

## BETTER LAWN - - HARVESTS

PUBLISHED PERIODICALLY BY THE  
BETTER LAWN & TURF INSTITUTE

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### STAFF OFFICE ACTIVITIES

Press Kits were produced and mailed during the quarter, premier Institute activity. As is normal, about one thousand units went to northern writers and editors, but an additional (separately designed) mailing went to the Sun Belt, to over 400 newspapers and garden writers there. The regular PK contained twenty-two titles (major ones "Lawn Seeding Season", "New Ryegrasses, Real Lawn Dandies", "Celebrated Bluegrasses", and "Remaking Old Lawns") with covering letter and three back up reprints ("The Tidy Lawn", "The Alternative to Lawns", and "Where are We in the Search for Better Turf-grasses"). The southern mailing included nine titles, featuring slow-release fertilization and winterseeding, plus two of the same reprints; the covering letter offered eventual availability of a reprint about winterseeding from The Golf Superintendent. The press mailings seem to have generated enthusiasm. Continuance of the joint "Supplement" (with the American Association of Nurserymen, The Fertilizer Institute, National Swimming Pool Institute, and perhaps others) has been scheduled through Pflaum Associates, with support promised from The Lawn Seed Division of ASTA.

Advisory correspondence has continued through the quarter, resulting mainly from offers made in the press kit, and through listings of the Institute in various directories as a source of information. Most inquiries can be handled with reprints, returned in the stamped envelopes typically requested. Additionally there is a continuous trickle of custom responses necessary.

National columnists, such as George Abraham (Green Thumb) and Earl Aronson (The Weeders Guide) have called or written, and been supplied informational materials. Calls are also received from national commercial organizations mostly wanting statistical data on seed or lawn products, but sometimes government agencies seek information and verification. Fertilizers Solutions magazine frequently directs such inquiries to the Institute. Erik Madisen, publisher of Park Maintenance and organizer of his so-called "National Institutes" has proposed that the Lawn Institute join in holding its annual meeting with his affairs.

President Jacklin has been in touch with several magazines, and promising leads have developed for future stories. Upon appearance of a story done for Lawn Care Industry, "Lawns, A Concept Proven", we anticipate continuance of the battle against anti-lawn sentiment.

Erich Wittig and Jim Fox, of Toro's Moist-O-Matic irrigation division, visited the Institute on September 19. Our automatic irrigation apparatus has been non-functional all summer, making it a "real test" for VRB cultivars in the demonstration area. With almost no rain during September it has been difficult to start new seedings, or refurbish old plantings, at this critical time of year. Obsolescence, and perennial winter damage (due to freezing of the valves) is the main fault with the system,

- Continued



#### STAFF OFFICE ACTIVITIES - Continued

kindly donated by Toro many years ago; the company now promises to up-date the system before next spring so that 1979 will not be a replay of this summer. We have been unable to secure service during 1978.

The Institute's photographic library has been suffering from over-exposure with the same photos through the years, without any replacement. In late August a new sequence of lawn-making and renovation pictures was arranged, suitable for story illustrations and in such releases as the "Supplement". The services of a Columbus photographer were utilized.

#### VICE PRESIDENT MILLER RESIGNS

We regret that Vice President Gordon Miller has resigned his office with the Lawn Institute, concurrent with his resignation from Stanford Seed Company, effective September 22. Gordon presented his resignation to President Jacklin, noting gratification at having served the Institute. Gordon writes, in part, "I am confident that the image of the Institute will continue to grow and prosper. - - I wish to express my personal thanks to you for your confidence and your leadership and would ask that you extend my gratitude to the officers, Bob, and the staff for their kindness and their friendship."

Gordon's calm, considered judgement will be missed, and we wish him well in his new endeavors.

#### INSTITUTE ON RADIO

One can never foresee the fall-out from press kit mailings. When WJBC, Bloomington, Illinois received a kit, Mr. Ken Behrens telephoned Dr. Schery to inquire whether a lawn question session might be set up. This was agreed upon for August 8, and for an hour that morning Dr. Schery fielded questions telephoned in from the Bloomington listening audience on open line from his desk to the WJBC studios.

Mr. Behrens, moderating the sessions, was very kind in giving the Institute frequent credit. He also permitted the offer of Institute literature for a stamped envelope mailed to the Institute office. Interest ran high during the hour, with a constant stream of telephone inquiries to the studio, at this time of year mostly relating to weed problems.

#### WINTERSEEDING STORY APPEARS

The September/October The Golf Superintendent carried the Institute's story, titled by the editors "Winter Overseeding, Improving on Nature". The story has been reprinted and circulated to members, but without the expensive color photograph of the original. The article opens with a general discussion of the use of northern grasses in the South for winter cover, and details some of the first University research that examined northern species. A boxed insert entitled "Noteworthy Wintergrasses" summarizes the features of the perennial ryegrasses, fine fescues, rough bluegrass and bentgrasses for golf green winterseeding, and names the "Institute" cultivars from the VRB acceptance list. General instructions for winterseeding are given, and the current "state of the art" is reviewed. A box announcement on the concluding page provides emphasis, "The Breeding of Improved Cultivars has Lent Tremendous Impetus to Southern Winterseeding".

#### MORE ON WINTERSEEDING?

A telephone call from editor John McClements indicates that a winterseeding story involving both bluegrasses and perennial ryegrasses (with varieties named), will be carried in the October issue of Plants Alive Magazine.



Other progress during the quarter on story preparation, publication and reprinting shows the following:

The first two in a series of three articles for Lawn Care Industry were completed and sent to editor Earley, the first entitled "Lawns, A Concept Proven", the second "Recarpeting Urban America". The former continues the Institute's campaign of emphasizing that lawns are not only a landscaping amenity but quite practical as well. It hopes to counter current propaganda suggesting that lawns are "immoral" and "wasteful". As the story states, "Lawns, in America, are a logical outgrowth of prevailing conditions, a concept of proven worth. - - - lawns seem the most efficient, attractive, useful ecosystem that we can impose upon the disturbed lands where we dwell".

In "Recarpeting Urban America", the position is taken that the development of new cultivars has amounted to quite a breakthrough, and that there are today numerous choices as well as practical candidate varieties. A tag line from the manuscript reads, " - - - nothing has been more spectacular than the development of special lawn cultivars chosen specifically for the task of clothing urban surroundings. A "panoramic glimpse" of new cultivars and their breeding follows.

"Lawngrasses for Fall Planting" appeared in the August issue of Plants Alive magazine. This is a distillation of a lengthier manuscript sent the editors, but it works out fairly well as a single-page envelope stuffer with a handy listing of the current VRB selections. The magazine has expressed interest in follow-up stories for 1979.

"Late Season Weeding" is a more technical presentation given at the last Ohio Turfgrass Conference, and reprinted from the Proceedings. Copies have been circulated to members and other interested people, and have elicited a request from ChemLawn for permission to reproduce and quote.

Initial planning is underway for a summer lawn story for Plants and Garden magazine, for 1979. Reprinting has been scheduled or completed on "Winterseeding, - Cool Weather Glory for Southern Golf Greens", and of the tri-part series from the American Nurseryman ("A Guide For Lawns"). The latter has proven quite useful for answering inquiries in an epitomized, straightforward fashion.

A custom story on winterseeding southern turf was offered to city and regional magazines in Atlanta, New Orleans, Charlotte, Houston, Birmingham, and Dallas. We received no response (although possibly inclusion of an abbreviated item eventually condensed for the press kit may have been used).

#### WINTERSEEDING STORY

Dr. Richard Hurley, Lofts Pedigreed Seed, received assistance from the Institute in the form of preparation of a ryegrass winterseeding story that Lofts had been asked to furnish a southern golf publication. The joint effort should help direct attention to the new coterie of perennial ryegrasses so valuable for winterseeding southern golf greens. The story appears under Dr. Hurley's signature.

#### AWARD OF MERIT PUBLICITY

Presentation of the Lawn Institute "Award of Merit" to Dr. Reed Funk, by President Doyle Jacklin, was reported upon in the July issue of Weeds, Trees and Turf, and in the August Lawn-Garden Marketing (the latter caught by Treasurer Russell). These are additional reportings to the several previously noted, and help the Institute image. Dr. Funk has been most complimentary, "I appreciate receiving your reprints. - - have always admired your writing skills and the great service that you provide the horticultural industry."



## READER'S DIGEST BOOK OUT

Dr. Schery was called upon as a consultant in preparation of the Reader's Digest Illustrated Guide to Gardening, and the Institute is credited in the list of "consultants and advisors". This attractive book, thoroughly illustrated, was adapted from the English edition. Handling of ornamentals has greater similarity between England and the United States than is the case with lawngrasses; unfortunately, although the text prepared by the Institute was proper for the United States, staff writers made numerous changes trying to adapt it to the English illustrations and format, resulting in some confusion. Nevertheless, we welcome having lawns featured in so prestigious a book, and to have the Lawn Institute credited.

## INSTITUTE ANNUAL MEETING ANNOUNCED

The August Seedsmen's Digest carried, under the title "Lawn Institute Elects Officers" a resume of the annual meeting, naming individuals elected to the Board, officers, and appointments to the Variety Review Board. The June-July issue of Landscape Industry also carried an announcement of a similar nature, as did the August issue of Seed World. The same report appeared as one of the industry features in the September/October The Golf Superintendent.

## PRESS KIT RESPONSE

This is the announcement which appeared in the Columbus Dispatch, Sunday, August 20, in response to the press mailing:

"Here's a chance to introduce some of the outstanding new varieties into your lawn. If you would like a list of these cultivars, send a self-addressed, stamped envelope with your request to the Lawn Institute, 991 W. 5th Street., Marysville, Ohio 43040."

This is another example of the fine cooperation we receive from a friendly garden editor. Essentially the same offer appeared in Richard Crum's column, in the Indianapolis The News on the same date.

## PRESS KIT USAGE

Nadia Zigalka, women's editor for the Elizabeth, New Jersey, The Daily Journal sends a note of thanks, and a tear sheet of August 15 issue in which one of our stories entitled "Late Summer Best Time To Seed New Lawns" enjoys a full six column spread (and illustration). The material used is exactly as presented in the press kit. Ms. Zigalka writes, "Thanks for the fast action on the photos - - - we'll be running other things from the packet from time to time and will be sure to send you tear sheets."

## PRESS ITEMS USED

We are pleased that the September (Vol. 32, No. 4) of the Bull Sheet (official bulletin Midwest Association of Golf Course Superintendents) utilized three of the Institute items. "Buying Sod, Check Cultivars", "Fine Fescues for Shade" and "New Ryegrasses, Real Lawn Dandies" all appeared under the Lawn Institute byline, citing the cultivars just as in the press kit.

## SLIDE SET ON ROADSIDE TURFGRASS

The slide set entitled "Roadside Turfgrass", senior compiler Dr. R. W. Duell, Rutgers University, is now available from the Crop Science Society (American Society of Agronomy, Madison, Wisconsin 53711) at the price of \$30 per set.



## PRESS MAILING COSTS

By its very nature, the mailing of press kits to a selected list of newspapers, writers and editors produces results that are hard to measure. Even when there is no "direct action", one's image may be building up, and a reservoir of good will gained. Each year, at the annual meeting, when the director reviews the Institutes press kit program, we feel it is remarkably economical. This is confirmed by a recent mailing received from the North American Press Syndicate, of New York, a PR agency which, among other activities, offers a service for placing stories in newspapers (1,000 dailies, 2,800 weeklies, on their contact list).

The price of a release 1 column wide, 7 inches deep, comes to \$885. A "package" of twelve or more releases, 2 columns wide, comes to \$1000 each (\$12,000 total). Obviously, to engage a professional agency such as NAPS for issuance of Institute coverage would cost in the tens of thousands of dollars. Additional space, beyond 7 inches, is priced at \$30 per column inch, to give a rough indication of present-day values.

NAPS anticipates at least 100 clippings from each release (to the 3,800 newspapers). They assume that clipping efficiency is about 25% (based on experience). Figured on this basis, how "valuable" were the twenty seven Institute clippings carried in the gardening section of the St. Louis Post Dispatch on April 14, 1978? One hundred forty one column inches were represented, which, at \$30 per column inch, amounts to \$7,230 - enough in this instance alone to justify the cost of the entire press mailing (which came to only a little over a thousand dollars, exclusive of staff time and office overhead, of course).

## PENDING SUBURBAN CHANGES?

In recent years it has become obvious that changes are being thrust upon conventional suburbia, and they may have influence upon lawn and garden volume. The courts have held various zoning regulations to be unconstitutional, and the rising costs of land and housing have made the purchase of single-family dwellings on spacious property beyond the reach of the majority. The situation is well reviewed in Forbes, August 7, under the title "Home Sweet Suburbia".

The story points out the incongruity of highly restricted communities requiring tremendous influx and outgo of workers daily; restrictions prohibit the construction of inexpensive housing that could put workers within walking distance in the community. The courts have been tackling this case by case, and strongly prohibitive zoning restrictions have been declared illegal. Garden apartments for the elderly have been a key to breaking restrictions, but subsidized housing for the poor (federal) has been applying pressure persistently. The federal government increasingly takes the attitude that if there is no housing for the poor permitted, there should be no federal grants of any kind (even for street or highway improvements). Thus economic pressures seem to be succeeding even where legal measures are slow.

The question posed by the article is whether suburbia's "time has come"? A mixture of integrated dwelling patterns is foreseen rather than exclusive, zoned housing communities. Perhaps America is mature enough now so that it will be approaching the European pattern, and the gigantic "move to the suburbs" by the affluent that so marked the 20th century (possible because of general availability of the automobile and inexpensive energy) may be coming to an end.

If so, the portents for lawns and gardens, and sales of lawn products, becomes obvious. There will be more communal properties handled by caretaker, and fewer individual home lawns and gardens. The size of the property should be diminishing, both for reasons of



## PENDING SUBURBAN CHANGES? - Continued

economy, and to accomodate smaller units as zoning restrictions are broken down. As condominiums, apartments and other multi-family developments increase, individual pride in the lawn and garden would seem destined to give way to heavily used communal grounds. The article concludes, "Sterilized suburbia, as we know it today, is possibly a passing phase, a strange period when every American wanted to become a mass-produced country squire." The article notes that the intellectuals, typically the leading edge of change, show dissatisfaction with suburbia and are moving back to urban town houses. Might this be another "sign of the times", such as the misguided revolt against lawns!

## TURFGRASSES PUBLICIZED

The August issue of Weeds, Trees and Turf, in the "Viewpoint" section by editor Bruce Shank, carried a very nice commendation of progress within the grass seed industry and the potential for new cultivars. Concludes Shank, "We need to improve our methods of informing the public about new improved turfgrass varieties. Urban extension agents and retail nurserymen must be kept abreast of turfgrass research. Buyers for discount stores need to know the facts of fine turf seed. - - - ask sod producers to grow the new varieties. As a result customers will receive the best turf available and you will be respected for your up-to-date knowledge of your field."

Members attending the annual meeting may recall that two representatives of Weeds, Trees and Turf were present.

## BLUEGRASS COMMENDED

Pro-bluegrass publicity has shown up in a number of golfing publications recently. Even though the professional golfers prefer to play on denser bentgrass fairways revival of interest in bluegrass fairways has occurred because of tolerance to drought. The argument is advanced that a bluegrass fairway requires little supplementary irrigation in many parts of the country, such that tens of thousands of dollars can be saved during course construction on less sophisticated irrigation apparatus adequate for bluegrass. Water for irrigation is increasingly likely to be limited, and in some cases may be entirely restricted (at least seasonally); bluegrass can adapt.

Ray Gerber, editor The Bull Sheet (Midwest Association of Golf Course Superintendents) takes up the cause in the August issue. He notes that the old time golfers won plenty of tournaments on bluegrass with scores comparable to those seen today, in spite of less refined equipment. He notes that bentgrass and *Poa annua* die without sufficient water, but that Kentucky bluegrass merely turns off-color, again quickly reviving with rain. Meanwhile it is possible to play golf quite adequately off of the brown turf. He writes, "Golf courses should not be too hasty to change their bluegrass turf to bentgrass. There could be a time coming when fairway irrigation will be prohibited - -". He feels it is mainly the pro golfers who are pushing for posher, more expensive, heavily-irrigated bentgrass fairways for their own convenience.

## SOD INDUSTRY REVIEWED

The August issue of Weeds, Trees and Turf provided a statistical review of the sod industry, giving some "hard" figures about which we are frequently queried. Among the species and cultivars that predominate, bluegrasses, of course lead the list (a fair amount of bermuda, zoysia and st. augustine is also produced). The leading bluegrass cultivars for sod (judged by percentage of respondents indicating its usage) were Baron, followed by Merion, Fylking, Glade, and Adelphi closely bunched. Majestic and Touchdown seemed to receive considerable use also. In the same issue are separate case-history stories of sod production in Florida, California, and a general review (the first in the series of three) by University of Maryland staff.



## 1978 NORTHERN MICHIGAN TURFGRASS FIELD DAY

The Department of Crops and Soil Sciences, Michigan State University, organized the 1978 Field Day in cooperation with the Traverse City Golf and Country Club. Dr. Schery took advantage of an invitation to visit the test and demonstration grounds representing a significantly northern environment on sandy soils (performance of cultivars often differs here from farther South, and the location represents a critical test of winter survival under boreal conditions.) Dr. Schery presented regards from the Lawn Institute to Drs. Kaufmann, Rieke, Payne and Vargas, who have been good friends of the Institute at Lansing.

Stop one evaluated nitrogen fertilizers. All treatments looked very much alike at time of visit, but A. M. Petrovic explained that the standard ureaform nitrogen gave a slow response, although the finely ground ("Powder Blue") was more like other materials. Treatment rates were a pound of nitrogen per month, monthly or bi-monthly. Average ratings for the year were not very different, no matter the nitrogen source.

Stop two demonstrated perennial ryegrass cultivars, planted in 1976. At date of visit all looked rather good except Caravelle; the elite, named cultivars (including Institute varieties) were generally decidedly better than "common" types. In a spring rating none had been better than Norlea and NK-200, noted for winter hardiness; early spring is not the best season for ryegrasses to stand out in the Traverse City climate. By June ratings had improved considerably, with Manhattan, Regal, Yorktown II, Derby, and Diplomat then slightly ahead of NK-200 and Pennfine. By mid-July Manhattan still led, and Omega had advanced greatly. By the end of July Derby, Yorktown II, Diplomat and Loretta were near the top (Loretta was among the best on September 13, time of field day).

Stop three demonstrated the use of wetting agents for treating localized dry spots, especially on golf greens, probably caused by fungus mycelium. Hydro-Met and Aqua-Gro were both effective, although efficacy of treatments was unpredictable and was generally best if accompanied by coring.

At stop four Dr. Payne discussed red fescues, noting that the relatively cool summers and well-drained sandy soils at Traverse City made the area ideal "fine fescue country". Many golf courses use fescues for the fairway, mowed at about 3/4 inch. But if the fairways are watered much, Poa annua invades. There is some damage from Helminthosporium disease, which Payne feels is the main cause for fine fescues being unsatisfactory southward. The search is still on for disease-tolerant breeding stock, and Michigan State has accumulated a few lines (time-consuming because disease-resistance seems to be recessive on a highly polyploid genome, which makes breeding of a "pure line" difficult). The plantings on display were only a year old, so that ratings must be considered "tentative". In the spring Banner was among the higher rating, with Highlight and Koket intermediate. The order was the same by mid-summer, although Koket and Highlight had risen.

Stop five demonstrated turfgrass renovation. Various combinations of slicing and coring were compared with simple overseeding (plain overseeding gave poorest results). Generally best was a combination of slicing and coring in two directions. The old sod was killed with glyphosate, ryegrass overseeded (perhaps a second glyphosate treatment made), and the various coring and scratching operations then practiced.

At stop six Dr. Vargas discussed bluegrass cultivars and diseases. All bluegrasses looked rather good at time of visit, especially Baron, Sydsport and Nugget. Vargas suggested for fairways dense, low-growing cultivars such as Touchdown and Brunswick, which he felt would compete better with Poa annua; however they might have a tendency to thatch. Other, less aggressive cultivars would be suggested for home lawns.

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## 1978 NORTHERN MICHIGAN TURFGRASS FIELD DAY - Continued

Vargas indicated that both Fylking and Campus did poorly because of Fusarium attack, and Vantage suffered from heavy rust infection. The bluegrass plantings had been made in 1969, so were significant for evaluation. Fusarium attack was the single most important influencing factor. Quality ratings made in the summer of 1977 showed Baron and some of the common types to rate most highly. Spring of 1978 showed Sydsport to be "numero uno", with Kenblue, Fylking, Nugget, Baron and several vegetative or coded cultivars not far behind.

Bentgrasses were not the object of a particular stop, but were the test grass for fertilizers and other treatments. Emerald suffered considerable dollarspot damage, more than did Penncross. Terrazole, uses a nitrification inhibitor, seemed not to accomplish much when used with ammoniated fertilizers.

## OHIO TURF AND LANDSCAPE DAY

The Ohio Agricultural Research and Development Center at Wooster held its annual field day September 12. We're grateful to Frank Plovick, Men's Garden Clubs of America, who visited the Institute September 11, for forwarding literature received when he attended the next day.

Not a great deal of attention was directed specifically to turf, "Lawngrasses for Ohio", by Dr. Karnok being the only formal presentation on this subject. Karnok, a graduate from Texas, has only been in Ohio for a couple of years, and his review of turfgrass species appropriate for the state follows traditional, fairly stereotyped recommendations.

Karnok suggests that up to 40% of "common" bluegrass can be utilized with elite cultivars, to lower seed cost. He mentions a fertilization rate of 1/2 - 1 pound N/M per growing month, a lot more than would be accorded most lawns. Blends of bluegrasses are recommended. Karnok notes of fine fescues, "They prefer dry, sandy soils having a pH of 5.5 to 6.5. The fine fescues will not tolerate wet, poorly drained soils or high soil salinity". If this were entirely true there would be little fescue planted in Ohio. His table suggests about 1/3 bluegrass, 2/3 fescue for shade.

Karnok's evaluation of perennial ryegrass seems a little behind the times, stating "Because ryegrass has tough, fibrous leaves, they are difficult to mow"; this, is not true of newer cultivars. Nor do perennial ryegrasses show such poor tolerance to high temperatures and drought. Tall fescue, bentgrass and zoysiagrass are also discussed. The table of cultivars fails to mention some of the more recent ryegrasses (e.g. Blazer, Diplomat, Fiesta, Omega, Yorktown II, Regal). Several excellent bluegrass and fescue cultivars are neglected, too, while some obsolete varieties are included in the listing.

## COOLING EFFECT OF GRASS

The June issue of HortScience, adapted from Horticulture Digest, notes: "One acre of grass gives off 2,400 gallons of water every hot summer day. This has a cooling effect of a 140,000 pound air conditioner - a 70 ton machine. A mature tree in front of your home can produce a cooling effect equal to 10 room-size air conditioners running 20 hours a day".



## RUTGERS 1978 RESEARCH REPORT

We were pleased to receive from Reed Funk, Volume 9, July 1978, "Turfgrass Proceedings" from Rutgers University. This is one of the most authoritative state publications, and encompasses lectures given at the preceding New Jersey Turfgrass Expo, plus a research up-dating from technical papers by the Rutgers staff. The 164 pages can not be adequately summarized here, but a few of the highlights may be of interest.

Blaser, Virginia, opens with a provocative review of the needs and "preferences" of various turfgrass species. He hypothesizes that ryegrass in mixture "subdues" bluegrass because of light exclusion, and advocates no more than 15% perennial ryegrass (plus frequent mowing soon after seeding to keep the ryegrass low). He also states that ryegrass grows at a lower temperature, and therefore recommends early spring and late autumn mowing to favor bluegrass. Mowing of quackgrass, orchardgrass, tall fescue, etc. is similarly advocated, because the broader leaf blades of these species shade bluegrass. Kentucky bluegrass is said to grow at cooler temperatures than white clover (and responds better to nitrogen fertilization), so that autumn fertilization helps bluegrass suppress clover; taller mowing of bluegrass in summer also helps. Blaser suggests that autumn fertilization replace that in spring (root and basal growth continues at lower temperature than leaf growth; also bluegrass favored over crabgrass). He notes that drought gives tall fescue advantage over bluegrass; low fertility and acid soils favor red fescue over bluegrass; soils high in soluble aluminum give bentgrass an edge over bluegrass and tall fescue; low fertility favors fescue over bluegrass; etc.

Tashiro, New York, notes a resurgence of Japanese beetle after some years of decline, with increasing turfgrass grub problems; Diazinon does not give perfect control, but is about the best available to a homeowner (some coded materials show promise, and fensulfothion is good but usable only by certified applicators). Sod webworm is still serious, but *Ataenius* dung beetle seems to be receding.

Schmidt, Virginia, reviewed the basics of watering turf. Meusel, Connecticut, discussed grass response to "wilt". Engel, New Jersey, suggests minimal watering of red fescue, although in the shade of trees occasional heavy watering may be needed to compensate. A series of papers deal with golf course employment and management. Jackson, Rhode Island, discusses "yellow turf" (possibly caused by a downy mildew fungus).

Smiley, New York, reviews specific cases of disease control with fungicides (see the paper for recommendation of specific treatments). Gray snowmold was controlled only by fungicides containing mercury or cadmium, and in one test nothing was too effective against *Helminthosporium* (although Daconil and Dyrene did reasonably well in another). Brown patch and dollarspot were controllable with a number of fungicides. Smiley notes that *Fusarium* is well controlled only by a few experimentals, and is causing change from Kentucky bluegrass (much affected by the disease) to bentgrass (little affected) on golf fairways. Langlois, New Jersey, remarks on strains of fungi having become resistant to fungicides. Cole, Pennsylvania, offers a planned program for controlling disease on a golf course.

Turgeon, Illinois, gives his latest observations on thatch (which is, perforce, often the rooting medium for lawn grasses). He suggests aerification (coring), with the cores dispersed as a sort of "topdressing" as one means for counteracting thatch. Miller, Ohio, discusses maintaining *Poa annua* on the Firestone fairways. Hurley, Lofts, New Jersey, reviews the many advantages of perennial ryegrasses for golf course fairways, from winterseeding, through temporary cover, to permanent cover (in more northerly regions) especially where competition for *Poa annua* is wanted. A series of papers discuss mowing, watering, landscape maintenance, and Jagschitz, Rhode Island, reviews control of difficult weeds. Horse racing turf is discussed by Miles, New Jersey.



Rutgers authorities review seeding mixtures for various purposes: fine fescues, and a few bluegrasses (A-34, Glade, Nugget) for dry shade, with perhaps some *Poa trivialis* for heavy shade (especially under damp conditions). The new perennial ryegrasses are suggested for temporary turf in intensely shaded areas. A blend of the newer bluegrasses is recommended for athletic fields receiving light use, to which would be added perennial ryegrasses for heavier use (tall fescue in extreme cases). Turf for baseball fields, school grounds, and parks are discussed.

#### RUTGERS TECHNICAL PRESENTATIONS

Cosky and Duell find that several Kentucky bluegrass cultivars have been superior to fine fescue for shade (Glade, Nugget and A-34 are three mentioned). Both red fescues and tall fescue proved adequate under moderate shade; perennial ryegrass was unacceptable in heavy shade. Sabre was the best *Poa trivialis* cultivar for shade. Nugget was badly afflicted with powdery mildew in heavy shade, and powdery mildew could be found on Banner and Jamestown fescues even in lighter shade. Common type bluegrasses and red fescues were unsatisfactory in either light or heavy shade.

Duell, Funk and Cosky reported on efforts to develop superior red fescues, none of which were competitive against *Poa annua* under moderate fertilization and close mowing.

Engel and Bussey discussed crabgrass control with herbicides, and achieved highest percentage of control with butralin (whether pre-emergence materials were applied in April or May seemed to make little difference). Oxadiazon has been effective, but has been injurious to bentgrass.

Funk, Engel, Duell and Dickson discuss "Kentucky Bluegrass for a New Jersey Turf" delving rather thoroughly into the background (origin, adaptation, fertility needs, etc.) of Kentucky bluegrass, and reviewing specific diseases which new cultivars have been selected to resist. Tables rate bluegrass cultivars by resistance to the specific diseases. Nugget and most "Institute cultivars" have shown good resistance to *Helminthosporium* (Baron, Plush, Glade and Ram I moderate resistance), while common types have shown high susceptibility. Institute cultivars showing good resistance to stripe smut include Glade, Touchdown, Adelphi, Plush and Birka, with others showing moderate reactions (except Merion, which has high susceptibility). *Fusarium* blight is confused by differing species of the fungus whose incidence varies greatly with environmental conditions (especially hot weather, stress from drought, excessive nitrogen fertilization, and abundant thatch). The researchers don't feel they have enough evidence on *Fusarium* yet, but note that Glade seems somewhat more resistant than Merion, which is somewhat more resistant than Fylking, which is somewhat more resistant than common types. Highly resistant to stem rust are Plush, Majestic, Adelphi, Bonnieblue, Ram I, and Fylking; Nugget, Baron and Birka are intermediate; Touchdown and Merion rather severely afflicted. Most resistant to leaf rust are Touchdown, Glade, Nugget, Adelphi, Fylking, Sydsport, Bonnieblue, Majestic, Galaxy, Baron and Merion in that order.

Dollarspot is of increasing importance, perhaps because of the widespread use of irrigation and planting of susceptible varieties (Merion, Fylking, Baron, Sydsport and Nugget). Showing moderate resistance were Majestic, Adelphi and several cultivars not on the Variety Review Board acceptance list. Nugget and Glade showed a good daylength response (decumbent growth), and many of the elite cultivars seem suitable for the low-mowed turf (Merion, Ram I, Bonnieblue, Birka, Touchdown, Baron, Sydsport, Jamestic, Fylking, Adelphi, etc. are named): common types of course are unsatisfactory. Merion has shown above average resistance to summer heat (but may succumb to stripe smut in summer). Adelphi and Glade are characterized by having



bright but dark coloration; Bonnieblue and Majestic retain excellent color in winter and green up early in spring. Baron and Nugget green up rather belatedly. In Table 7 (page 134) Touchdown exhibits best spring performance, but is only high-intermediate in summer; common types are very poor both spring and summer, and Nugget does not rate too favorably in summer. The final pages of this report characterize each cultivar individually, ending up with the recommendation of combining cultivars in a blend (a variety highly resistant to both stripe smut and Helminthosporium should surely be included).

Funk and Dickson summarize the regional tests for Kentucky bluegrass cultivars for 1977. At New Brunswick, Brunswick rated most highly on average, followed by Brunswick plus P59, Plush, Touchdown, Adelphi plus Glade, Adelphi, Nugget plus Glade, Bonnieblue, Sydsport, and so on. Eighty nine cultivars or blends were in the comparisons. In a six year average Brunswick plus P59 led, followed by Brunswick, Touchdown, and Adelphi plus Glade in a tie for second; with Adelphi, Nugget plus Glade, Enmundi, Plush, Sodco, Adelphi plus Fylking, Parade, Rugby, Bonnieblue, Glade, Majestic, Ram I not far behind, and with common types generally poorest.

Funk and Dickson also discuss performance of perennial ryegrass cultivars, reflecting overall turf quality (appearance, density, mowing quality, freedom from disease, etc.) The newer turf-type cultivars are far superior (rating well were Yorktown II, Blazer, Fiesta, Diplomat, Omega, Citation, Yorktown, Regal, Derby, Clipper, Birdie, Manhattan and Pennfine). Yorktown II, Blazer, Manhattan, Yorktown, Diplomat and Omega were especially good in autumn and winter (resistant to winter brown blight disease); Citation, Yorktown II, Blazer, Fiesta, Birdie, Pennfine, Derby, Diplomat and Omega in summer (largely due to good resistance to brown patch disease). Averaging scores for five years, Citation ranked highest, followed closely by Omega, Diplomat, Yorktown, Manhattan and Pennfine, (this at New Brunswick). At Adelphia rankings for the most recent three years showed Yorktown II and Citation leading, followed closely by Derby, Omega, Pennfine, Diplomat, Manhattan, and Yorktown. Averaging all ratings for the 1974 seeding Yorktown II ranked first, followed by Diplomat, Omega, Citation, Yorktown, Derby, Birdie, Pennfine and Manhattan, with other trailing considerably behind. A 1976 seeding showed Yorktown II first, followed closely by Blazer, then Fiesta, Diplomat, Omega, Citation, Yorktown, Regal, Derby, Clipper, Birdie, Manhattan, Pennfine, with others considerably lower.

Halisky and Atalla note that certain phytotoxic fungicidal applications encourage ingress of Poa annua. O'Knefski, provides a tabular listing of Kentucky bluegrass cultivar performance according to susceptibility to various diseases. A final paper, with no author listing, discusses "Fescues For Home Lawns", and cites many reservations. Banner, is the only cultivar to achieve a "good" rating in all categories (Dollarspot on Long Island, Helminthosporium in Michigan, Helminthosporium at Cornell). Highlight and Jamestown are almost as good (no "poor" ratings) but all other cultivars rate "poor" in at least one of the categories. Hard fescues are considered favorably, followed by Chewings types.

#### GREATER BLUEGRASS EFFICIENCY IN WINTER

Research by Dr. Richard Hull, Rhode Island (Turfgrass Research Review, July) compared carbon dioxide fixation in July with that in December, and noted the amount of radio-carbon movement to the roots. With Merion bluegrass there was greater net gain from photosynthesis in December (after foliage growth had essentially ceased) than in July, and better utilization made of fertilizer nutrients, an argument for autumn fertilization.



During August the Proceedings of the December 1977 Ohio Turfgrass Conference finally appeared. The Institute was represented by the paper "Late Season Weeding" by Dr. Schery, which has been reprinted and circulated for the information and possible use of members. It will not be commented upon here, but a resume of other papers may be of interest.

After an initial welcome, golf architects made pertinent observations to the effect that golf courses are an ecological "plus", the public value of which should be better appreciated. In many cases golf is the lure that brings this segment of the population into the nearest contact it will have with nature; ruboff should have benefits in more enlightened public and voter awareness. Golf courses as a "green belt", and in utilization of otherwise useless terrain, is emphasized.

S. E. Allen, TVA, thoroughly reviews "Controlled-Release Fertilizers For Turfgrasses". An interesting point made is " - - warm season grasses, which produce maximum growth in the summer months, tend to benefit most from controlled - release nitrogen. With cool season grasses, normally semidormant in midsummer, excess available nitrogen may result in stand reduction." On the whole it is a well-rounded discussion.

Subsequent papers deal with tree care, bunker design and maintenance, golf course renovation, and wear-usage of turfgrass areas. Niemczyk and Power review the intensified interest recently in Ataenius beetle control (diazinon works best), and Niemczyk also discusses a grain mite which now seems to be damaging fairways. Larsen and Hagan, Ohio State pathologists, discuss Helminthosporium disease. They present a chart of Kentucky bluegrass varieties in which elite cultivars (including all Institute varieties) are listed as excellent, while common types range from good to poor. In fungicide tests Dyrene and Tersan LSR gave best control of spore germination, while most fungicides reduced severity of the disease.

Dr. Butler, Colorado, reviews soil conditions, pointing out some of the difficulties with using sand as an amendment, and the pros and cons of organic materials. He noted that there is great difference among grasses to salt tolerance, e.g. "Kentucky bluegrass has a rather low tolerance to soluble salts, while perennial ryegrass and red fescue will tolerate higher levels of salt than Kentucky bluegrass - - in certain areas where salt levels are high [alkali grass may be the only alternative]".

Butler also discusses drought tolerance of turfgrasses, of particular importance in Colorado. He notes the increasing difficulty likely in obtaining irrigation water, and offers suggestions for limiting usage without serious damage to the turf. He notes that Kentucky bluegrasses are quite tolerant to drought, revive when moisture again becomes available even though completely browned (other species might die if they desiccate this much). Common bermudagrass, buffalograss and blue gramagrass are warm season species which often get by with little water, but, suprisingly, tall fescue does not seem to hold up in the high plains. Colorado State is selecting from brome grasses for greater drought tolerance, and looking over wheatgrasses too (but the species is generally unsatisfactory for its lack of density). In a Colorado master thesis various bluegrass cultivars were studied for drought tolerance, the "common" types ranking better than the elite cultivars (a table listing 30 different cultivars or combinations are given, in which Arboretum ranks second, followed by Merion third, Baron eleventh, and other named varieties farther down the list.)

Karnok, Ohio State, outlines his plans for future research, which mainly involve physiological response. Dr. Jagschitz, quest speaker from Rhode Island reviewed chemicals for eliminating turf, renovating lawns, and retarding growth (nothing too satisfactory in the last category, and nothing really new in the former ones).



Irrigation and aquatic weed control are covered. Cholinesterase tests for employee protection (against pesticides) is reviewed, as are correction of soil acidity, and diseases of ornamentals.

Watschke, Pennsylvania, discusses growth regulators, noting that they produce unfavorable side effects (including increased disease susceptibility), but that there is some hope that types which suppress leaf growth but not root growth might be developed. He also finds growth regulators of scant value for preventing Poa annua on fairways (through seed reduction), and noted that "There is evidence that fall application of growth regulators on turf-type perennial ryegrasses has caused stand losses due to winter kill." He had suggested overseedings of perennial ryegrass-with-bentgrass, the ryegrass to contest Poa annua quickly and vigorously in autumn, the bentgrass to eventually take over.

Niemczyk, Ohio, brings up the bluegrass billbug, an increasingly identified problem in Ohio. Adults can be controlled in late spring, larvae in early summer; bendiocarb, diazinon, propoxur have all given high percentages of control. Pesticide tank mixes, lightning, and handling of golf course crews are other subjects for subsequent papers.

Jackson, Rhode Island, speculates about the advent of new diseases, feeling that many times improved diagnosis calls attention, but in other cases virulent strains of fungi that have long been present (even non-pathogenic) arise. He notes particularly "yellow tuft" and "ophiobolus" as increasingly important on turf, whereas formerly they were little reported.

Aerial applications of pesticides from helicopter have been successful and reasonably economical in northern Ohio, and mist blower applications of fungicides recommended over boom spraying by one superintendent. Jagschitz, Rhode Island, discusses chemical control of annual grasses and weeds in perennial turf. He mentions soil sterilants, general vegetation killers, a selective broadleaf killer (bromoxynil) for seedling turf, pre-emergence crabgrass preventives, arsonates and bentazon for nutsedge control, the familiar phenoxy approaches to selective broadleaf weed control, no entirely effective means for annual bluegrass control, and the use of charcoal to nullify misapplication of herbicides.

J. Martin Erbaugh, Davey Tree Co., presents an evaluation of the lawn service industry. While recognizing the great growth this industry has had, and the portents for continuing expansion, he sees danger signs that indicate over-expansion, lower profits, and an impending shake-out ahead. On the other hand Bob Farley, Lawn Care Industry, marvels at the sudden opportunities the lawn service industry has presented. He notes specialization with products tailored especially for the lawn service industry. He feels it is a "young" industry with quite a future still ahead.

#### TURF DISEASES REVIEWED

Dr. David Martin, Ohio, discusses "Turfgrass Diseases and Their Control" in the August Park Maintenance. He regards Helminthosporium as the most serious, best controlled with resistant cultivars. Several fungicides can be helpful. Fusarium control remains erratic, environmental influences unclear, with benomyl helpful against fungus strains that have not built up resistance. Powdery mildew can be troublesome, and Pythium is being given research attention. Other diseases fairly common are Anthracnose, brown patch, red thread, stripe smut and snowmold.



Dr. Beard forwarded publication PR-3484-93, under date of May 1978, the official research report from Texas A & M University. Much of the work will be of interest to members even though conducted under a southern climate, especially that reflecting upon winterseeding of northern grasses. The booklet opens noting that 3.1 million acres of turfgrass are maintained in Texas, more than half accounted for by home lawns.

Pythium is often a problem on overseeded northern grasses. Research confirms that frequent watering (such as twice daily) encourages disease compared to a drier regime (such as watering every other day). The disease was at a peak in February, when temperatures were between 46-63° F., cooler than normally thought incitive. Generous fertilization and high pH seem to encourage the disease, but ample calcium restrains it. Dexon and Koban are fungicides effective against Pythium, but cultural measures must be taken also.

Rooting of bermudagrass and st. augustine is discussed, and apparently a spring change-over occurs much as with northern grasses, during which the grass can be "touchy" and should not be under stress (such as over-fertilized). Tall fescue seems to work out very well as a shade grass, giving year-around green cover. St. augustine, noted for shade performance, did not establish well from sprigs or plugs in heavy shade, had to be sodded. High (3 inches) mowing was beneficial, as was moderate fertilization. Common st. augustine is much more tolerant of cold (soils in shaded location may not warm much during winter) than is Floratam: cold injury is intensified under low mowing (less insulation of growing points).

Spore counts were made on lawns in various cities. In Dallas tall fescue showed almost twice as many spores per unit of dry weight as did improved bermudagrass, with common bermudagrass and st. augustine only about half that of the improved bermuda. Since even a few spores are sufficient to initiate disease under favorable circumstances, it is difficult to see the significance of this research, which can be likened to investigating "overkill".

Wear and golf ball roll were checked on wintergrass overseeded under golf green conditions. Machines to simulate wear of the grass, and to measure roll of the golf ball were used. The elite perennial ryegrasses wore better than fescues, rough bluegrass or bentgrass, but difference between cultivars was negligible (not significant statistically). However, some of the older and common types did not rate well. Sabre, an improved rough bluegrass, was markedly superior to common. In golf ball roll (measured by distance), Citation, Regal, Derby and Caravelle perennial ryegrasses ranked in that order; all perennial ryegrasses gave greater roll than did fescues, creeping bentgrass and rough bluegrasses. Among the fescues, Highlight ranked first for distance of roll. It is difficult to see much significance to the roll test, however, since skill in putting, not how "fast" the green is, would seem to be what is important.

Tests have been initiated on nitrogen fertilization of st. augustine grass, and its relationship to thatch. Adequate turf quality requires approximately a half pound of nitrogen per growing-season month (on sandy soils, clippings removed), and fertilization beyond this suggests thatch encouragement, as does also higher mowing. Differences are not great, and conclusions are tentative. Other papers take a look at Zoysia tenuifolia, search for resistant breeding stock of st. augustine grass, and use of chemical growth regulators on bermudagrass (surprisingly, light rates of

- Continued



#### TEXAS RESEARCH, 1977-78 - Continued

glyphosate were effective, although nothing could be recommended for normally well-kept turf). Of more interest is the evaluation of winter overseeding for 1977-78.

The 1977-78 overseeding evaluations were the third in a four year series, and followed the usual procedures reported upon earlier (plantings were more widely made in Texas this winter). Winter was reported to be very cold and wet, especially in January and February, a condition said to favor perennial ryegrasses over fescues and bentgrasses. In fact, even the ryegrasses became semi-dormant (except Loretta, which seemed especially tolerant of cold temperatures, and thus rated very highly in this winter's tests.). As in the past, there was no statistical significance to the ratings between the top 17 perennial ryegrass cultivars, which included the Institute's VRB cultivars. Other than the perennial ryegrasses only Sabre rough bluegrass showed to advantage. With the cold weather, considerable Poa annua invaded the fescue plantings. At San Antonio dollarspot attacked, with Manhattan ryegrass showing least susceptibility.

#### WINTERSEEDING REPORT FROM TEXAS

Dr. Beard, Texas, recently forwarded the "1977 Winter Overseeding Performance on Dormant Turfs" report of March 1978 (PR-3483), a follow-up on the previous year's observations. Tests were undertaken both at College Station and Houston for the 1976-77 winter.

Procedures were as is customary for winterseeding, into Tifgreen and Tifdwarf bermudagrasses (vertical mowing, topdressing, fertilization and fungicides as appropriate). The winter was severely colder than normal, especially early in the season, magnifying problems with slow-starting species (perennial ryegrasses proved far superior to other species). Differences among the leading ryegrasses were slight, with considerable overlap and non-significant differences in the statistical sense.

Sabre rough bluegrass, and Dawson Chewings fescue, rated very well for winter performance, slightly better than most of the perennial ryegrasses; however, as noted, the cold winter tended to favor ryegrasses over rough bluegrass and fescue. Bentgrasses were unsatisfactory because of slowness to establish, although Penncross was better at Houston than at College Station, probably because of the slightly warmer climate and earlier seeding date. Sabre was decidedly superior to common Poa trivialis.

The perennial ryegrasses also lead in spring transition back to bermudagrass. Personal conversations with Beard indicate that some golf superintendents find the improved varieties "too good", not disappearing quickly enough; this is probably the result of inexperience in their management, and reflects their natural disease resistance. They are definitely more attractive than is common ryegrass.

Thus, after two years of observations the Texas researchers find rather little difference among cultivars of the improved perennial ryegrass, but perennial ryegrasses definitely better than other species especially for overseeding in cold, wet winters (fescues and other species perform favorably, too, in dry, warm winters). Bentgrass is useful almost only for late-season coverage, giving good spring transition.



## TURF ANNUAL

Park Maintenance magazine's 1978 "Turf Research and Irrigation Annual" appeared as the July issue. Again this year, in place of having one "guest editor" not necessarily attentive to national detail, three specialists were called upon for the Northeast, South and West (Drs. Wehner, Maryland; Burns, Georgia; Kneebone, Arizona). These professionals reviewed their respective regions well, and so distilled the research that epitomization further is difficult.

In the Northeast the "regional bluegrass review" (July Harvests), and new releases are mentioned. At Beltsville bluegrass and tall fescue cultivars are being evaluated for performance under acid conditions (Fylking, Victa, Pennstar, Touchdown and Majestic are said most tolerant, common types most sensitive; tall fescue more tolerant than bluegrass). In waterbath tests Kentucky bluegrass was more tolerant of heat than perennial ryegrass; Loretta was less tolerant than Pennfine, Diplomat and Citation ryegrasses.

Fertilization studies continue, including use of sludge, especially at Penn State. At Rhode Island Dr. Duff is investigating allelopathy (competition between cultivars). Jagschitz has found most familiar broadleaf herbicides compatible with growth regulators (mefluidide recently made commercial as Embark). Favorable results for killing out bermudagrass continue to be reported for glyphosate.

In the South Burns emphasizes that tall mowing and fertilization is the best weed control (low fertility for centipede). Some Tennessee research suggests that winterseeded ryegrass does weaken bermudagrass, but also helps restrain weeds. Glyphosate at light rates has been successfully used on dormant bermudagrass to control winter weeds (but it will injure semi-dormant or actively growing bermuda). There is increasing concern that persistent use of herbicides may have deleterious effects on bermudagrass and zoysia.

A new herbicide, Asulam, has given good results in Florida for the control of grassy weeds in st. augustine. Fertilization through the irrigation system continues to be promoted, said to give more efficient use of nitrogen (less leaching and more consistent grass growth). However, frequent watering seemed to increase crabgrass problems. Winter hardiness of bermudagrass has been improved by potassium applications, helping offset late nitrogen fertilization. Sewage sludge continues to look promising in Georgia and Maryland.

A large scale turfgrass breeding program is underway in Florida, the search continuing for bermudagrass resistant to insects, st. augustine resistant to diseases, salt spray and low fertility, etc. Several bermudagrass strains have shown outstanding competitive ability against weeds, as have some "Japonica" types of zoysia. These, and induced mutations of st. augustine, are encouraging, and new releases are imminent. It is proposed that bahiagrass of a type that won't produce seedheads in Florida be developed, with commercial seed production in other climatic zones. None of the growth retardants have proven outstanding.

In the West, Rugby, Sydsport, Parade, Bonnieblue, Banff, A-34, Geronimo, Monopoly, Baron and Birka bluegrasses have been top performers; as have Ensporta, Manhattan and Pennfine perennial ryegrasses. In Idaho Sydsport is reported to be excellent early, Nugget late in the season. Top performing bluegrasses in California have been Parade, Adelphi, Bonnieblue and Rugby; Derby, Pennfine and Manhattan are tops among the perennial ryegrasses. In Arizona Derby and Manhattan have been the best performers on overseeded golf greens. The degree of survival of northern grasses through summer in Arizona is being investigated (thin stands of a number of cultivars hang on).



## TURF ANNUAL - Continued

Sulphur continues to give good growth response in western Washington, as well as some control of Poa annua. In Arizona less Poa annua occurs in dense winter stands of perennial ryegrass if the fertility level is high (but in sparse stands fertility is best kept low). Pronamide continues to give excellent pre-emergence and post-emergence control of Poa annua in bermudagrass fairways.

Cultivar selection is underway to find strains more resistant against iron chlorosis. In western Washington Goss finds that IBDU, SCU and UF applied as 2-4 pound N/M increments give the highest quality turf, equivalent to using ammonium sulphate monthly. In Arizona watering with sewage effluent successfully utilizes the nitrogen and phosphorus of the effluent. Studies in several locations are looking for lowest possible consumptive use of irrigation. In Arizona bermudagrasses and zoysias were generally more conservative of water than was st. augustine and tall fescue.

## RESEARCH ON BLUEGRASS LEAFBLADE ORIENTATION

Sheffer, Watschke and Duich, Penn State, report on the effects of mowing height on Kentucky bluegrasses. Differences between cultivars were considerable, and more significant than compensating reactions due to mowing height. In general cultivars were more procumbent under lower mowing than under tall mowing (2 inches), as might be expected if at the higher mowing they were "reaching for light". The number of leaves per tiller was also affected by mowing height, being greatest at about 1 inch, somewhat less at either lower or higher mowing heights (differences were not great, however). Tiller density increased as mowing height was reduced, in compensation for defoliation (there was considerable variation among cultivars in degree).

Judged by the angle of the second leaf the most decumbent bluegrasses at low mowing were Plush, Adelphi, Fylking, Baron, Enmundi, Galaxy and Majestic (among "Institute cultivars"), least decumbent being Sydsport, Nugget, Touchdown, Bonnieblue, Glade, and Merion in that order. At the 1 inch mowing height the sequence varied somewhat, several cultivars (in the order of greatest procumbency) being Galaxy, Pennstar, Plush. The authors note that, "For some cultivars (Brunswick, Fylking - -, Majestic, - Sodco, - - Merion, - - Park - -, Glade - - Touchdown - -) mowing management did not greatly affect leaf angle." "Only three cultivars [including Glade] became progressively more procumbent as cutting height increased". "Cutting heights significantly affected the tiller density - -. As cutting height decreased, tiller density increased. - - Even though Baron [and a coded selection] had greatest tiller density when lowered [to .1 inch], they both had a sharp reduction in tillers at the [2 inch] height. - - Of those measured, only Bonnieblue and Pennstar had a significant reduction in tillers at each increase in cutting height". The implication is that certain cultivars would have greater competitive advantage against others when seeded in mixture, depending upon lawn mowing height.

## BLUEGRASS DISEASE-MANAGEMENT INTERRELATIONSHIPS

Research conducted by Dernoeden and Jackson, Rhode Island (Turfgrass Research Review, July, 1978) confirms that higher mowing in particular improves bluegrass appearance (probably because of reduced disease). Liming also reduces *Helminthosporium* disease by 20-25%. Readily available nitrogen restrained disease compared to slow-release or no nitrogen. The tests were conducted on a blend of Adelphi, Baron and Bonnieblue Kentucky bluegrasses. In summary, one would conclude that under Rhode Island conditions taller mowing (2 inches as compared to 1 inch), liming, and balanced fertilization contribute strongly to better bluegrass quality.



## EUROPEAN TURF PUBLICATION

The July issue of Rasen (Turf/Gazon), edited by Professor P. Boeker, Bonn, Germany, was received in August (Heft 2-Jahrgang 9). The articles in this issue are entirely in German, but, fortunately, with English summaries.

In the review of International literature, the Institute story "The Value of a Variety Review Board for Better Turf" (from Seedsmen's Digest, November 1977) is carried, one of four items reviewed. Dr. Boeker lists by name all of the VRB cultivars cited in that story.

Two very attractively done commercial inserts, in color, were included with this issue, one on Majestic perennial ryegrass (Bruno Nebelung, Münster), one about "Little Wonder" powered hedge trimming shears (Emil Lux, Wermelskirchen). These commercial inserts are not objectionable, and undoubtedly help underwrite the publication costs.

Articles in this issue include a review by Boeker, showing that fescue, bluegrass, and perennial ryegrass root masses increase progressively with age, with a cyclical reduction in winter and a peak in summer. Some difference in total root mass occurs consistently between cultivars, and to some extent between species. The study encompassed monthly measurements over a span of 3 years.

Teuteberg comments on the prevalence of Drechslera (Helminthosporium) in areas with low temperatures and high humidity in Germany; he regards this as the most serious turf pathogen. Control is chiefly through the planting of disease-tolerant cultivars.

Schott et al had success with 3M's mefluidide (Embark) as a growth retardant, finding that when it was carefully used the normal mowing interval of about 8 days could be extended several times over. Best results were obtained from treatment 3 to 4 days after mowing. The growth retardant is systemic and seemed well tolerated by all turf-grasses.

Michelmann discusses breeding of cultivars for salt tolerance. Red fescues proved most salt-tolerant, followed by perennial ryegrass, with bentgrasses least tolerant. Selecting salt-tolerant ecotypes from coastal regions for crossing with established cultivars is suggested.

## LAWNS AS SITES FOR ECOLOGICAL STUDY

Ecologist John Falk continues to use lawns as a site for formal ecological study. Reporting to the twenty-ninth annual AIBS meeting on "Response of Invertebrate Consumers to Lawn Mowing", he finds that certain insects have become increasingly specialized and dependent upon lawns now that lawns have become a commonplace type of ecological community in America.

## COMPETITION BETWEEN C<sub>3</sub> and C<sub>4</sub> GRASSES

Stowe and Will reported to the Ecological Society annual meeting at Athens, Georgia that the theoretical advantage in efficiency that C<sub>4</sub> grasses have over C<sub>3</sub> grasses does not necessarily hold up under natural competition. Their study indicates that plant competition appears unrelated to photosynthetic pathway.



### PRAIRIE REGENERATION

Glenn-Lewin, Iowa, reports on "The Rate of Revegetation of Natural Prairie Following Grazing" to the Ecological Society, at the Athens, Georgia national meeting. He concludes that when native vegetation does invade disturbed habitat it moves in as a whole complex rather than as a gradual succession of different species, that the rate of revegetation is slow (on the order of 200-300 years to re-establish the native conditions), and that unless abandoned grasslands are adjacent to native prairie they probably never will re-establish the original type of vegetation. This study points up how complex is the ecology of climax vegetation, and how impossible the re-establishment of "prairie" through abandonment of lawns in the typical disturbed, urban habitat.

### LEAFSPOT DISEASE RELATES TO LIGHT

Research conducted by Nilsen, Madsen and Hodges, Iowa State, reported at the 75th anniversary meeting of the American Society for Horticultural Science, indicated that leafspot (Helminthosporium) on bluegrass is enhanced by short day length, and by bluelight spectra. However, ultraviolet greatly limited disease expression, suggesting that a light-responsive mechanism helps control leaf senescence in interaction with infection zones.

### MORE ON GRASS SEED PRODUCTION

Canode and Law, Washington State, report on seed production investigations in the July-August Agronomy Journal. Mechanical straw removal resulted in significantly less yield than did field burning, for red fescue, smooth brome grass and crested wheatgrass. The authors state, "The increase in seed production resulting from burning residue apparently was associated with control of downy brome grass (Bromus tectorum) and increased vigor of autumn regrowth. Diseases and insects were of little consequence and probably had little influence on seed yield in these experiments."

### SMOG RESISTANCE

The August issue of Western Landscaping News carries report by Greer and Gaskin, California Polytechnic State University, which purports to list [California] plants sensitive, intermediate, and resistant to smog (and particular components of smog). Ryegrass (Lolium) and Poa annua are the only grasses named sensitive to air pollution (smog, general), while red fescue and Kentucky bluegrass (as well as bermudagrass and zoysia) are listed as "tolerant to air pollution".

### COLOR INDICATES DEGREE OF "AFTER RIPENING" WITH BLUEGRASS

Research reported by Phaneendranaph and Rutgers faculty, July-August Crop Science, noted that the browning of bluegrass spikelets and panicle branches ~~was a~~ good indication of maturity enough for the seed to germinate well. With almost all cultivars seed left for harvest until July germinated rather well, but in some cases earlier harvest in June resulted in very poor germination (Merion germinated very poorly from early harvest, only 7% on a June 28 harvest date compared to 83% on a July 21 date; at the other extreme timing was not critical with Glade).