn, but at least it does place desirable candidates in good position to colonize thin or bare areas where weeds will arise if grass does not. Autumn is a good time to improve your lawn by introducing some of the splendid new cultivars bred in recent years - varieties that are lower-growing, darker-color, more tolerant of disease, denser and more attractive than older varieties."

LAWNSEED INDUSTRY RESUME APPEARS

The August issue of Home & Garden Supply Merchandiser was devoted to past-present-future history and predictions on various aspects of the green industry. Dr. Schery was asked to prepare a section devoted to lawnseed, entitled: "Lawns Come Into Their Own". His review told of modernization of the industry shortly after World War II, and gradual evolution to its present highly regarded level. While the future is always uncertain, Schery anticipates continuing (but slower) growth, at least in keeping with the population. Very likely professional management will intensify (commercial, industrial, recreational, condominium properties, for example), and there may be some switch away from lawns as a status symbol as homeowner "values" are reassessed.

REPRINTS OFFERED

Inclusion of "A Man-Made Ecosystem-YOUR LAWN" in the Autumn Press Kit has resulted in some additional publicity for the Institute. Our old friend "Doc" Abraham, syndicated columnist, is offering this on his television broadcast. "Doc" writes "I was just looking over your wonderful press kit and came across 'A Man-Made Ecosystem'. To me its beautiful and original ---- It's great and I wonder if you have some extra copies ---- we can use on our TV show?"

TV COVERAGE PLANNED

A telephone call from the Maryland Center for Public Broadcasting indicated plans for a gardening TV series analogous to the well received "Wall Street Week" aired out of Owings Mills, Maryland. Literature was sent to help provide background for the program, with an offer to help in critical review (should it be requested).

REPRINTS ANSWER INQUIRIES

Good use is made of accumulated reprints for answering inquiries. During the quarter these were numerous due to a WEWS TV appearance by Dr. Schery, and mention in various newspapers (as a result of the Institute's PK offer) of reprints to those sending in a self-addressed, stamped envelope. Some of the titles distributed were: "Lawns, Their Making and Keeping", "New Varieties For Fine Turf", "Selecting Lawn Grasses", "Lawnmaker's Year", "Now Is The Time To Get Your Lawn Into Shape" and "Starting A New Lawn, Improving An Old Lawn".

BOY SCOUTS REQUEST HONORED

A request was received from The Columbia Pacific Council, Boy Scouts of America, asking for resource items for their upcoming Cub Scout Leader's POW WOW '75. The estimated attendance at this Pow Wow is 1500 from 15 counties of Oregon and Washington, serving over 20,000 boys.

The Lawn Institute was happy to be able to cooperate in this endeavor by sending the reprint "Lawns, Their Making and Keeping" reprinted from the HANDBOOK ON GARDENING published by the Brooklyn Botanical Garden.

NEWSDAY LITERATURE OFFER

The first week of September a flurry of self-addressed stamped envelopes was received in Marysville, asking for Institute literature. This resulted from an offer issued by Newsday, New York, widely picked up in both New York and New Jersey. Some respondents included the newspaper clipping, adapted from the Press Kit. In part this reads: "This is why the new lawngrasses, bred for density and low growth --- are a help. These varieties compete well with weeds, seed of which lurks in almost every soil ---. For a listing and brief description of Variety Review Board acceptances, send a stamped envelope --- to the Lawn Institute".

REQUEST FROM CHILE

The Institute's "reputation" gets around. This quarter's award for "The most distant request for reprints" goes to Dr. Ernst R. Hajek, Instituto de Ciencias Biologicas, Universidal Catolica de Chile, Santiago.

STRAW LAWNMAT

Easy-Lay Lawns Ltd., Kelowna, British Columbia, sent a sample of their new lawn mat composed of a bluegrass-fescue seed mixture and fertilizer impregnated on straw held together by water-soluble adhesive. The product seems sensible in its choice of materials, but it remains to be seen whether the economics are viable, and whether necessary amounts of seed are contained which can settle from the mat into soilbed crevices.

Gordon Latcher, marketing manager for Easy-Lay, writes, "Dear Mr. Schery: Since your book 'A Perfect Lawn the Easy-Way' is virtually our bible, I thought you might be interested in knowing that another method of lawn development is now in being and shows promise of becoming a significant factor in 'lawn-laying' across the country, particularly for the 'do-it-yourselfer' who finds sodding too difficult and too expensive and seeding too risky."

TECHNICAL SECTION

OHIO TURFGRASS FIELD DAY, 1975

The annual turfgrass Field Day at Ohio State University was held this year on October 1, rather than at the traditional time in August. It was a more pleasant, and in many ways more informative session by the research and teaching staff, although attendance was appreciably down. Ten staff members and several graduate students were present to review and answer questions about 10 different "stops", 5 in the morning, 5 in the afternoon, sandwiched around a catered lunch. Various aspects of research in Ohio, and current problems being encountered by homeowners and golf courses were given special attention.

Perhaps most interesting from the Institute viewpoint is the continuing observation of cultivars. These have now been split so that half receive the normal care (irrigation in dry weather, 4 pounds N/M annually), the other half receiving no watering or fertilization. Many of the vaunted cultivars excellent when cared for, were "disasters" under low-maintenance. This was particularly true of several of the New Jersey "P" numbers. Without attention, A-20, Primo, Sydsport, C-114, C-5, Nugget, P-115, and P-56 looked very poor. Better, but still not at top quality, were Fylking, Prato, Adelphi, Campus, Delta, Arista, Pennstar, and K-107. Looking good in spite of low care were many of the "common" types, including Kenblue, South Dakota common, Park, Palouse, and Minnesota-6 as well as A-10, Sodco, Vantage and Windsor. Even when given better care a few cultivars didn't look well, particularly Zwartberg; Nugget was only fair, probably because of its tendency to pickup dollarspot. Jamestown appeared outstanding among the fine fescues.

A whole series of new cultivars planted in April has had only one growing season "under their belt". Staff ratings on these (reflecting chiefly rapidity of establishment) showed Haga at the top among the bluegrasses, followed by EVB 1939, Ram I, P-104, Brunswick, EVB 216, EVB 282 and Touchdown; of the fine fescues C-26 headed the list, followed by Polar, Banner, Wintergreen and others.

Staff judgment is that Adelphi, Sodco and A-34 perform better than other commercial varieties in the Columbus environment, and that P-5, P-35, P-56 and P-115 are all excellent (although none are currently being grown for commercial production of seed). It was noted that under lack of maintenance Adelphi, P-5, P-56, P-114 and P-115 ranked lower than many of the "common" types. Vantage and Belturf are singled out as doing well under limited maintenance.

In overall score for four years of rating (at 1 1/2 inches mowing height) the rankings were, for the top ten: P-56, Adelphi, P-5, Sodco, A-34, P-35, P-115, P-114, A-20 and Vantage; the ten lowest ranking were: Delta, Kenblue, Minnesota-6, K-162, South Dakota, Geary, Palouse, WK-408, A-10, Park and Newport. Under the 3/4 inch mowing height ranking was roughly in this order, except that a few (such as Nugget, Merion and Sydsport) were relatively better than at the higher mowing.

Other research reported upon included investigation of what is apparently a fungal coating of sand grains that causes dry spots in golf greens; the finding of many new Pythium blight diseases (mainly a problem on bentgrasses); no relationship between nitrogen fertilization and thatch (there may be a linkage to pH, alkalinity making silica more soluble and perhaps better picked up by the vegetation); lack of positive results from biological thatch eliminators (such as Bio de-thatch); reduction of dollarspot by nitrogen fertilization; knock-down of grassy vegetation with glyphosate; and current turf insect problems

OHIO TURFGRASS FIELD DAY, 1975 (Continued)

(previously little-evident billbug has been the chief problem in Columbus this year, with some chinchbugs but very little webworm).

AGRONOMY MEETINGS, TURFGRASS REPORTS

Session 2 included a review by Moore, Aquatrols Corp., indicating that blended wetting agents increase infiltration and percolation, wet the soil better, decrease density of compacted soils, increase drainage, increase moisture availability, increase rooting, eliminate dry spots, reduce evaporation loss, reduce wilting, and generally reduce disease and winter injury. Rieke and Beard, Michigan, demonstrated the effectiveness of a wetting agent for improving a hydrophobic soil; turf recovered more quickly, and benefits lasted longer, with wetting agent as compared to cultivation. A combination of coring and wetting agent was best of all.

Nielsen and Spomer, Illinois, reviewed the theory behind amending golf green soil. Daniels and Freeborg, Purdue, discussed criteria for sands, which must be fine to work well in such special greens construction as the Purr-Wick perched water table. Ohio researchers reported upon recovery of nitrogen in simulated golf green soil columns; with "quick release" nitrogen, grass and organic materials accumulated most of the nitrogen, while with UF, IBDU and natural organics most of the nitrogen remained as residual fertilizer (or accumulated in the turfgrass clippings). UF provided more residual fertilizer than did Milorganite, which in turn provided more than did IBDU.

Third session papers dealt with physiology and stress. Pennsylvania researchers reviewed carbohydrates in bluegrass; leaf blades showed lowest carbohydrate content, sheaths highest. Carbohydrate varied throughout the day, and from day to day, depending upon environmental conditions. Krans and Beard, Michigan, observed that root development decreased and shoot density increased, as clipping height was lowered and clipping frequency increased (with Merion). Photosynthetic and dark respiration rates increased. Kinbacher and Francis, Nebraska, found nitrate reductase activity in bermudagrass to be significantly higher than in buffalograss, and enzyme activity in buffalograss significantly higher than in Manhattan ryegrass. Kentucky 31 fescue and 5 Kentucky bluegrasses were not significantly different from one another, but their enzyme activity was less than with bermudagrass, buffalograss or Manhattan ryegrass.

Beard and Karnok discussed electrophoretic identification of Kentucky bluegrass cultivars, of which only Nugget and Galaxy give clear indications. There was some grouping and partial identification, provided growing conditions were constant. University of Missouri researchers related carbon exchange to cold hardening of Zoysia and bermudagrass; no practical conclusions seem to have been found. Minnesota researchers examined cold acclimatization in NK-200 and NK-100 perennial ryegrasses; NK-100 "winter killed" in the field, while NK-200 achieved hardiness to as low a temperature as -37°C in January (-14°C in June). NK-200 seems able to survive greater cellular dehydration and tolerates more tissues ice than does NK-100.

Karnok and Kneebone, Arizona, found differences in heat tolerance to selections of creeping bentgrass; it tied in with respiration rate and "apparent photosynthesis". With all selections root growth decreased as temperature increased,

AGRONOMY MEETINGS, TURFGRASS REPORTS (Continued)

and no root formation took place at 40°C. Ehler and Dunn, Missouri, tested the comparative response of three bluegrasses and bermudagrasses to high temperature. Heat stress could not be shown to be purely enzymatic or biochemical. All bluegrasses showed a higher water requirement than did bermudagrass.

Nutrition and management were subjects for discussion in the fourth session. Pennsylvania researchers noted that depth and weight of roots do not necessarily reflect their activity. Uptake of nutrients by the foliage is a better indication of root absorption. In another Pennsylvania test it was shown that sampling depth materially affected soil tests. Inclusion of thatch increased test levels of several readings. Fertilizer recommendations would differ considerably depending upon level from which the soil was sampled.

Researchers at Rhode Island confirmed that Merion bluegrass receiving high fertilization or unbalanced fertilization, experienced more stripe smut (but phosphorus appeared to provide some resistance to the disease). At Missouri, ancymidol (a growth regulating chemical) reduced tall fescue topgrowth by 50-75%; heavy concentrations stopped bermudagrass topgrowth altogether. Roots and stem bases seemed little affected (tall fescue: bermuda inconsistent). Yellow nutsedge was controlled in Illinois as reported in the Proceedings of Illinois Turfgrass Conference.

Anda and Beard, Michigan, studied seed soaking and drying treatments to improve emergence of Penncross bentgrass, Pennlawn fescue, Manhattan perennial ryegrass and Merion bluegrass. Soaking at various temperatures and for various lengths of time, followed by drying, did benefit germination, although treatments were not significant with Manhattan. Considering the laboriousness of the operation, there seems to be no practical advantage from such procedure. Horst and Taylor, Texas, El Paso, compared sixteen Kentucky bluegrass cultivars for performance under increasingly saline conditions. As salt concentration increased, germination, fresh weight and emergence decreased. The cultivars responded differently, reflecting genetic variability for germination and growth under saline conditions. Duncan and Beard, Michigan, investigated wear-tolerance as related to thatch. Wearability increased as thatch or mat increased, and a moderate level of thatch is desirable for improved wear tolerance (provided it is not so abundant as to cause other disadvantages).

15TH. ILLINOIS TURFGRASS CONFERENCE

The Proceedings for the 15th. Illinois Turfgrass Conference was received in July. This represents one of the most rapidly advancing turfgrass programs in the country. The Proceedings is excellent, up to date, and well edited.

Hughes, Illinois, updates IBDU observations. He notes accumulation of ammonia, especially on acid soils, but finds that particle size is most important in affecting nitrogen release.

Turgeon and Black observing yellow nutsedge in competition with Kentucky bluegrass, find that anything favoring the bluegrass affects the nutsedge adversely. Bentazon, cyperquat and MAMA were all helpful in controlling the weed.

Turgeon and Siemens discuss the advantages and disadvantages of core aeration compared to the Jacobsen subsurface soil-shattering device. On the whole core removal is less devastating, but seldom penetrates deeply enough to break a "hardpan" (about 3 inches deep) that seems to develop because of repeated

15TH. ILLINOIS TURFGRASS CONFERENCE (Continued)

aerification. Shattering is applicable only to dry soil, coring best done on damp soil.

Jansen discusses the influence of pesticides on soil properties; Illinois is well known for research in which pre-emergence herbicides (as well as insecticides) were shown to eliminate soil organisms (such as earthworms) to the detriment of turfgrass.

Turgeon reviews annual grass control, chiefly by pre-emergents. He notes that there has been injury from repeated use, usually due to weakening of the grass (that then permits increased disease, more thatch, and so on). Crabgrass control was excellent with Betasan, Dacthal, Balan, Emblem, Ronstar and Tolban (plus some still coded materials). However, the newer materials (such as Ronstar and Tolban) seem to offer no advantage over older ones such as Betasan and Dacthal. In separate research Dacthal proved quite toxic to bluegrass when applied to waterlogged turf (from the air). Hiltibran and Turgeon also report little hazard from most water herbicides (if the water is then used for irrigation), exceptions being dichlobenil, silvex and simazine.

C. Reed Funk discusses the breeding of turfgrasses. He noted the increasing importance of perennial ryegrass, and contrasted the late-flowering, leafy varieties with the early-flowering less-leafy types. He commends Manhattan, Pennfine, NK-200, Eton, Birdie, Citation, Yorktown, Derby, and Diplomat. For winter hardiness he likes Eton, NK-200, Manhattan and Yorktown. Citation, Pennfine, Birdie, Derby and Diplomat exhibit good heat tolerance and summer performance. Citation, Eton, NK-200, Pennfine, Birdie, Diplomat, Yorktown, Manhattan and Derby all mow well (for a ryegrass) but Eton and NK-200 (which rank very well during cool weather) don't mow so well during hot weather. Yorktown and Pelo rank best for resistance to winter brownblight; Citation, Pennfine and Diplomat for brownpatch resistance. Citation and Yorktown have generally shown the darkest color. Other strengths and weaknesses of the perennial ryegrasses are reviewed.

K. T. Payne, Michigan, reviewed fine-leaf fescues. Because of susceptibility to hot weather disease, a really excellent red fescue is not yet in sight - although the potential is there. Performing best overall at Michigan State University were Dawson (seriously decimated on the Institute grounds in 1974, but recovering well) and Menuet (northern rather than southern Michigan).

A number of papers are devoted to golfing interests, including putting green soil, bentgrass diseases, wetting agents, pesticide application by helicopter, automatic irrigation, economy in maintenance, etc. Dr. Dunn, Missouri, spoke of zoysia and tall fescue as alternatives to bluegrass in the border states. Schinderle and Turgeon reported on bluegrass mowing height and frequency related to fertilization. Some Rhizoctonia disease was noted on all low-mowed turf, but decreased the more frequently grass was mowed. Clippings were most abundant the day following mowing, as compared to the day following a "rest period". Turf quality was generally best under low fertilization in summer but high fertilization in autumn.

15TH ILLINOIS TURFGRASS CONFERENCE (Continued)

Other papers slanted towards landscaping included review of insect pests on ornamentals, selecting plants suited for the landscape, protecting landscape plantings (intelligent choice of species for the location), use of flowering annuals, and soil physical factors as they affect water relationships.

Highlight of the meetings was a symposium on Kentucky bluegrass. Meyer, then of Warren's Turf Nursery, provided background discussion. Funk, Rutgers, noted the many fine attributes of bluegrass as a turfgrass, but also that rather little has so far been done to provide cultivars bred especially for such things as herbicide tolerance, pest resistance, problem soils, regional needs, etc. Some selections are less molested by insect pests than others. Zoysia varieties have shown considerable differences in tolerance of herbicides, and the same should hold true for bluegrasses (this has been seen, for example in tolerance to tricalcium arsenate). The shade tolerance of Nugget and A-34 is cited as evidence of ability to breed for this attribute. Observations in New Jersey indicate that the bluegrass compete rather poorly with tree roots, while the fine fescues do better (the tree root competition, not the shade, makes the difference). Funk sees many opportunities to combine the best characteristics of various parent strains into one plant, and to economically perpetuate this "clonal" quality through bluegrass' proclivity for apomixis.

Payne, Michigan, cited observations on bluegrasses at Michigan State University, made mostly by Dr. Beard. He noted that Merion had been excellent, but is beginning to suffer from widespread buildup of disease inoculum. Nugget, recently, has been starting to suffer from dollarspot, although previously it had been top-rating. Nugget and A-34 have been excellent in shade. NJE P-56 has been the outstanding variety for density and dark color throughout the season. On the whole, Adelphi, Galaxy, Baron, A-20, Sodco, Bonnieblue, Belturf, Majestic and A-34 have been superior. In wear tolerance Beard rates Fylking, Nugget, Pennstar, and Baron as best. Belturf and Monopoly are best for tolerating submersion. Prato, Cougar, Delta, and Kenblue use least water. Nugget is the sole variety rating "excellent" for low-temperature hardiness.

Dunn, Missouri, reported 5-year observations on Kentucky bluegrass, including two subtest locations in the southern part of the state almost in "bermudagrass country". Top-rating over the five year period have been A-20, A-34, Fylking, WK-412 and Sodco. Poorest have been Arista, Delta, Campus, Nugget, and South Dakota common. Early indications are that Victa, Galaxy, Majestic and Emundi are doing well at a southern location.

Turgeon reviewed Kentucky bluegrasses in Illinois. Bluegrass suffers primarily from two diseases, Helminthosporium in spring, and Fusarium in summer. Varieties exhibiting resistance to these diseases include A-20, A-34, Adelphi, Baron, Glade, Majestic, Monopoly, Parade, Sydsport, Touchdown and Victa (along with a number of coded selections). Glade appeared to dominate a Nugget-Glade blend, and Brunswick a Brunswick-P-59 blend. Fescue-bluegrass mixtures have not been too satisfactory because of poor visual quality due to summer "disease". On the other hand bluegrass-perennial ryegrass has so far done well. Several coded selections competed very well with annual bluegrass, but Park and Galaxy were not strong in this respect. Under a light fertilization schedule Windsor,

15TH. ILLINOIS TURFGRASS CONFERENCE (Continued)

A-20 and Nugget did relatively poorly, but performed much better under heavier, more-regular fertilization; yet Merion, Fylking, Pennstar and Kenblue were not benefited by heavier fertilization. Turgeon provides ratings on leafspot, Fusarium blight, and quality at three times of year for the individual varieties, blends and mixtures listed alphabetically.

RUTGERS PROCEEDINGS APPEARS

Proceedings of the January 1975 Rutgers Turfgrass Conference were issued in July. Much of general interest is contained, although the publication will not be reviewed in great detail since much that is reported duplicates presentations by Funk and Turgeon at the Illinois Conference, reviewed elsewhere.

Opening papers cited the most frequent problems (as judged by inquiry) on Long Island (Fusarium roseum disease leads), and suggestions for practical turf on school grounds. Duell and Schmit note the need for something better for roadsides, and cite red fescues as the prime possibility (Fortress, a spreading selection made at Rutgers, is a candidate). Waddington, Pennsylvania, reviews fertilization, and suggests that nothing gives top performance year-long from a single application. Vasvary confirms that Japanese beetle grubs have developed resistance to insecticides, but that many newer ones are still effective (including Dasanit, labeled for nematode control).

Smiley, Cornell, evaluates fungicides. Systemics are useful for controlling Fusarium blight, and a single application was as effective as were two separate applications totaling the same concentration. Some of the thiophanates did poorly. There was no good evidence that a nematicide was of great importance in the control of the Fusarium. A granular formulation of benomyl gave good control of stripe smut. But where stripe smut was well controlled, Helminthosporium and rust increased. Fungicide-treated grass became more severely infected with a number of diseases than did non-treated turf. A Penncross green seemed predisposed to cold weather brownpatch; apparently fungicidal treatment depressed microorganisms which normally hold the brownpatch in check? Snowmold was well controlled by a number of fungicides. Smiley concludes, "Reduced turf quality was definitely associated with previous use of systemic fungicide -- in one case, where only one application of Benomyl was made, the turf was far superior to that where four applications were made ---". Thorough drenching of a systemic fungicide is necessary for effectiveness, and may limit damage. Several diseases seem to be developing tolerance to systemics.

Other papers discuss fungicides and their applications; watering as it affects bentgrass-annual bluegrass; control of annual bluegrass with bensulide; tricalcium arsonate; and endothal.

Dickson and Funk reported on the regional Kentucky bluegrass test started in 1972. Highest rating for 1974 was Brunswick, followed by P-59, Touchdown, and a combination of Adelphi-Glade. The discussion of perennial ryegrasses was essentially the same as given for the Illinois Conference, with many of the newer varieties cited for superior performance. Citation had the highest average rating for 1974 (1972 planting), followed by Syn B, Manhattan, Yorktown and Loft's Syn F; at Adelphia Syn F was "tops", followed by Syn B, Diplomat, Manhattan, Citation and Derby.

RUTGERS PROCEEDINGS APPEAR (Continued)

Engel, Bussey and Catron review crabgrass and goosegrass controls. Nothing has proved outstanding yet for goosegrass, but a number of new and old pre-emergence chemicals work well for crabgrass. In general granular applications were superior to sprays.

Engel, Lindemann, and Halisky confirmed that nitrogen generally increases Helminthosporium disease. Autumn applications of a soluble fertilizer does not increase disease, though the same fertilizer does if applied in late winter or spring. Slow-release fertilizer in spring, at reasonable rates, is not deleterious. Disease is apt to be somewhat more severe in shade. The authors suggest lower levels of spring fertilization where Helminthosporium is a problem. Review of Kinds of Lawngrasses for New Jersey winds up the Proceedings. Cited for good leafspot resistance in the leaflet are Adelphi, Birka, Bonnieblue, Fylking, Pennstar, Majestic, Merion, Nugget, Parade, Sydsport, Touchdown, A-20 and A-34. Of these Birka, Bonnieblue, Fylking, Pennstar, Nugget, Sydsport, Touchdown and A-20 also have good stripe smut resistance.

NITROGEN INFLUENCE ON GRASS

Papers presented at the opening session of the Turfgrass Division Agronomy Meetings, University of Tennessee, dealt with nitrogen and organic wastes. Brief summary may be of interest.

Hughes, Illinois, reviewed nitrogen release from IBDU. For 2 months release was more rapid under acid conditions; but soil moisture and particle size were the major determining factors. Volk and Dudeck, Florida, investigated IBDU influence on ryegrass when used as a topdressing. Some discoloration of grass occurred from IBDU applications at only slightly more than conventional rate, especially at higher pH. Heavier applications yellowed grass for months, but there was no off-color with ureaform or sulfur-coated urea. Ohio researchers found IBDU to stimulate spring green-up poorly compared to UF, but resulted in higher quality turf in mid-summer. IBDU used in September provided good quality in spring (better than UF), but UF applied then gave increased quality through spring and early summer while IBDU did not.

McCart and Shoulders, Virginia, compared different nitrogen sources for fairway and rough turf quality for 5 years. Results varied from year to year, but most of the time there was little difference comparing ammonium nitrate, UF and three types of sulphur-coated urea. Smithberg and White, Minnesota, report on the effect of fertilization in early autumn on hardiness. Reasonable rates showed no difference in winter hardiness (Baron bluegrass survived -40°C , Kenblue -32°C , Wintergreen fescue -25°C , NK-100 ryegrass -25°C and NK-200 -37°C). Late fertilization provided better foliage into winter, and earlier green-up in spring. Penncross bentgrass was somewhat injured by fertilization with ammonium nitrate. Henderlong, Ohio, in a five year study, found autumn fertilization to enhance Merion and Kenblue bluegrasses, Pennlawn fine fescue, and Kentucky 31 tall fescue. Color was better, as was early spring green-up and density. Thatch was not markedly affected (pH appeared to be of greater significance than either rate or time of nitrogen fertilization).

NITROGEN INFLUENCE ON GRASS (Continued)

Mitchell and Dickens, Auburn, Alabama, measured sod strength of bermudagrass under differing treatments. Moderate fertilization gave stronger sod than that which was heavily fertilized. Tifway sod was nearly twice as strong as Tifgreen. Mowing height did not measurably affect sod strength. Snow and Kaufmann, Cornell, investigated the effects of nitrogen on bluegrass biomass. The study was in response to suspicion that well drinking water might be contaminated from turf fertilization. Heavier fertilization gave a higher percentage of nitrogen in grass tissue, but not greater tissue weight.

Shearman and Beard, Nebraska and Texas, investigated the influence of nitrogen and potassium on wear of Toronto bentgrass. Grass wore better as nitrogen was increased to a moderate level, then decreased. Potassium improved wear. Other influences were noted. Wright and Huling, Rhode Island, reported on the use of pharmaceutical wastes for growing turfgrass. The mycelium contained about 2.5% nitrogen, and proved an excellent amendment for growing turfgrass. Burns, Georgia, evaluated solid sewage sludge for sod production. Heavy metals in the sludge seemed to retard root formation of bermudagrass cuttings, but nonetheless satisfactory sod can generally be grown using the sludges tested.

UPCOMING EPA INFLUENCE

During the agronomy meetings, a joint session before the turfgrass and land use divisions featured EPA administrators Ritch and Osmun, as well as Dr. Foy of VPI (representing the academic viewpoint) and Bangs of Scotts (representing industry). The symposium served well to point up how far reaching are the new FIFRA regulations, and how unresolved the issues still are. Osmun, in particular, pictured the new authority granted EPA for policing pesticides, to be a direct mandate of Congress, well thought-out, logical in its approach, with leniency being shown "offenders" during the shakedown periods. Foy, on the other hand, noted how complicated and time consuming all of the requirements are for those engaged in academic research (and by implication those involved in use of pesticides). He feels that much of the paperwork is valueless, and some of the regulations downright contradictory.

From the gist of the discussions it appears that many homeowner products will be washed out by the new regulations. Certainly things so hazardous as soil fumigation chemicals will be restricted. Even farmers will be required to "pass a test" to use many familiar chemicals, and restrictions are even greater for applicators (including golf course superintendents). Strangely, the "intended use" weighs importantly; creosote, for example, might be restricted when used to control fungi (i.e. prevent decay), yet be allowed freely for staining wood or other uses!

We can certainly envision several years of confusion regarding pesticide use, and so many roadblocks seem to be in the way of conventional homeowner purchase and use as to cause one to wonder how much control of disease, insects, and weeds in the lawn will prove possible without the hiring of a licensed lawn service operator!

HERBICIDES AND THATCH

Results from turfgrass conferences previously reported in Harvests, on the influence of various herbicidal treatments on thatch development in Kentucky bluegrass, were formalized by publication in the July-August Agronomy Journal. Turgeon, Freeborg and Bruce, Illinois and Indiana, were the authors. Calcium arsonate and bandane seriously stressed the bluegrass, causing more leafspot, greater tendency to wilt, and substantial thatch development. The thatch is apparently due to the elimination of earthworm activity by the chemicals. Bensulide was mildly inhibitory, while Benefin, DCPA and siduron produced no measurable effects.

ENCOURAGING NUTSEGE CONTROL

Johnson, Georgia, reports in the September Weed Science on his research concerning purple nutsedge control in turfgrass, using bentazon and perfluidone. Bentazon was especially encouraging in that it was not injurious to the turfgrasses, while still controlling nearly 100% of nutsedge when applied in late spring (it was considerably less effective in summer). Perfluidone was reasonably effective when applied in spring, highly effective in summer, but it injured st. augustine, zoysia, centipede and common bermudagrass (a few bermudagrass cultivars were tolerant). The results are encouraging, in that nutsedge is one of the worst turfgrass weeds, seemingly on the increase.

SOD INDUSTRY' STATISTICS

The July issue of Weeds, Trees, and Turf quotes Dr. Hall, University of Maryland, about the industry in that state. Hall estimates a quarter million acres of turf being maintained in Maryland, at a cost of about \$80 million. Thirteen thousand acres of commercial sod exist (more than in Virginia, Pennsylvania, and New Jersey combined). Installed, its estimated value is 43 million. Hall estimates that it costs about \$3,279 to purchase, transport and lay an acre of sod.

WEED CONTROL IN DORMANT BERMUDAGRASS

Johnson, Georgia, reviewed the usefulness of various herbicides for controlling winter weeds in dormant bermudagrass, in the September-October Agronomy Journal. Two new products, methazole and cisanilide, were quite promising, but no herbicide (including Trimec-like combinations) were effective against all weeds in a single application.

ARSENIC ACCUMULATION FROM CRABGRASS HERBICIDE

Robinson, Georgia, reports on accumulation of arsenic residues in soil as a result of arsonate applications, in the September Weed Science. Varying rates of MSMA (a familiar product for post-emergence crabgrass control), were applied repeatedly over a five year period, and the soil tested for arsenic accumulation. Only the very heaviest treatments showed significant increase in arsenic residues; elemental arsenic did not show increase on any of the test plots receiving less than about a pound of MSMA/M. These results are encouraging so far as reasonable use of arsonate is concerned, but do point up that serious arsenic accumulations can develop with heavy use.

IN AGRONOMY NEWS

Dr. Schery's Liaison Reports on TIE appeared in the July-August 1975 issue of Agronomy News. This has little to do directly with turfgrass, but does represent tie-in with influential groups nationally.

WINTERGRASSES FOR SOUTHERN GOLF COURSES

Ray Jensen's recent "Southern Turf Newsletter" deals mostly with suitable winter cover for Southern golf courses. Great success was experienced at Callaway Gardens with Penncross as a greens grass, only to have summer failure a few years later (by which time, unfortunately, existing bermuda greens on another 18 holes had been switched over to bentgrass).

The perennial ryegrasses are extolled for overseeding, with Pennfine receiving top honors in tests conducted at Tifton, Georgia. Eighteen varieties and mixtures were compared with the following results (listed in order of rating, first mentioned being best): Color - 85% Pennfine, 15% Dawson fescue; 70% Pennfine, 30% Dawson; 85% Pennfine, 15% creeping red. Texture - 85% Pennfine, 15% Dawson; 85% Pennfine, 15% Jamestown fescue; 70% Pennfine, 30% Dawson; 85% Pennfine, 15% Jamestown. Quality - 85% Pennfine, 15% Dawson; 70% Pennfine, 30% Dawson; 85% Pennfine, 15% Jamestown. Manhattan and Manhattan combinations were good, too, although most of the "winners" in these tests had a high Pennfine content.

VEGETATIVE ESTABLISHMENT OF BLUEGRASS

Solon and Turgeon, Illinois, report in the July-August Agronomy Journal, on attempts to plant bluegrass vegetatively (necessary with certain cultivars that don't breed true, such as A-20). In the planting of plugs, size seemed to make less difference than frequency. Shredded sod was "touchy", the fragments often drying out, but under favorable circumstances it produced a new turf quickly.

MORE ALLELOPATHY EVIDENCE

Extensive research reported in vol. 56, no. 3 (Late Spring, 1975) Ecology, by Tennessee researchers, provides convincing evidence of phytotoxicity from secretions by Sassafras. This supports the conclusion that "---releasing phytotoxins into the environment at different times of the year --- continuously influences a [seed plant's] surroundings." Allelopathy is so prevalent in the plant kingdom that certainly it can be expected to prevail with grass species, including those used for lawns. Ryegrasses and fine fescues may be particularly influential.

COMPETITION AND VEGETATIVE REPRODUCTION

Studies by Abrahamson, Bucknell University, reported in Vol. 56, No. 3 (Late Spring, 1975) Ecology, show that in species examined a marked decrease in vegetative reproductive effort occurs as population density increases. On the other hand sexual reproductive effort (seed) does not diminish. This same generalization probably applies to turfgrasses such as bluegrass, in which sodbound plants rhizome less than do spaced plantings (from which rhizoming is usually judged).

VEGETATIVE BLUEGRASS ESTABLISHMENT

Research by Solon and Turgeon, Illinois, reported in the September-October Agronomy Journal, deals with rapidity of bluegrass establishment from plugs. Intensive treatments in the greenhouse show all pre-emergence herbicides to inhibit some aspect of growth; however, outdoors only benfen and bensulide reduced spread of the bluegrass measurably. Where annual bluegrass sprouting from seed was involved, oxadiazon provided the best weed control for establishment of the bluegrass.

ENERGY PER ACRE

Cornell University has calculated energy usage per acre for a number of crops, as reported in June HortScience. Heading the list for gasoline is cabbage, with 76.7 gallons. Onions require 13.6 gallons of propane plus 280 kilowatts of electricity. What might be the estimate for annual lawn maintenance? Exclusive of energy required for the making of product (fertilizer, pesticides, equipment), I would estimate on the order of 30 gallons of gasoline used directly for maintenance of an acre of Lawn Institute grass annually (about on a par with snap beans, in the Cornell survey). Would it be fair to double this figure on an equivalence basis, calculating in manufacture and amortization of equipment plus product (principally fertilizer) dispersed? Assuming so, nearly a billion gallons of fuel might be required to underwrite the nations turf maintenance? If so, this comes to about one-eighth of what Cornell estimates is the total requirement for farm production nationally, and something in the nature of one-third of one percent of national fuel requirements.

NITROGEN INFLUENCE ON RECOVERY FROM STRESS

Research by Watschke and Waddington, Pennsylvania, on the recovery of Merion bluegrass from various abuses when differentially fertilized, is reported in the July-August Agronomy Journal. When Merion was allowed to wilt, that most heavily fertilized with nitrogen wilted most quickly; that which was unfertilized was quickest to recover, and the most heavily fertilized the slowest. When the Merion was scalped, turf that had been liberally fertilized recovered faster than that which was lightly fertilized. Carbohydrates were less evident in fertilized than in unfertilized turf.

TRACE ELEMENTS FOR TURF

Dr. C. E. Watson, New Mexico, spoke about "Microelements of Turfgrass" at the Arizona Turfgrass Conference, epitomized in the July Western Landscaping News. Watson believes that much of the "iron deficiency" is really a zinc deficiency, or combined with zinc deficiency. Almost invariably on western soil the trace elements are present, but are "tied up" in the soil in unavailable form. Reducing the high alkalinity generally releases sufficient trace element. Thus the choice of an acidifying fertilizer helps prevent "iron chlorosis". Soils alkaline from sodium (rather than calcium carbonate) respond best to applications of ferrous ammonium sulfate.

LAWNGRASS VARIETIES CITED

An Institute article entitled "Lawngress Who's Who", was carried in the Bull Sheet (August issue), publication of the Midwest Association of Golf Course Superintendents. It begins "Outstanding lawngress varieties accepted by the Variety Review Board of the Lawn Institute include the following: ---". The recitation which follows was organized by species, with a general description of the species before citation of the varieties. Nothing remiss happened with the bluegrasses, but half way through the perennial ryegrasses the editor ran out of space, making it seem as if the only perennial ryegrasses were those towards the beginning of the alphabet!

TURF RESEARCH AND IRRIGATION ANNUAL

The "Turf Research And Irrigation Annual" put out by Park Maintenance magazine appeared as usual in the July issue. Several regional experts reviewed research in their areas, Dudek, Florida, for the South; Skogley, Rhode Island, for the Northeast; and Daniel, Purdue, for the Midwest. Mascaró, Florida, handled the "Irrigation Outlook".

Not a great deal of new information was presented, although Dudek summarized very nicely what is going on in the South. Floratam, SAD-virus and chinchbug resisting st. augustine has been released and is making headway. New bermudas and bahiagrasses are under investigation, though difficulties seem to be increasing for centipedegrass. The advantages and disadvantages of fertilization through the irrigation water is discussed. Subsurface irrigation has its problems, but progress is being noted. Glyphosate is highly touted as a lawn renovation chemical. Inexpensive methods for nematode control seem shaping up. Research for the other regions has generally been covered elsewhere in Harvests.

FESCUE SPREADING

Ensign and Weiser, Idaho, report upon the spreading abilities of fine fescues compared to bluegrasses, in the July-August Agronomy Journal. Mowed grass produced more roots and rhizomes than did unmowed (let go to seed). Root and rhizome production differed between bluegrass cultivars. As would be anticipated, bluegrasses exceeded fescues in rhizome production. Pennlawn fescue produced rhizomes more prolifically than other fescues (mostly Chewings sorts). Leading bluegrass cultivars, in frequency of rhizomes, were Touchdown, Nugget, Adelphi, Newport and Baron, in that order; weakest were Delta, Fylking, Victa, and Cougar. Sydsport had very few rhizomes when unmowed, but a fair number when mowed. Most rhizomes developed in the top inch of soil, with very few cultivars having any rhizomes so deep as three inches. Glade, Adelphi, Nugget and Fylking were the leading cultivars so far as root weight was concerned.

STOPPING CRABGRASS AND GOOSEGRASS

Johnson, Georgia, reports in the September Weed Science on experimentation for the control of crabgrass and goosegrass in turf. For crabgrass none of the chemicals was any more effective than MSMA alone, although in some years a repeat application twelve days or so after the first was required (about 1 lb/A rate a.i.). Goosegrass was not checked very well by MSMA. However, single applications of metribuzin (at about 1 lb/A), or of methazole (at about 2 lb/A) provide excellent goosegrass control without any permanent injury to common bermudagrass.