BETTER LAWN -- HARVESTS

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ANNUAL MEETING REMINDER

President Carnes reminds us that he has called the Institute Annual Meeting the week of the Oregon Seed League Meetings beginning December 7. The exact scheduling will be announced as meeting time approaches and space availability becomes clear. Mr. Carnes hopes to have fuller information after visiting with other officers and board members in Oregon. Since moving from Oregon to Kansas City a few months ago Mr. Carnes has had his hands full, but hope to find a little more time for firming Institute plans after October. Meanwhile we are most grateful for the fine efforts of vice president Amos Funrue, treasurer Howard Mader, and the good offices of Scott Lamb, who have kept the gears in mesh during this transition period for the president.

ARONSON COLUMN

The Institute was pleased to be credited again in an Associated Press News-feature column by Earl Aronson, widely distributed throughout the country. Although in this instance Dr. Schery was quoted more on garden feeding than lawn seeding, it is always nice to have the Institute receive mention in so extensive a release as an Associated Press Newsfeature.

MICHIGAN STATE VISIT PLANNED

Drs. Kenneth Payne and Jim Beard, Michigan State University have invited Dr. Schery to be a one-day "visiting professor" in a planned visit to the Michigan State University campus. In addition to teaching a turfgrass course and conducting a graduate seminar in the evening, there will be chance to visit with the research experts about the extensive program they have underway.

CONTRIBUTION RECEIVED

A contribution of \$50 was received in mid-September from the Atlantic Seedsmen Association for furtherance of Institute activities. This expression of interest is very much appreciated.

ROADSIDE PRESENTATION PREPARED

The Twenty-Ninth Short Course on Roadside Development, the Ohio Department of Highways and Ohio State University sponsoring, is scheduled for October 5 - 9, Columbus, Ohio. This is the annual national gathering of landscape architects concerned with highways. Two days of formal presentations are followed by two days of field trip, this year to southern Ohio.

The Institute is represented on the program with the presentation, "The Essentials for Roadside Vegetation". The paper by Dr. Schery reminds attendees that the greatest "essential" is wise programming by an experienced individual. Adapted species, water-soil relationships, fertilizers and contaminants are major subjects reviewed. Research reports from advisors and other experts are cited, and Dr. Schery concludes that the Michigan recommendations of at least 20 percent each of Kentucky bluegrass, fine fescue and perennial ryegrass, without any cereal rye or coarse grass species, could "apply well all over the cool-humid regions, and are in keeping with the trend towards more attractive, lower, less-coarse grasses and legumes meant to prevent the berm from becoming a hayfield."

Mr. Garmhausen has solicited such reprints as the Institute might wish to furnish for hand-out, especially for inclusion in the "tote bags" provided those taking the tour. The Institute is furnishing for this occasion <u>The</u> <u>New Look in Landscaping</u>, from Landscape Industry; <u>A New Era Dawns For Bluegrass</u>, from Flower and Garden magazine; and <u>The Curious Case of Highland</u> <u>Bentgrass</u>, from the New York Botanical Garden Journal. In these fine turfgrass varieties are listed and discussed.

GARDEN SUPPLY STORY

The July issue of the Home and Garden Supply Merchandiser carried the Institute item, <u>Artificial Turf vs Real Turf</u>. "Artificial turf was used on a number of big time athletic fields for the first time last year. Robert W. Schery of the Lawn Institute, says there is no quarrel with substituting a pavement for real turf in places where living grass cannot possibly stand up --- but he points out it remains to be seen how durable artificial turf will prove and wonders if live grass might not do equally well if provided a maintenance budget equivalent to artificial turf upkeep plus interest on the cost of installation. --- Schery says, artificial turf looks more and more like a special case than a general solution --". The advantages of live grass are then discussed, with results at Michigan State University cited showing the marked reduction of temperature on an athletic field with live grass compared to artificial turf.

INSTITUTE ON RADIO

One of the unforeseen benefits from the autumn press kit, was the interest it excited in radio station WDV, Decatur, Illinois. Program director Lois Howdette telephoned the Institute, asking if Dr. Schery could appear on a lawn question-answer program sponsored by that station in prime morning time. Interestingly, the "interview" is conducted by long distance wire. The Institute director merely sits at his desk talking into the telephone, "conference call" style. Here is an audio bonus from press kits designed chiefly for the printed page. It is also indicative of the high regard in which the Institute is held by those receiving the press kits.

ARTIFICIAL TURF

The Friday, July 3 issue of the St. Louis Post-Dispatch carried a lengthy feature on the sports pages, entitled "AstroTurf Reflections: Players Get Heated Up". This had to do with the new artificial turf installation at the St. Louis major league stadium. Some of the measurements reported in the article were used for a story in the autumn press kit.

The discussion was mainly about how unnaturally hot the artificial turf is when played upon for day games. Cleverly written by Dick Kaegel here are some of the points: "-- the hotfoot is back. And it's no laughing matter. The 1970 version of the hotfoot is received by standing on the AstroTurf at Bush Stadium --", "Watch the outfielders. They'll keep lifting their feet and hopping around", "Outfield Jim Beauchamp remarked, 'My feet like to burnt off -- I mean they were scorching.'", "Some of the possible solution includes especially-vented shoes, extra innersoles and insulated socks."

The story goes on to say that baseball commissioner Kuhn has appointed a committee to investigate suitability of artificial turf. Apparently there is a problem of surface drainage of rain in damp weather, as well as the heat factor in the sun. The story also points out that pitchers who do a lot of running in pre-game work develop sore legs from running on the firm surface of artificial turf.

PRESS KIT (AUTUMN, 1970) PICK-UP

A 20 column-inch article under title of "'Cool Season' Grasses Best Choice for Most Areas of U.S." appeared in the August 23 Columbus Dispatch. In part it reads: "We recently received the latest information on lawns from The Lawn Institute of Marysville, Ohio. It was prepared by Dr. Robert Schery director of the Institute, a nationally recognized authority on lawns. -- These grasses include: the Kentucky bluegrasses, fine fescues, bentgrasses and a few specialty species -- -- there is little nitrogen loss in autumn fertilizing, especially when high grade lawn fertilizers are used. Ureaform nitrogen used in most high grade lawn fertilizers, becomes slowly available for plant use ---".

GARDEN CLUB INQUIRY

Richard Swart, Syracuse, New York, sent to the Institute for criticism a proposed brochure entitled "Lawn Clinic", intended for distribution through a booth at the New York State Fair. The Syracuse Men's Garden Club annually offers this service as an aid to homeowners, in the public interest. Mr. Swart was anxious that this year's Lawn Clinic leaflet be up-to-date and technically correct, especially in that it was adopting a "care for the environment" stance. We feel that the Institute has been helpful in offering a number of suggestions and corrections for design of the leaflet, and has offered Institute reprints for display and distribution through the Syracuse club's booth.

STORY IN SEED TRADE NEWS

The September 2 Seed Trade News carried the item "Lawns, Crop Fields Replenish Oxygen, Help Control Pollution", derived from a combination of stories in the autumn press kit.

POLLUTION REVIEW

With pollution so much a topic of discussion these days, it is good to have an authoritative review bringing together several research aspects of the subject. Such is available in the special insert to the August, 1970, HortScience, derived from the symposium held at Washington State University in August of 1969, entitled "Pollutant Impact on Horticulture and Man". Statistics taken from various sources, including the blue ribbon Academy of Science committee, make this a good source of general as well as specific information about various pollution problems. Especially provocative is Gabelman's paper, pointing out the interplay between pollution and plants. He notes such interesting incidentals as ability of a carrot crop to remove 90 percent of the chlorinated hydrocarbon contamination of a soil in which they grow. There are many cases where the growing of turfgrass and ornamentals along the roadsides and in urban areas does much to buffer what would otherwise be a much harsher impact of pollution.

IN SEED WORLD

The Institute story, <u>Autumn is Time to Spruce up Lawns</u>, appeared in the September 11 issue of Seed World. The reader is advised, " -- Rainy areas and close mowing favor bentgrass; colonial bentgrass such as Highland, Exeter and Holfior are easier to care for --- might be mixed with low-growing bluegrasses such as Fylking, Pennstar and Sodco."

SEED FROM PENN STATE

The Marysville office was grateful to Dr. Joseph Duich, Pennsylvania State University, for receipt of Pennfine perennial ryegrass and Pennstar Kentucky bluegrass seed, for experimental plantings on the Institute grounds.

RESEARCH REVIEW PREPARED

At the request of the Smith-Douglass Division of Borden, which sends a newsletter to golf superintendents, Dr. Schery prepared for use during the autumn quarter a review of recent research from the field.

LAWN PRESENTATION

Anne Bruce Halderman, Landscape Architect in the Louisville, Kentucky area, has organized a series of garden symposia to be held at the Farmington Mansion (designed by Thomas Jefferson) in Louisville, Kentucky, now being restored as a historical landmark. Miss Halderman telephoned the Institute to find out if Dr. Schery would be available for a lawn program feature February 24 of next year. Barring unforeseen travel complications, the Institute has accepted this kind invitation to appear before an important segment of the gardening public.

PRESS KIT TO PUBLISHER

Upon request from the Associate Editor of Creative Communications (Webb Publishing Co.), an Institute press kit and information about lawns was sent to the publisher.

BLUEGRASS COMMISSION DEFEATED

We are informed by Scott Lamb and Oregon officers of the Institute, that the referendum in Oregon for organizing a Bluegrass Commission failed of the necessary plurality by only four votes. Nonetheless, the increasing interest in a commission (compared an earlier trial) was encouraging, and it is felt that preoccupation with field burning and current pollution problems occupied the attention of many growers who otherwise might have voted. A Bluegrass Commission analogous to the Chewings Fescue and Creeping Red Fescue Commission and the Highland Bentgrass Commission, which have functioned so excellently through the years, would, hopefully, become an Institute supporter. The Pacific Northwest Bluegrass Association, like the Merion Bluegrass Association a voluntary group, has functioned very well, but it proves increasingly burdensome for a few officers to devote sufficient time for needed organizing efforts. If a Bluegrass Association could concentrate more fully on the handler and out-of-state segments of the trade.

FINE FESCUE STORY UPDATED

Manuscript for a fine fescue story has been in the hands of Weeds Trees and Turf magazine for nearly a year. Recent correspondence with editor Ingalsbe indicates usage planned for mid-winter. The manuscript has been reexamined for additional listings of new varieties. Unfortunately, there are so many new fine fescue selections under test throughout the country that it becomes difficult to include all names and origins. The Marysville office is always pleased to hear from members about any new fine fescues approaching commercial distribution. Seed of varieties that look promising would be most welcome for planting on the Institute's demonstration grounds to show to visitors.

COLLEGE REQUEST

Around the middle of August the Institute received a request from Mel Essex, Chairman of the Ornamental Horticulture Department, Kirkwood Community College, Cedar Rapids, Iowa for literature, etc., to be used in the classroom. A new two-year vocational program is being started, including "Lawn and Turf".

Sample reprints were sent Mr. Essex, along with a copy of "The Householder's Guide to Outdoor Beauty" for possible text usage.

TIME-LIFE BOOK ON LAWNS

A telephone call from Margo Dryden, Time-Life Books, indicated preparation for publishing a book on lawns is building up, for some time in the future. At this stage only information is being gathered. A diversified set of Institute literature was sent Miss Dryden, and hopefully the Institute will play a part in shaping this publication.

SEED LEAGUE PRESENTATION

Rex Warren has written Dr. Schery asking that he discuss "Changing Times in Turf" at the Oregon Seed League Meetings December 7 - 9.

PRESS KIT OUT

The autumn press kit was mailed to our selected list of newspapers and editors in mid-July as customary. Nineteen pages of stories (40 items) were included, backed up by three reprints and a covering letter. Again the mailing was economically done through Middleton Printing Company in Columbus, Ohio, after preparation of copy at the Marysville office.

Indications are that this press mailing has been well received. A clipping service is no longer employed to verify usage, so we depend chiefly upon key features as indicators. One of these is the offer of reprints made in one of the stories, if a self-addressed, stamped envelope is sent to the Institute. Apparently a good many editors let this offer stand when the story is used, for "pockets" of mail are received from metropolitan areas with a major newspaper using the item (at least one instance of which is described in another Harvests item). Over a period of three or four days a flurry of letters comes in from that area. We are very pleased that this has occurred repeatedly through the autumn season, from differing parts of the northeastern trade area.

As further evidence of the high regard in which the press kit is held the Marysville office has had a number of independent requests for extra kits this autumn. Not many "extras" are stocked, since a kit is of little service unless it is being used by some newspaper. Thus requests for multiple copies cannot be honored without an advance request. Printing and preparation for mailing is fairly expensive, and a conscientious effort is made to avoid wastage. The Marysville office is always glad to have suggestions from members as to where additional kits might profitably be mailed, but if at all possible we hope that this can be done in advance of printing and assemblage.

CONTRIBUTION FROM EUROPE

Earlier in the year Dr. I. M. Kamps of Van Engelen, Holland, visited the Institute, on a tour checking turfgrass varieties in this country. We were very pleased to receive in early September a contribution of \$100 from the Van Engelen firm, for encouragement of the Institute activities in publicizing fine turf varieties. We are most grateful to Gebr. Van Engelen, and have added this contribution to our dwindling travel account.

MORE ADVERSITY FOR ARTIFICIAL TURF

The St. Louis stadium received criticism enough for the heat build-up of the AstroTurf during day baseball games, but this was nothing to the scorn heaped upon it in the sports pages following the Missouri-Air Force football game in late September. An inch of rain left the field soaking-slippery (at least for the Missouri players, who lost the game), and there was "stretching" under the cool moist conditions so that loose "flaps" of turf as much as 6 inches long buckled up. Planned half time entertainment was cancelled because the line markings were "melting" in the moisture. Apparently a good many people had second thoughts about this three-quarter million dollar investment in what is supposed to be all-season, permanent turf. The Missouri football coach is quoted as having said that never in his whole life of coaching had he seen a game played on worse field conditions.

NEW WEED MAGAZINE

The Weed Science Society of America launched with the June issue, a new popularized journal called <u>Weeds Today</u>. Research and technical reports will continue to be published in <u>Weed Science</u>, while <u>Weeds Today</u> will devote itself to popular discussions, application techniques, and suchlike. The first issue carried mostly background stories by society officers explaining the purposes and evolution of this new magazine, although Dr. R. A. Peters of Connecticut discussed "Crabgrass in Perspective", of interest to people active in the turfgrass field. No new information on crabgrass control was given, but it is good to have in one place accumulation of miscellaneous data about how crabgrass grows, germination dates, seed production, and so on.

RADIO APPEARANCE

Through the good offices of the Borden Chemical Company, Dr. Schery was invited to a guest appearance on the Lines "Questions and Answer" radio show held each Saturday morning over WBNS, Columbus, Ohio. The appearance was the first Saturday in September, an ideal season in this climate for seeding lawns, bolstering thin turfs, feeding and weeding. These were the chief topics of comment on the program, prior to questions being telephoned in by the listening audience.

REPRINTS FURNISHED

The Lawnmaker's Year; Kentucky Bluegrass: Turfgrass Par Excellence; Fine Fescues; Autumn Lawns, Up, Up, and Away; and Lawn Thatch, What It's All About were sent to the Men's Garden Club of Syracuse, New York, for issuance at the club's booth at the New York State Fair. This is in addition to custom leaflets from the garden club itself, which were updated following criticism by the Institute.

GOLF MAGAZINE STORY SCHEDULED

Correspondence with editors of the Golf Superintendent has paved the way for a story due to appear in that magazine in early spring, having to do chiefly with the fertilization and upkeep of a golf green. Such vehicles are always handy, however, for bringing in mention of quality lawn seed and its particular appropriateness under different types of feeding.

COLUMNIST ACTIVE

During the quarter there have been six separate exchanges of correspondence with "Doc" Abraham, whose syndicated "The Green Thumb" column appears in over a hundred eastern papers. Mention has been made on several occasions in Harvests of the fine working relationship with Abraham, whereby "Doc" sends some of his trickier lawn inquiries from readers to the Institute for answer, and usually makes use of the answers in his column (often with credit to the Institute).

RECENT VISITORS

Calling upon the Institute in mid-September were Phil Peck, buyer for Sears Roebuck; Irwin Jines, columnist for the Columbus, Ohio Dispatch; and George Osburn, Hercules. It is pleasant to have visitors such as this drop by, for a chat on matters of mutual interest, and to see the demonstration grounds.

NEWS ITEM

An item appeared in the August 19 issue of Seed Trade News taken from the autumn press kit. Under title of Turfgrass Names Confuse Buyers, it explains the Penn prefix -- "Penncross" and "Pennlawn". "Penncross is a creeping bentgrass, the finest golf green grass that can be planted by seed. --" "Pennlawn -- one of the best of the fine fescues -- persists with little attention on dry, poor soil as well as in good locations --".

REPRINT REQUEST

The interest excited by newspaper appearance of the Institute press kit story, in which an offer is extended in the last paragraph to send fescue-bluegrass reprints upon receipt of a stamped envelope, was especially pointed up when as many as 18 requests were received daily after appearance of the item in the Cincinnati Enquirer the week end of September 12.

PARKS INVESTIGATION

Lee Moser, consultant for the Columbia, Maryland, Parks and Recreation Association, asked the Institute's aid in an attempt to arrive at practical turfgrass maintenance standards for all park systems in the region. Mr. Moser was anxious to have Institute literature. A selection of reprints was sent, and reference to appropriate books in the field given.

REQUEST FROM ARGENTINA

An inquiry was received in late June, from Pelayo Cuadrado, Casilla de Correos 2026, Buenos Aires, requesting information that included names and addresses of US firms dealing in "luxury grass seeds". The letter gives no clue as to how the Institute's name and address was procured. We attempted to provide general information as requested, including a listing of Institute sponsors engaged in international sales.

REVIEW FOR HORT-SCIENCE

Although not directly applicable to lawn seed, the Institute does lend a service to associated groups when it can. For example, at the request of editor Janick, Dr. Schery reviewed for Hort-Science a recent book in the field of economic botany.

AMPLIFIED COVERAGE

We are grateful to Institute members for additional distribution of stories during this quarter. There were several requests for small quantities of reprints, but two members, at their own expense, had printed and mailed 1,500 and 1,000 reprints respectively for their customers and associates.

PUBLICITY FROM RADIO APPEARANCE

Following the telephone appearance by Dr. Schery on WDZ "Hotline" radio program (Decatur, Illinois), a number of requests were received by mail for Institute literature offered by the MC Steve Ballinger at the sign-off of that program. This is certainly excellent "advertising" for the Institute.

FLORIST & NURSERY EXCHANGE ITEM APPEARS

The August 4, 1970 issue of FLORIST & NURSERY EXCHANGE magazine contained "Nurserymens' Opportunities Boosted by New Lawn Varieties" authored by Dr. R. W. Schery, Director, The Lawn Institute. Two Lawn Institute photographs were included. The item discussed new and traditional varieties and compatability of fine turfgrasses. Viz., " -- the 'makings' are at hand for a new facet of landscaping -- lawn landscaping. -- Kentucky bluegrasses and Oregon fine fescues have long been the mainstays. -- The roster of bluegrass and fescue names felt ready for the big time runs to half a hundred each already. -- Highland and Holfior bentgrasses are modest in their requirements --".

LAWN PHOTOS FURNISHED

Ed Hadley, garden editor of the Louisville Courier-Journal and the Louisville Times, asked for and received glossy pictures for use in these papers, to be used in connection with articles taken from the press kit. Particularly wanted were photos showing the preparation of a new lawn, and the steps to be taken in reseeding bare spots.

ADVISOR MAILING

A covering letter and 19 reprints were sent to each of the Institute advisors in August, bringing them to date on Institute publications and activities. The advisors are a widely spread group of research experts in all sections of the country, many associated with state colleges.

ASSIGNMENT FOR ENCYCLOPEDIA AMERICANA

Dr. Schery completed an assignment from Encyclopedia Americana, for a five thousand word resume of gardening. It is good to have Institute views presented in this prestigeous reference encyclopedia, which will have wide readership for many years to come.

AGRONOMY SOCIETY TURFGRASS PROGRAM

National forum for discussing turfgrass research is division C-5, Turfgrass Management, of the American Society of Agronomy. Meetings were held this year in Tucson, Arizona, with 17 reports given to the division, and 7 others jointly with the "Land Use and Management" division. Reports serve as a means for technical people, especially at the state colleges, to appear before their peers; even if not a great deal new is reported, the discussions engendered are instructive. All in all a good bird's eye view of the direction turfgrass research is taking is offered by the papers reported at this conference. For such interest as it may hold for members, an epitomized review of this year's presentations follows.

The sectional meeting opened with a discussion by Rutgers researchers on Kentucky bluegrass hybrids. Mr. Pepin pointed out that less than one percent of the crosses are even promising. Recently it has been determined that six out of seven of the hybrids are triploids, an unsuspectedly high incidence. Parent lines reported good for conveying stripe smut resistance are Pennstar (Fylking), Anheuser, and Bellview.

Californians reported upon soil mixes for putting green construction. Details were provided on combinations of shredded bark, nursery sand, peat, etc. Also dealing with golf greens was a report on water table and rootzones by Purdue researchers. It was felt that coarse sand was all right for a shallow water table, but fine sand better on deeper water tables (the quickest germination of Penncross was on fine sand; wilting occurred first on coarser sand). This is part of the PURR-WICK system reviewed in a previous Harvests.

Virginia research involved the quality of cool-season turfgrasses overseeded onto bermudagrass, especially as influenced by thatch removal and fertilization. It was determined that aerification and top-dressing of bermuda during summer, aided the quality of overseeded winter turf. Ryegrass was impaired more than fine fescue when thatch was not removed or high nitrogen fertilization was used. Of interest to fescue growers is the statement, "Plots overseeded with annual ryegrass generally were poorer in winter turf quality --- than fine fescues." Fescue provided a desirable gradual transition in spring. Two lbs. N/M is recommended for winter fertilization, amounts higher than this sometimes causing winter kill. Ryegrass was competitive with Poa annua, helping restrain the latter.

Florida research had to do with fertilization of bahiagrass, most of this work done by solution culture. In general ammonium was more active in nutrition than nitrate. Lack of phosphorus had only limited effect, but intensified the uptake of nitrogen. Lack of potassium also increased uptake of many other ions. Nitrogen deficiency was noted in bermudagrass below 2.7%, and in bahiagrass below 2.2%.

Arizona researchers reported upon chlorosis in bermudagrass, a considerable problem during summer in Tucson. Iron sulfate proved more effective in correcting chlorosis than did chelates. Degree of chlorosis varied greatly with grass variety. Sulfur was ineffective in correcting chlorosis; supplemental nitrogen darkened the color of non-chlorotic grasses, but did not lessen the incidence of chlorosis. It is recommended that iron sulfate be used at 2 lbs/M.

AGRONOMY SOCIETY TURFGRASS PROGRAM (Continued)

Rhode Island research dealthwith soil heating and protective covers during winter. Additional nitrogen improved color at low temperatures, but had little effect at higher temperatures. Shading helped increase the chlorophyll content. Fine fescue, tall fescue, bluegrass, and ryegrass all responded to treatments by extending their winter season, an exception being Exeter colonial bentgrass. But the very factors that encouraged color in early winter acted adversely in February, causing loss of color and lesser sod density then. Thus cover should be removed before rapid spring growth occurs. Turf quality was improved at lower temperatures and under reduced cover if provided ample nitrogen.

Other Florida research investigated the response of Tifway bermudagrass to differing forms of nitrogen. Excellent response was gained from sulfur, but in at least one instance brown patch disease was evident where ammonium sulfate was used (but not where ammonium nitrate was employed). Otherwise ammonium sulfate or ammonium carbonate gave better ratings than other nitrogen sources.

Michigan State researchers compared the influence of temperature and other factors on enzyme activity in bentgrass and bermudagrass. Nitrate reductase activity was adequate at a lower range of temperature for bentgrass than for bermudagrass.

Henderlong, Ohio, reported on seedling germination of familiar turfgrass varieties, a matter not unfamiliar to seedsmen. There were no new conclusions, but Henderlong had found some references to slow germination of tall fescue which he hoped to disprove.

The heating of sod was investigated in Michigan. Sod with seedheads was more sensitive to heat damage. Low cut sod heated less than high cut, and low nitrogen content favored rooting of the sod. Growth regulators had little effect.

California research reported by Youngner had to do with the turf density and carbohydrate reserves of 5 Kentucky bluegrass cultivars grown in three locations. Merion and Windsor showed higher carbohydrate levels than Newport, Park and Prato. Mountain climates gave a higher carbohydrate level than did coastal locations. It was felt that the prevalence of summer disease along the coast was due chiefly to the small spread between daily high and low temperatures. Carbohydrate content is increased even where day temperature is high if night temperature is low, yielding better bluegrass having less disease.

Georgia research investigated the response of three bermudagrasses to reduce light intensity. It was thought that the more prostrate growth of a shadetolerant variety is responsible for such tolerance, since less of the foliage is lost in mowing.

Oregon researchers investigated the control of colonial bentgrasses in Kentucky bluegrass. No treatment is completely satisfactory, but selective removal with fall applications of silvex at about 22 lbs. per acre is reasonably effective.

AGRONOMY SOCIETY TURFGRASS PROGRAM (Continued)

Mississippi research had to do with the phytotoxicity of pre-emergence herbicides on overseeded turf. The objective was to control Poa annua in bermudagrass golf greens, without injury to overseeded grasses (ryegrass, fine fescue, Poa trivialis). The herbicides were generally not detrimental to the overseeding if applied 70-90 days before the overseeding. Betasan was the most toxic of the products tested, with Dacthal less so, and Balan even less. Poa trivialis was more severely injured than fine fescue, and ryegrass less injured than either.

Michigan State research had to do with the interaction of arsenate and phosphorus in the soil. Twenty pounds of calcium arsenate was sufficient to prevent germination and growth of Poa annua, bluegrass, and two bentgrasses in the absence of phosphorus. Addition of phosphorus reduced arsenate toxicity, and encouraged Poa annua. Poa annua was more sensitive to arsenate than was Merion bluegrass, with Penncross and Cohansey bentgrasses even less sensitive.

The effect of non-ionic surfactants on seed germination growth and root distribution was studied in California. Mostly the effect was negative. There was some difference between surfactants, but in general mild applications stimulated growth but high rates retarded it. Performance varied with type of soil and other conditions.

Kentucky bluegrasses for roadside use were discussed by Purdue investigators. It has been difficult to select for both rhizome spread and low growth (these seem negatively correlated), but some highly aptomictic selections are now considered ready for roadside testing. No correlation was noted between chromosome number and apomixis.

The ecology of 20 different turfgrass seed mixtures for the roadside was studied in Michigan, on soil types ranging from clay to sand. " -- the most rapid establishment is achieved with mixtures containing a minimum of 20 percent each of perennial ryegrass, Kentucky bluegrass, and red fescue -- ". Addition of cereal rye as a nursegrass was almost invariably detrimental. After 4 years Kentucky bluegrass became dominant on the loamy sites, with red fescue the only significant grass on sandy sites.

Establishment of bermudagrass on highway backslopes was discussed by Oklahoma researchers. Fertilization proved more influential than tillage or liming in establishment of bermudagrass, but after 5 years all plantings leveled out to the same general composition no matter the treatment at time of seeding.

Establishment of crown vetch on highway slopes was studied in Virginia. It was very slow to establish. Liming helped somewhat, as did moderate amounts of phosphorus; but heavy nitrogen favored companion grasses over the crown vetch, and retarded the latter's establishment. It is suggested that UF be used as 50 to 75 percent of the fertilizer nitrogen for new plantings. Early planting (March) gave far better establishment than late planting (June).

Other investigations in Virginia were concerned with the deicing of highways, resulting in salt pollution of the vegetation. A case history of the gradual loss of roadside trees was reviewed for a location in Vermont. When chloride concentration in leaves reached 0.5%, defoliation and ultimately

AGRONOMY SOCIETY TURFGRASS PROGRAM (Continued)

death of the tree could be expected. Damage is greatest on the downhill slopes away from the highway, where the salt washes in the run-off. A companion study in Virginia rated the salt tolerance of several trees and shrubs which might be used along the roudside. Honey Locust was one of the more tolerant trees, tuliptree one of the least; honeysuckle and privet shrubs were quite salt tolerant, roses and spirca less co. Among conifers junipers were tolerant, hemlocks and spruces intolerant, white pine intermediate.

Response of desart seltgrass, <u>Distichlis stricta</u>, in Nebraska, was reviewed by Al Dudeck, now in Florida. Although topgrowth was reduced, there was no mortality when salt concentration reached 20,000 ppm or even more. Dudeck feels that with selection the species might yield excellent salt-tolerant ecotypes.

LAWNS IN ECOLOGY SCHEME

A. A. Lindsey, writing for the Bulletin for theEcological Society of America, postulates two contrasting biotic systems. One is <u>dependent</u>, involving urban areas and managed crop lands; the other <u>independent</u>, involving natural areas, sanctuaries and wilderness. Obviously lawns and lawngrasses fall into the dependent system.

Lindscy characterizes the dependent system as having few species but large populations, being less stable, growth and expansion emphasized, intensively used, much labour and fuel energy required, highly productive but poorly buffered, tending to unbalance the ecosystem (with conservation required for maintenance and liveability). In contrast the independent system has many species with few individuals, living in a mature steady-state, with little exploitation and minimum human effort required (self maintained with solar energy), low productivity, a balance for other systems, a sink for pollutants, high in matural beauty and not improved by management, etc.

It is well to be gaine that turfgrass stands with the exploitive facets of human activity, having the advantages and disadvantages associated with this. Lawngrase is a population more vulnerable than a natural prairie, requiring effort and expense to maintain. Fortunately its esthetic qualities make it one of the most desirable types of plant used in the dependent system, substituting in some loguee for an independent system that can never be available in no ulated meas.

POA ANNUA CONTROL?

The possibility for biological control of Poa annua may exist in the turfgrass verval, which seems to attack Poa annua exclusively. Golf course fairways of the northeast (largely infested with Poa annua) have suffered serious damage in recent years, and a study was initiated at Cornell University as to the cause. This was found to be due to the weevil, <u>Hyperodes spp</u>. No one knows whether sufficiently devastating weevil attack could be sparked to "do in" a whole population of Poa annua, but with today's pressure for biological rather than chemical control of weeds no doubt this will bear some looking into.

TURFGRASS TOUR

One day of the Agronomy Meetings, the turfgrass section takes a tour of local facilities. This year, in Tucson, stops were made at the Tucson High School, Randolph Park, Tucson Country Club, Skyline Country Club, and Tucson National Golf Club. The turf, of course, is mainly of southern species, primarily common bermudagrass and the improved bermudagrasses on golf courses. Interestingly, bentgrass seems the predominant golf green turf, with Penncross widely planted.

The Tucson High School "front yard" and athletic field receive maintenance by the city crew, and the chief problems are said to be soil compaction and insufficient attention at time of planting. A predominating weed, spread by mowing equipment is an Amaranth (probably Alternanthera), said to be the most difficult weed to control on the grounds. A nursery is being built in cooperation with the physical education department, and experimental greens (one Tifgreen, one Penncross) are being established.

Randolph Park contains two heavily used 18 hole golf courses, largely automated. The greens are Tifgreen. The baseball field is used in spring training by the Cleveland Indians, as well as for season-long play by the Tucson Club. Near the park are shopping centers and a new golf course for which "turf landscaping" is important.

The Tucson Country Club is not in the mountains, but nonetheless has bentgrass greens (first Seaside, now converted to Penncross). High humidity and restricted air movement make summer maintenance difficult. In contrast the Skyline Country Club is in the mountains overlooking Tucson, and sports excellent Penncross greens. Fairways and tees are Tifgreen hybrid bermudagrass. The Tucson National Golf Club is in the foothills of the Santa Catalina mountains and has good air drainage. Large Penncross greens are used here, and have never needed spraying with a fungicide since planting in 1962. The fairways are Tifway hybrid bermuda.

CHEMICAL INFLUENCE ON GRASS LAND

Malone and Reichle, Oak Ridge, Tennessee, reported to the AIBS Meetings at Indiana University, on the effects of soil treatments with formalin, phorate and sodium chlorate. The study was designed to determine what influence these sterilants would have upon animal life (principally arthropods and earthworms), and upon the soil microflora. Although the interrelationships were complex, a chemical treatment which reduced soil animals generally increased the density of the microflora. The ability of the microflora to decompose organic material was not impeded, except in cases where large masses (such as roots) would require fragmentation by animals before it could be attack by microbes.

Chemical treatments that reduce animal life (such as chlordane applications to the lawn) would thus not be expected to have any detrimental activity upon soil mineralization supporting growth of turfgrass; the absence of soil animals is largely compensated for by increase in microfloral activity. The exception would be in something like the usefulness of earthworms and other animals in reducing thatch to a condition where it might be more readily degraded by the microflora.

VISIT COLORADO STATE UNIVERSITY

On return from the Agronomy Meetings, Dr. Schery took time to visit Colorado State University, where turfgrass research is carried on under the aegis of Horticulture rather than Agronomy.

Bill Macksam has assumed most of the duties formerly performed by George Beach. A new demonstration putting green has been established on the campus, mostly through donations provided by turfgrass firms and other groups interested in Colorado turfgrass. The green was constructed according to USGA green section recommendations, and has been planted half to Penncross creeping bentgrass, half to Seaside. It is open for use by University staff and students, in the manner in which the practice green has been used at Purdue University for years; it is hoped that this will reflect the kind of use a green customarily receives, and provide for research under typical greens conditions.

Drs. Fults and Macksam are looking into means for subsoiling compacted turf, with new devices that can loosen the subsoil without disturbing the surface turf unduly (or lifting it only momentarily). Introduction of fertilizer into the rootzone at the same time is being given consideration. Many of the trials formerly managed by Dr. Beach have been abandoned as teaching and research adopt new approaches. Turf conference Proceedings have been abandoned at least temporarily.

Dr. Fults maintains a series of turf plantings fully infested with weeds, to determine what methods of weed prevention are most practical for homeowners and sodsmen. Through combinations of fertilization, variety and herbicides, he has been able to change coarse grass plantings into populations that are largely fine-textured (mainly bluegrass), and to limit further invasion of weeds. Generous fertilization of grasses such as Merion is probably the most important measure, and fertilization in combination with phenoxy herbicides has proved quite effective. Encouraging results have been obtained using Phytar, for eliminating both coarse grasses and bentgrass in bluegrass plantings; the "ecology" is changed to favor the bluegrass.

Fults keeps fairly large plots of the major fine turf varieties, for testing effectiveness of herbicides, fungicides, and so on. He is enthusiastic about the possible use of growth inhibitors on Kentucky bluegrass, including some of the newer horticultural growth control agents as well as the older MH-30. Coarse grasses that Fults has been able to supplant with bluegrass by appropriate management techniques include perennial ryegrass, orchardgrass, smooth bromegrass, tall fescue, timothy, and redtop. Some of the chemicals employed include Phytar, Weedazol, paraquat, Aerocyanate, Dowpon, Tordon, Ansar, and various rates of nitrogen. He is also testing new grasses for high alkali and salt tolerance.

Compared to other sections of the country, Colorado grows bluegrass and fine fescue exceptionally well because of the high elevations and dry climate which prevail. Of course irrigation is necessary. Kentucky bluegrasses, fine fescues and bentgrasses are the chief fine turf species used, managed as conventionally recommended in other regions. It is reported that sod growers favor the Park variety of bluegrass because of its rapid germination and early vigor. Fults' investigations on simplified means for weed control should prove useful to a large group of Colorado residents, but no radically new techniques seem imminent or likely to be recommended. In view of several staff retirements within recent years turfgrass research may be somewhat under-manned, but the department is searching for a new extension specialist (part-time research) to replace Dr. Drage.

WINTER SEEDING IN FLORIDA

The Proceedings for the 1969 Florida Turfgrass Management Conference carry interesting recommendations by Dr. Evert Burt on the overseeding of bermudagrass greens in southern Florida. The new perennial ryegrass varieties have performed very well, a combination of NK-100 and Pelo together being reported superior to either alone. Seeding was at the high rate of 50 lbs. per M. Burt was especially impressed by the rapid germination and quick establishment of stand.

Florida continues to recommend a combination of fine-textured northern turf species. Burt states, "A three variety combination of bluegrass, creeping red fescue and either Highland or Seaside bent has given excellent results for the past seven years." Dr. Granville Horn tells of overseeding research in northern Florida, "A mixture containing 10 lbs. fescue, 4 lbs. bluegrass and 1/3 lbs. bentgrass per M was found to be outstanding again last winter."

HELMINTHOSPORIUM STUDY

At the suggestion of Dr. Skogley, Leo Zanoni of the University of Rhode Island wrote the Institute for such information as could be obtained concerning the differential virulence of Helminthosporium on regional plantings of Kentucky bluegrass, and on different varieties in various areas. Dr. Schery informed Mr. Zanoni about some of the early Institute investigations having to do with selected regional gatherings (ecotypes) of natural Kentucky bluegrass. Climatic information in which Mr. Zanoni was interested was also supplied. Investigation of regional virulence of Helminth could very well become an important contribution to turfgrass science if it results in a thorough-going graduate dissertation. Very little is known about geographical differences of Helminthosporium, and how weather conditions affect disease resistance of varieties in various regions.

REPORT TO HORTICULTURE SOCIETY

Whitcomb, Florida, reports upon the "Effects of Roots of Dormant Trees on Establishment and Growth of Four Cool Season Grasses" in a presentation to the 67th Annual Meeting of the American Society for Horticultural Science. The study involved establishment of Kentucky bluegrass, fine fescue, perennial ryegrass and Poa trivialis in containers into which roots of silver maple and honey locust trees had been grown. Kentucky bluegrass was not significantly influenced by the tree roots, but Poa trivialis was; the other two grasses were intermediate. After full establishment not much differential in the growth of the grasses occurred because of tree roots except after fertilization. Whitcomb concludes, "Data suggest a significant nutrient competition between 'dormant' deciduous trees and cool-season grasses --- each grass species varies in its sensitivity to tree root competition." He suggests at least half again as much fertilizer is needed by grass where tree roots exist.

MORE ON FAIRY RING

Norstadt and Frey, ARS, Fort Collins, Colorado reported upon the urease activity stimulated in soil by the fairy ring <u>Marasmius</u> <u>oreades</u>. Where the fungus was active, urease activity was only one-half to one-third that of uninfested soil outside the fairy ring. It appears that there is decreased biological activity in the zone where the fungus works.

BENOMYL FOR STRIPE SMUT

Paul R. Miller, in Ag Chem, reviews research at Pennsylvania State University and the University of Rhode Island, both of which report good success in controlling stripe smut on Merion and other susceptible bluegrass varieties through the use of benomyl. Applications of 6 oz. per 1,000 sq. ft. in October gave almost complete control of the disease. With so many Merion lawns already in existence, it is good to have a preventive that can be recommended where stripe smut is serious.

WEED THREAT CHANGES

Leo Bendixen, Ohio, notes in the charter issue of <u>Weeds Today</u>, that the success had in controlling annual and broadleaf weeds is causing other weeds released from competition to become dominant. Certainly in lawns the perennial weed grasses have superceded dandelion, crabgrass and suchlike as the most detested pests. Bendixen feels that the most serious weeds of the future will be perennial types that spread extensively by vegetative means (such as underground rhizomes).

SYSTEMIC FUNGICIDE

A report in the September 4 Science, by a group of researchers at Rohm and Haas, documented enduring and selective systemic control of wheat leafrust by either foliar or soil applications of a triazole compound (4-n-butyl -1,2,4-triazole). Maybe the day for long-lasting systemic fungicides for turf is approaching?

RECOVERY OF SOIL NITROGEN

A study by Westerman and Kurtz, Illinois, reported to the Agronomy Meetings, showed that tagged nitrogen was almost completely recovered by the second cropping year. There was no measurable loss of fertilizer N by denitrification, leaching or volatilization in the second cropping year.

RESPONSE IN A COOL-SEASON GRASS

Findings on orchardgrass, reported by Brown and Blazer, Virginia, in the May-June Crop Science, may indicate a situation that prevails generally with cool-season grasses including bluegrasses, fescues and bentgrasses. Test cultures were maintained at high and low temperatures, under low, medium and high moisture regimes. As would be expected of a cool-season grass, yields were twice as great at a cool temperature as at a hot temperature, and not unexpectedly twice as great where there was ample moisture as where moisture was limiting. No new tillers were produced at the higher temperature. Moisture stress increased the soluble carbohydrate content, presumably because of reduced utilization rather than increased synthesis.

OHIO STATE TURFGRASS RESEARCH

September 24, Dr. Schery visited the Ohio State University campus in Columbus, going over the current and planned research with Drs. Miller and Henderlong of the Agronomy Department. Turfgrass research in Ohio formerly was conducted chiefly at the Wooster Agricultural Experiment Station; most activity is now shifting to Columbus, where new research grounds were made available for planting in 1969, fully equipped with underground irrigation, drainage system, ample equipment and manpower for maintenance.

With seedings only a year old, it is difficult at this time to draw conclusions about differing grass varieties. One study already bearing fruit, however, is the proven essentiality of phosphorus for good establishment and performance of bluegrass. Plots receiving no phosphorus at time of seeding experienced severe winter killing the first year, not the case with those receiving even modest phosphorus additions. The critical need for phosphorus is likewise demonstrated by turf growing in flats (which can be shifted to the greenhouse in cold weather). There is some interaction between phosphorus and potassium, but without at least fair incorporation of phosphorus into the seedbed performance is poor. Ohio State is currently recommending that the phosphorus level (by soil test) be brought to 32 lbs./A. This is especially important for roadside seedings, which are frequently made on infertile subsoils that by soil test have less than 10 lbs. per acre of phosphorus. Usually the pH is satisfactory in all of the glaciated sections of Ohio (neutral or slightly alkaline), and potassium as satisfactory at around 250 lbs./A. It has been noted, too, that rust disease is particularly a problem where phosphorus is low.

A large series of cultivars (new varieties) of Kentucky bluegrass, fine fescue, bentgrass and tall fescue is under test and observation. The year has been one of good growing weather in Columbus (ample rainfall, even without irrigation), and the bluegrasses are particularly handsome at this time of year. On the other hand the appearance of fine fescues leaves much to be desired. Bentgrasses are just becoming fully established, and the only quality readings so far have to do with rapidity of making cover.

There is considerable difference among the bluegrass varieties, with two of the Rutger's hybrids (P-56 and P-69) looking especially attractive at this time. Nugget also looks quite good. Not nearly so much difference is apparent comparing fine fescue varieties one with another. Apparently the wet summer has set back most of them, and a few are being heavily invaded by bluegrass (Golfrood is a prominent case in point).

A number of relatively fine-textured tall fescues are now being tested, but the Ohio agronomists agree that where bluegrass performs so excellently there is not much point in planting any of the tall fescues, even the betterlooking fine-textured ones. Farther south, and in some locations in southeastern Ohio, they may fill a need. K-9-81 seemed to be the best-looking of the new tall fescues at time of visit.

A good deal of difference was evident among perennial ryegrass varieties. Using Manhattan as a standard, the majority were of inferior color and density, but several superior. Pennturf was outstanding, and K-9-125 also very good. Until the bentgrass plantings are older, and disease has built up to a greater extent, preferences are mostly subjective (based upon color, texture, etc.). A few, including Highland, have been especially slow to make a stand. The erect habit of Holfior was evident, and a number of the varieties under code designation are denser and darker green than most of the traditional cultivars, leading to the supposition that release of new bentgrass varieties in the near future is likely.

MORE ON OVERSEEDING

Several years ago the Institute actively encouraged the investigation of overseeding, in California as well as in the south-east. Dr. Schery made a trip to California, visiting with Institute advisor Youngner, and spending the day checking winterseeding plots on various golf courses in San Diego County with James R. Breece. Seed of Kentucky bluegrass, fine fescue and Highland bentgrass had been arranged for, and planted separately on the test plots at three different golf courses, along with an annual ryegrass for comparison purposes. The results of these overseeding tests are finally reported in the July, 1970 issue of Calinfornia Turfgrass Culture, although begun in 1966-1967.

As would be expected, response was different depending upon whether the environment was coastal, interior, or desert interior. In the more equable marine climate especially, cool-season grasses persist fairly well, so that overseedings may last for several years in mixed competition with bermuda. In all three locations bermudagrass is the dominant fairway cover during hot weather.

Some of the conclusions advanced by the authors are as follows: Seedbed preparation must be adequate in order to have a good catch of wintergrass, and the wintergrass must be maintained (especially continuation of irrigation) throughout the winter season. Obviously this requires budget expenditures, not only for the seed and its planting, but for some additional maintenance expenses through winter. However, this is the only means for obtaining a fairway cover of good quality, in a region where golf is played year-around. The authors feel that Kentucky bluegrass and creeping red fescue can be expected to give two or three years of satisfactory color and improved turf quality if properly established and maintained. Bluegrass, fescue and ryegrass were similar in performance ratings, with the ryegrass notable for quick establishment, the bluegrass and fescue for later performance. In general the Highland bentgrass ratings were the poorest, and little better than the check. The ratings are tabluated in 8 figures, as page 19 of volume 20, no. 3, California Turfgrass Culture, July, 1970.

MEN'S GARDEN CLUB STORY

The Gardener, official publication of the Men's Garden Clubs of America, carried the Institute story "New Lawngrasses and Their Fertilization" in the July-August issue. The story opens with a review of the rich assortment of fine turf varieties now available, and their usefulness in good design. "This means that the lawns of the future will be populated not only with the workhorse grasses so familiar today, but increasingly with thoroughbreds well suited to a 'faster track'". Lists of bluegrass and fine fescue varieties available today for both highly kept and self-sufficient lawns is provided as a boxed insert. The suitability of different fertilization methods is then related to the kind of grass, and the peculiar advantages of slow-release fertilizer (UF) for certain seasons and situations. We are delighted to have this story acquaint so influential a group as the Men's Garden Clubs across America of the current turfgrass situation.

POA ANNUA CONTROL

A new herbicide, Kerb (formerly RH-315), is reported to give excellent control of Poa annua in both pre- and post-emergence applications, according to Dr. Horn, Florida.

PHYSIOLOGICAL DIFFERENCES IN BLUEGRASSES

Watschke, Schmidt and Blaser, Virginia report in the July-August Crop Science on <u>Responses of Some Kentucky Bluegrasses to High Temperature and</u> <u>Nitrogen Fertility</u>. Two Virginia selections of Kentucky bluegrass, Kenblue (Kentucky), Pennstar (Pennsylvania) and Nugget (Alaska) were compared at differing temperature and nitrogen-fertility regimes. Contrary to the findings reported by Juska and Hanson some years ago, distinct differences were found related to region of origin; bluegrasses from warm regions proved better adapted to high temperature (because of low nitrate absorption, thus conserving carbohydrate?) than did those from cooler regions. It was felt that inherent differences more importantly govern heat tolerance of the cultivars than do management practices (such as level of fertilization). All varieties could be made more heat tolerant if pre-conditioned by a stay at cool temperatures.

The authors state, "Apparently, grasses with reasonably high carbohydrate content, whether induced by fertility, management, or because of genetic composition enhance Kentucky bluegrass tolerance to high temperature stress. --However, fertility management to conserve carbohydrates will enhance high temperature tolerance." This confirms the prevailing opinion that generous nitrogen fertilization in late spring and summer (when carbohydrates reserves would be low from new growth) is exhausting for the grass and inadvisable as a management practice, at least in regions where the summer turns warm. This research indicates that bluegrasses from southern locations are better equipped to handle excessive nitrogen fertilization then, by mechanisms that prevent comparatively as great N absorption as would be the case with northern strains.

This is a revealing investigation of a question that has long plagued seed houses devising lawn seed mixtures for several climatic belts. The authors are to be congratulated for integrating several facets of physiological theory providing reasonable explanation for bluegrass behavior that has heretofore largely been empirical.

SOD ROOT REGENERATION

Dunn and Engel, New Jersey, studied root regeneration of Merion Kentucky bluegrass sod under differing nitrogen fertilization schedules. Their report appears in the September-October Agronomy Journal. It was found that fertilization just prior to or at time of transplanting helped with the re-rooting of the grass. Nitrogen applications close to the time of transplanting were more beneficial than when made at greater intervals either before or after moving of the sod. The nitrogen did decrease the carbohydrate content of the foliage, but this seemed associated with better root regeneration.

GRASS SEED SET

C. L. Canode, Washington state, participated in the symposium on pollination and seed set at the Agronomy Meetings. He spoke on the floral induction in cool-season grasses. Delta Kentucky bluegrass received sufficient cold and short day growth by November 1 to set seed, Newport by December 1, and Merion and Cougar by January 1. The longer the exposure to short days and cool temperatures, however, the greater the number of inflorescenses and the better the seed weight per plant. Some other species (viz. certain bromegrasses, wheatgrasses and orchardgrass) experienced some floral induction as early as September 15.

SHADE TOLERANCE DISCUSSED

Dickson and Funk, New Jersey, provide an excellent review of the physiological effects of shade in a story done for the September-October <u>The Golf</u> <u>Superintendent</u>. Discussing bluegrass shade tolerance, they especially commend Anheuser-Dwarf, A-20, A-34, P-23, P-29, P-56 and P-101 (the "P" numbers being New Jersey selections or hybrids). Beset by growing conditions that tend to cause a low carbohydrate levi, bluegrasses in the shade generally succumb more to disease than from insufficient sunlight.

The authors consider Canada bluegrass as more shade tolerant than Kentucky bluegrass, but insufficiently attractive. Except for velvet bent, bentgrasses are not regarded favorably for the shade. Annual bluegrass is a good performer in moist, cool shade; Poa trivialis in similar conditions on more alkaline soils.

The fine fescues are recommended for dry shade and infertile soils. Pennlawn, Illahee, Chewings, Cascade, Highlight, Jamestown and Ruby are all mentioned by name. Sheep fescues are good in the shade but are intolerant of even moderate nitrogen fertility and poor drainage. Tall fescue is reasonably tolerant of shade and various other conditions, but is unattractively coarse. Perennial ryegrasses are noted as being a bit more shade tolerant than Kentucky bluegrass if kept cool and moist; they are suggested for temporary cover through winter when deciduous trees are leafless.

BLUEGRASS SEED GERMINATION

J. D. Maguire, Washington state, reported to the Agronomy Meetings on bluegrass seed germination. There was considerable variation in different seed years, and between varieties. In 1969 Newport did not germinate at all one month after harvest, while Cougar germinated 56 percent. Addition of potassium nitrate increased the germination of Newport, but had no influence on Cougar. Several months later germination was greatly improved with both varieties.

ANNUAL OUTLASTS PERENNIAL RYEGRASS

Research reported by Schafer and Chilcote, Oregon, in July-August Crop Science, showed that annual ryegrass seed was more persistent than was perennial ryegrass when buried in the soil. Some of the annual ryegrass turned dormant and thus remained viable, while almost all the perennial ryegrass seed "sprouted" while buried and its viability thus became extinguished. High soil temperatures and adequate moisture intensified viability depletion.

SILVERTOP IN KENTUCKY BLUEGRASS

Peterson and Elling, Minnesota, report that silvertop in that state is due to the capsus bug, which overwinters on grass and wheat. Infestations are most severe on older stands of bluegrass, or bluegrass following wheat. Silvertop can be prevented by burning field residues after harvest, or by spraying with insecticide at early heading stage.

NEW MOISTURE METER

The Agtronics Manufacturing Company, Barstow, California is offering a new small battery-powered <u>Soil Moisture Meter</u>. A test model sent the Institute is very attractively designed and would seem quite useful for reckoning general soil moisture conditions below the surface in lawns. A dial ranging from 0 (dry) to 5 (wet) is activated by the tip of the soil probe (the probe is 8 inches long) at whatever depth the tip is inserted into the soil. On the meter itself are suggested watering instructions, -- for moisture-loving plants when the dial reads between 3 and 4, for average plants when it reads between 2 and 3, and for drought-tolerant plants when between 1 and 2. The meter should be an intriguing device for the gadget-conscious home gardener, and could serve to point out the moisture reserve in various parts of the lawn.

TEMPERATURE EFFECTS ON BLUEGRASS, OTHERS

Baker and Jung, West Virginia, report in the July-August Crop Science on research done with Kentucky bluegrass and three other pasture species subjected to differing temperature regimes. They speculate that day temperatures influence bluegrass growth at least in part through nucleic acids (RNA, DNA) effects, but night temperatures mostly influence carbohydrate food reserves. A previous investigation had indicated that night temperatures were more important than day temperatures in controlling food reserves.

WINTER HARDINESS OF BERMUDA

Texas researchers report in the September-October Agronomy Journal on the effect of major nutrients on cold hardiness of Tifgreen bermudagrass. Contrary to general opinion, abundant nitrogen fertilization in autumn did not reduce hardiness, and resulted in quicker green-up come spring. On the other hand a high phosphorus level (in comparison to low potassium did reduce hardiness. The uptake of both P and K was associated with uptake of N, but K was more favored by nitrogen fertilization than P; this may partly explain why nitrogen fertilization did not have detrimental effects, since it encouraged a lower P/K ratio. None of the treatments influenced hardiness for more than a few degrees temperature range. Invariably greatest winter injury occurred when the grass received high rates of P and no K.

BLUEGRASS SEED PRODUCTION

C. L. Canode, Washington state, reported to the Agronomy Meetings on bluegrass seed production as influenced by the age of the plant. When plants were rather narrowly spaced maximum seed yields came the first and second year, but when widely spaced (3 ft.) peak yield came from four year plants. Thereafter yields declined for all spacings, including seed weight per panicle and generally number of panicles per unit area.

BLUEGRASS SEED HARVEST

Canode et al, Washington, report in the May-June Crop Science on studies involving the germination of Kentucky bluegrass seed harvested in the Northwest as related to time of harvest and drying rate. They find no difference whether seed is harvested early or late in the day, or on an overcast (slowdrying) day as compared to a sunny (fast-drying) one. WHAT THEY ARE SAYING:

"I hope all is well with you. Looking forward as usual to your fall press kit, which, as you know, is mighty handy." Earl Aronson

AP Syndicated Columnist

"I would greatly appreciate reprints of your work." Earnest Small, Research Scientist Plant Research Institute, Ottawa, Canada

"Please send available materials about lawns and turfgrass for use in the high school classroom. Thank you for your helpfulness." Fred Bartlett, Vo-Ag Instructor

Rockford Public Schools, Rockford, Mich.

"Please include me in your mailing list of articles and press releases from The Lawn Institute. In my capacity at Michigan State University, I have found your information sheets and articles to be a valuable addition to my turfgrass library."

> Dr. Alfred J. Turgeon Turfgrass Weed Control Specialist

"We are sure there are many of our customers who would be interested in receiving your information on lawns, grass seeds, etc." Mrs. Naomi S. Ullom The Cyclone Seeder Co., Inc.

"I am the coordinator for the ornamental horticulture program at Kirkwood Community College. We have a two-year vocational program -- I am interested in receiving any publications that you might have ---" Mel Essex, Chairman

Kirkwood Community College (Cedar Rapids)

"Dear Dr. Schery, The Lawn Clinic Committee, and myself, especially, wish to thank you for the lawn literature you sent us. These consisted of: 'Autumn Lawns', Kentucky Bluegrass: Turfgrass Par Excellence, Fine Fescues'. At the Lawn Clinic about 40 men manned the booth during Fair Week, 3 shifts per day, with usually two men on at a time. As usual we had a big interested crowd, and as usual, we got a blue ribbon for an educational booth, and the Fair gave the Club \$150."

> R. H. Swart, Corresponding Secretary Men's Garden Club of Syracuse

"I have read some articles of yours and I am very impressed by what I have read."

Henry C. Wetzel, Jr. Graduate Student (New Jersey)

"I'm a regular reader of your lawn 'Bulletin Board Suggestions' in <u>Seed World</u> magazine. These items have been helpful in the lawn grass portion of our business."

> James L. Girardin Arrow Seed Co., Inc. (Nebraska)