TIMELY TURF TOPICS

Issued By The

UNITED STATES GOLF ASSOCIATION GREEN SECTION

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CONFERENCE ISSUE

THE OUTLOOK: Optimism and enthusiasm characterized all conferences. A bright future for turf is indicated. Many new names appeared on speakers' lists and registration rosters. Uses of new materials were discussed but reviews of proven principles dominated the talks. Greatest drawback seems to be lack of equipment. Fertilizer supplies appear to be adequate for the present but early ordering and acceptance of delivery is essential. Any shortages should be eased by late summer when the bulk of turf fertilizers will be needed.

A most significant development is the broadening of interests in heretofore restricted groups. The dominant theme appears to be "the greatest good for the greatest number." New slogans were voiced: "Better Turf for Better Golf," "Turf is Big Business."

Education was cited as the greatest single limiting factor in progressive development. Lack of trained personnel to function as "extension turf specialists" to give frequent local assistance greatly limits the dissemination and the application of much existing knowledge. Recognition of Turf as a major agronomic enterprise by the American Society of Agronomy ranks high as a forward step in turf development. No longer a stepchild, Turf now has the opportunity to share equally with other agricultural work, State and Federal, in research, education, and service.

NATIONAL: The Greenkeeping Superintendents Association's 17th Annual Conference at Cleveland, 29 January to 1 February, drew over 400 turf-minded people. The educational program was well balanced and highly informative. Machinery displays were light but 2,4-D was prominent. The speakers listed on the formal program included:

Harold Stodola, retiring G.S.A. president, St. Paul, Minn.
Fred V. Grau, Director, U.S.G.A. Green Section, Beltsville, Md.
O. S. Aamodt, Bureau of Plant Industry, Beltsville, Md.
G.O. Mott, Executive Secretary, Midwest Regional Turf Foundation, Purdue Univ.
H. B. Musser, Prof. of Agronomy, Pennsylvania State College
Howard Dwight Smith, Am. Committee, Living War Memorials
John E. Morley, Department of Labor, Washington, D. C.
James E. Tyson, Soils Department, Michigan State College, E. Lansing
H. L. Lantz, Prof. of Horticulture, Ames, Iowa
Joe Ryan, G.S.A. past president, Rolling Green Golf Club, Media, Pa.
T. T. Taylor, Westchester Country Club, Rye, N. Y.
Frank Dinelli, Northmoor Country Club, Highland Park, Ill.
William H. Johnson, Griffith Park Municipal Courses, Los Angeles, Calif.
Harvey Bicknel, Cleveland, O.
Hon. Judge Lee E. Skeel, President, Cleveland Safety Council
Harry L. Keil, Rhode Island State College
George Decker, Entomology Department, Illinois Natural History Survey, Urbana, Ill.
Frank S. Filmer, New Jersey Experiment Station, New Brunswick
Paul C. Marth, U. S. Department of Agriculture
Horace Purdy, Toronto Golf Club, Toronto, Canada
F. F. Davis, Department of Interior, National Capital Parks

Credit is due Harold Stodola, John Anderson and Marshall E. Farnham for their ability as chairmen of the sessions. Photographs by O. J. Noer added to the displays. A. L. Brandon's untiring efforts in arranging the conference and show deserve special commendation. The U.S.G.A. Green Section congratulates the new officers and directors of Greenkeeping Superintendents Association:

President	Marshall E. Farnham, Philadelphia Country Club, West Conshohocken, Pa.
Vice-President	John Darrah, 2540 W. 87th St., Chicago 19, Ill. (Beverly Country Club, Chicago, Ill.)
Secretary-Treasurer	A. L. Brandon, P. O. Box 106, St. Charles, Ill.
Directors	Chester Mendenhall, 6245 West 80th St., Overland Park, Kans. (Mission Hills Country Club, Kansas City, Mo.)
	J. L. Haines, Denver Country Club, Denver, Colo.
	Lawrence Huber, Box 245, Worthington, O. (Brookside Country Club, Linworth, O.)
	Stan Graves, Dept. of Public Parks, P. O. Box 5042, Station A., Indianapolis, Ind.
	Edward J. Casey, 1152 Caldwell Ave., Union, N. J. (Baltusrol Golf Club, Springfield, N. J.)
	W. Bruce Matthews, Green Ridge Country Club, P. O. Box 213 Grand Rapids, Mich.

Highlights - G.S.A. "Speaker Statements"

Turf is big business and currently demands the attention of all public agencies.... Education and dissemination of information are the immediate needs in the field of turf.... Nutrient balance will be prominent in turf research....Close collaboration between the U.S.G.A. Green Section and the G.S.A. is desirable in developing a national turf improvement program. (Grau)

Turf problems are not limited by political boundaries, a strong point for the regional approach....Cooperation, coordination, and integration are the three keys to efficiency in regional research....The U.S.G.A. Green Section is the focal point for national coordination and clearing house of information. (Aamodt)

A conference of a few days is most useful to the well-trained man who needs a "refresher" and wants to know "why"....A short course of a few weeks is more helpful to the beginner who needs to know "what" and "how". Taking the short course to the "man of the job" seems to be in the picture. Extension has an obligation....A two-year course with practical training required is needed to train new men for responsible turf positions. Colleges have an obligation....Education must be backed by sound research. (Musser)

Golf courses are popular living war memorials. (Smith)

Greenkeeping is not among the 150 skilled trades recognized by the U. S. Department of Labor. (Morley)

Competition is a sound basis for professional improvement. (Grau)

Pioneering is still fashionable. Our forefathers hewed this country out of the rough and gave it to us to improve and beautify for fuller, more gracious living. (John Gray)

The variety or strain is the basis of improvement in all of agriculture....C-1 and C-19 are most resistant to dollarspot....More disease-resistant strains of grasses are needed to reduce costs of disease control. (Lantz)

Good planning is essential to success in any program of turf maintenance and improvement....It is good planning to have a bigger nursery than you think you will need.... Spotty, hard-to-keep greens are best de-turfed, renovated, and re-turfed with perfect nursery sod....Got a knotty problem? Call in your neighboring greenkeepers and discuss it. (Ryan)

Mechanization is the answer to better turf under reduced maintenance costs.... Better design can eliminate practically all hand work....Well-planned weed control will reduce mowing costs....A well-equipped shop is essential in a mechanized program. (Taylor)

Removal of excessive surface mat on putting greens before topdressing is essential to success. (Dinelli)

Golf is everybody's game today and caddy carts are here to stay. (Johnson)

Certain complex organic compounds appear safer and more economical than inorganic mercury compounds for controlling turf diseases....A new chemical prevents dew formation on grass. (Keil)

Arsenate of lead still leads in the control of most turf insects but newer materials are promising....Sabadilla is a quicker "knockdown" but DDT has greater residual effect. (Filmer)

Conference programs should introduce new, varied, and interesting subjects, not entirely on turf but in related fields. (Stewart)

Growth-regulating substances have opened a new era in weed control....Most common turf weeds (except crabgrass) no longer present a serious problem....Each new weedkiller is but another tool which is most effective in skilled hands....No weedkiller is a substitute for doing a good job of growing grass but growing good grass makes the weed-killing job easier. (Grau)

Large-scale 2,4-D treatments now cost less than $5 an acre....Weeds low in food reserves are most effectively killed with 2,4-D....Coverage is the most important factor in weedkilling....The best weed-control program is a long-range planned program in which the use of weedkillers are coordinated with sound management procedures. (Davis)

ARMY SERVICE FORCES: The Army Service Forces, Engineer Maintenance and Repair Conferencd at Omaha, Nebr., 4 through 7 February, 1946, was attended by, in addition to A. S. F. personnel, M. A. Hein, Bureau of Plant Industry, Beltsville, Md.; A. E. Rabbitt, Bureau of Aeronautics, Navy Dept.; and Fred V. Grau, Director, U.S.G.A. Green Section....Subjects discussed in the Grounds Section included maintenance, irrigation, landscaping, dust and erosion control, pest control, drainage, research, regional investigations, grounds maintenance at Navy installations, evaluation of ground treatments, mowing, fertilizing, mulch, native grasses, and a program of future grounds maintenance at Military installations....The full cooperation of the U.S.G.A. Green Section was pledged in the development of the Army Service Forces Grounds Section program, particularly with respect to golf courses and other turf areas on military lands.

NEW JERSEY: The 15th Annual Short Course in Turf Management held at New Brunswick, N. J., 11 to 15 February, was attended by nearly 100 people interested in all phases of turf. The course was well organized and packed with information. The speakers included:

G. H. Ahlgren	Robert Jones
R. S. Snell	E. R. Biel
J. W. Shive	Donald Capell
T. T. Taylor	J. C. Taylor
W. C. Krueger	Firman E. Bear
Jessie G. Fiske	O. W. Davidson
Bailey B. Pepper	P. D. Pirone
R. S. Filmer	Fred V. Grau
F. F. Davis	Frank G. Helyar

One feature of the course was a folder given to each registrant at the start of the sessions in which were contained mimeographed condensed outlines of each talk to be given, with ample space for notes. At the close of the course, lists of all who registered, together with their affiliations and addresses, were distributed. Another feature was the Question Box at the close of the sessions. Fred E. Emenenger, John Anderson, Dr. DeFrance (Rhode Island), and Dr. Grau made up the panel to answer the questions. Samples of the questions were:

"Why don't we cut putting greens with electric power?"
"Is it practical to sub-irrigate greens?"
"What is the best way to eradicate cicada killers?"
"Is liquid fertilizer a possibility?"
"Will continuous use of chemical fertilizers kill bacteria in the soil?"

The dinner at the Roger Smith Hotel had a capacity crowd, with Dr. Husted, New Jersey Golf Association, presiding. Dean Martin, principal speaker, was called away. Dr. Grau substituted with an informative discussion on the "National Program for Turf." The greatest national problem today is lack of trained personnel to handle research, education, and advisory phases of the program.

Highlights - New Jersey "Speaker Statements"

Good turf for public and private uses is assuming greater national importance than ever before....Modern industrial developments are built with generous areas of turf as part of the plan....Many turf problems require solution for maximum benefits from turf....Human psychology is a factor in turf improvement and development....Healthy surroundings encourage healthy grass. (Ahlgren)

Many "physiological diseases" are the result of excesses or deficiencies of trace elements....Highly concentrated and refined inorganic fertilizers may lack many essential elements....Organics usually contain most essential growth elements....12% of New Jersey soils are boron deficient....Boron is related to functional processes involving calcium and potassium....Iron and manganese are likewise functionally related. (Shive)

Good budgeting is a well-developed plan for spending the money you expect to get. Three factors govern budgets: (1) standard of maintenance (2) expense to maintain standards (3) how much can the club afford?....The golf course superintendent figures on the basis of preliminary information drawn from (1) chairman of green committee (2) bookkeeper (3) inventory (4) studying each hole as a separate unit (5) monthly calendar of labor costs and distribution (6) monthly calendar of material expenditures. (Taylor)

Soil aeration is one of the most important factors in producing superior turf. Compaction, the foe of aeration, is brought about in many ways....Neutralizing soil acidity is an important factor in improving soil aeration by encouraging good crumb structure and bacterial activity....More efficient equipment is needed for aerating soils under a turf cover. (Ahlgren)

DDT is not recommended by the New Jersey Agricultural Experiment Station for the control of insects....Suggestions are offered for testing on individual responsibility.... Sabadilla dust, 10% strength, at 100 pounds to the acre, is recommended by the New Jersey Station for chinch bug control. (Filmer)

Advantages of 2,4-D as an herbicide include (1) controls many weeds (2) little or no discoloration on grass (3) safe to handle (4) nonpoisonous to livestock (5) low cost (6) no limitations as to time of day (7) rain shortly after treatment does not seriously interfere with effectiveness (8) regular maintenance may proceed as usual....Disadvantages of 2,4-D as an herbicide include (1) weedy grasses not controlled (2) many horticultural plants and vegetables extremely sensitive (3) clover may be killed. (Davis)

The distribution of the 1100 species of grasses in the United States largely is the result of climate (temperature, variation in rainfall, light intensity)....Microclimate (the "plant climate") at ground level may be vastly different from the "human climate" 6 feet above ground, where measurements are usually taken....Books recommended for reading:

Blair, Thomas — Meteorology — Prentice Hall Publishing Co.
" " — Climatology — " " " "
Climate and Man. U.S.D.A. Yearbook 1941. Chapter on Clouds.

Good labor management gets work done on time, at low cost, with contented workers.... Good supervision, an essential, includes: (1) knowledge of the work (2) knowledge of responsibilities (3) skill in improving methods (4) skill in instructing (5) skill in leadership....Good relations arise when each worker knows (1) how he is getting along (2) what is expected (3) that he gets credit when credit is due (4) "why" he is doing a job (5) that he is an individual (6) that his best abilities are used and appreciated (7) that he has definite responsibilities....Good results come from satisfied labor; labor is performed by people; people require understanding; understanding results in increased production. (J. C. Taylor)

Major problems in regulating plant nutrient supplies in soils are: (1) maintaining organic matter to serve as food for microbes, slow source of nitrogen, storage agent for water and mineral elements, physical soil conditioner (2) regulation of pH values

to supply calcium, to render nitrogen and phosphorus available, to maintain good physical condition in soil (3) checking on possible trace-element deficiencies or excesses (Firman E. Bear)

Tissue testing to determine fertilizer needs for turf appears to have a promising future....Methods have not been refined nor simplified to the point where they can be recommended for general use but good progress has been made....Arsenic in the soil confuses the readings for phosphorus when soil tests are made; plant tissue contains very little arsenic. The demonstration of methods was well done and very interesting. (Davidson)

Topdressing maintains true putting surface, improves plant vigor and resiliency, stimulates new growth, heals injuries, overcomes matted surface. Sandy loam high in organic matter makes desirable topdressing material....Sources and preparation of material include: (1) soil bed (2) soil shed (3) compost pile (4) commercially-prepared soil (5) woods earth....Control of weed seeds in topdressing is important (1) baking or steaming (2) chloropicrin (3) natural heat of decomposition of organic materials (4) cyanamid.... No set rule governs frequency or quantities of topdressing....Velvet bent requires least; creeping bent the most. Some greens have received no topdressing in 3 to 4 years and are still in good condition....The tendency has been to use too much rather than too little....Removal of surface mat before applying topdressing is essential if summer trouble is to be avoided. (Grau)

PENNSYLVANIA: Pennsylvania's 15th Annual Turf Conference, 18 to 20 February, had nearly 100 in attendance. Three years of conferences had been missed because of the war. Dr. Lyman E. Jackson, newly-appointed dean of the School of Agriculture, and Dr. H. K. Wilson, Head, Agronomy Department, stated in effect, that "much of the wealth of the state goes into turf and that turf is as important as other phases of agriculture."

The speakers on Penn State's Turf Conference program included:

R. B. Musser
A. E. Cooper
M. E. Farnham
A. C. Richer
Fred V. Grau
J. O. Pepper
E. J. Udine
H. W. Thurston
F. J. Holben
J. R. Haswell
E. W. Schroeder

Feature of Penn State's Conference is the Turf Research Advisory Committee meeting, at which time plans for research and the most pressing problems are discussed and outlined. The Dean of the School of Agriculture appoints the committee and names local leaders representing all parts of the state. It has been a most effective part of the balanced program.

Highlights - Penn State "Speaker Statements"

A. E. Cooper has been selected to handle extension work in turf for the state of Pennsylvania....Every profession requires replacements....The better trained the replacement, the higher will be the standards of the profession....Local study groups offer a real opportunity for learning specific subject matter and present a real challenge to educational institutions....Some significant relations between nutrient balance and disease incidence have been established in fundamental research....More graduate fellowships are needed in turf studies....Growth rate is one satisfactory measure of the relationship between soil fertility and turf production....The straight-line curve is the ideal relationship....Penn State has 175 of its own bent selections and 80 selections from the U.S.G.A. Green Section, to be used in a breeding program intended to develop a superior synthetic seed mixture of the broadest adaptation. (Musser)

DDT works slowly on ants but does an excellent job....Sabadilla burns the skin and causes sneezing....Pyrethrum is of good grade and in good supply....The product 666 Gammexane) looks promising for turf insects....The nicotine supply is low....Rotenone with a high percentage of sulfur has caused serious burning of turf....DDT has not been effective on earthworms....Insect outbreaks should be reported to the county agent, who will report to the college. (Pepper)

Loss of organic matter under putting turf, 1935 to 1939:

cocoa hulls	74.9%	Florida peat	29.0%
mushroom soil	32.8%	Adirondack peat	25.0%
New Jersey peat	28.1%	charcoal	20.2%

Fescues and bent have given a poor response to phosphorus....Kentucky bluegrass responds to heavy applications of phosphorus....This indicates a 1-2-1 or a 2-3-1 ratio for bluegrass, and a 1-1-1 ratio for fescues and bent....The true role of potash in turf production is still unknown....In general, potash in balance with nitrogen is good. If soils are low in N, potash is likely to encourage clover....The penetrometer has been used to measure soil density and compaction under turf cover....Relative readings on penetration show, after 10 years under turf, with 21% organic matter by weight added to the soil at beginning, these values:

Treatment	Relative depth of penetration
Cocoa hulls	137
Florida peat	134
New Jersey peat	133
Charcoal	120
Mushroom soil	114
Soil alone	100
Soil - sand	101

All readings were taken in one day at field soil moisture content.

Water penetration studies are another measure of soil compaction. A measured quantity of water, poured into a cylinder and pushed down into the turf, soaks away and the time is recorded. At 21% organic matter content, by weight, the average of 1939 and 1942 readings show:

Treatment	Relative time required for water to soak into soil
Cocoa hulls	8
Mushroom soil	12
New Jersey peat	21
Florida peat	28
Charcoal	36
Soil-sand	77
Soil alone	100

These figures appear to be highly significant in relation to good turf management practices. (Richer)

Eighty-eight separate applications of 2,4-D materials were applied from 7 June to 1 November at the Philadelphia Country Club. Plots 5' x 100' extended 5 to 10 feet into the rough to observe effects at higher cut. Conclusions:

Various formulations give similar results when used at rates yielding equivalent quantities of 2,4-D....Bluegrass fairway and lawn turf can be treated at any time of the year without fear of injury to bluegrass....Spring treatments on thin turf may encourage crabgrass....Turf containing bent should be treated cautiously....2,4-D sprayed on bare ground may cause temporary soil sterilization....Control of dandelion and plantain was satisfactory; of white clover, variable; of chickweed, not satisfactory from single treatments....2,4-D increases Poa annua over bent in mixed populations. (Farnham)

Six superintendents out of 100 present had used or tried 2,4-D to date. (Grau)

A. R. Warnock, Dean of Men at Penn State, was principal speaker at the dinner. "You achieve unity when you keep people thinking about the thing they have in common and when you get them working on a common project." (Warnock)

Strong local organizations are essential to success in building a sound national program of turf improvement. Group action is stronger than individual effort. (Grau)

H. B. Musser outlined the two-year Turf Management Course which has been officially inaugurated at Pennsylvania State College, starting fall 1946. Two full seasons of practical experience under competent professional supervision are minimum requirements

for a certificate, in addition to the course work. The course is designed to train students for the professional culture and management of turf on golf courses, parks, cemeteries and similar grassed areas. Basic training in chemistry, botany, and bacteriology are supported by applied courses in agronomy and horticulture, including soils, fertilizers, and plant materials. Other courses provide training in accounting methods, turf diseases, insect and weed control, operation and care of turf machinery, and land drainage. Credit is given to veterans for physical education and ROTC courses. (Musser)

AMERICAN SOCIETY OF AGRONOMY: The Annual Meeting was held at the Hotel Deshler-Wallick, Columbus, Ohio, 26 February to 1 March, 1946. At this meeting the Society created a national Turf Committee to study needs and to make recommendations for action. In addition, the Crops Science Division approved a Turf Management Symposium for the next annual meeting and is considering the most desirable arrangements for the permanent status of Turf within the Society.

Chairman of the Turf Committee for the Society is C. S. Aamodt, Bureau of Plant Industry, Beltsville, Md. Committee assignments have not been completed. Chairman of the Turf Management Program for the next annual meeting is Fred V. Grau, U.S.G.A. Green Section, Beltsville, Md. The approach to this program will be through technical papers which have a direct bearing on phases of turf management. Emphasis on the practical applications of technical papers will continue to be the function of the National, Regional, and State Turf Conferences.

COLUMBUS GREENKEEPERS: A special meeting of the Columbus District Greenkeepers Association was arranged by John McCoy, Ohio State University, on 1 March, 1946, at the Deshler-Wallick Hotel, following the close of the American Society of Agronomy meetings. The attendance was 25; 11 clubs were represented. Guest speakers included Dr. F. D. Keim, Chairman, Department of Agronomy, University of Nebraska; Dr. Kling Anderson, Department of Agronomy, Kansas State College, Manhattan, Kansas; Mr. Garrard; C. J. Noer, Milwaukee, Wisconsin; and Fred V. Grau, U.S.G.A. Green Section.

Visits were made earlier in the afternoon to three golf courses - Ohio State University, Columbus Country Club, and Scioto.

PHILADELPHIA: Philadelphia's "Lawn School" of prewar years, sponsored by the Philadelphia Association of Golf Course Superintendents and the Philadelphia Branch of National Association of Gardeners, Agricultural Extension Service, cooperating, became the Philadelphia Turf Conference this year. It was held at the Llanerch Country Club on 5 March, 1946, 7:30 to 10 p.m. It was attended by over 100 turf-minded people. The committee included:

Golf Course Superintendents	Gardeners
James J. Conway	J. C. Kenealy
Leonard Strong	Alex MacLeod
Robert F. Pollock	Thomas McKay
Joseph Ryan	Fred Moore
Paul Weiss	Harry Wood
	Charles K. Hallowell

A. E. Cooper represented the Pennsylvania State College; Grau and Forbes represented the U.S.G.A. Green Section.

The outstanding feature of this conference is the lack of a "speakers' program". Brilliantly led by Charles K. Hallowell, Philadelphia County Agent, "experience discussions" brought out old and new developments in turf improvement. Lime, phosphorus, fall feeding and seeding and high cutting are the basic principles which have continued to be stressed and which have built good lawn turf in the Philadelphia area. Philadelphia has been the cradle of many new developments in turf improvement. The "Lawn School" (now "Turf Conference") has featured the publicizing of good turf and of bringing education to the layman through cooperative unselfish effort. Much credit is due the Golf Course Superintendents, the Gardeners, and the Extension Service for providing this opportunity for "Education in Turf."

ENGINEER SCHOOL: The Engineer School, Fort Belvoir, Va., led by Major Jay Henry brought 35 officers, all future Post Engineers, to the Beltsville Station on 6 March, 1946, for an all-day study of grasses and turf management. O. S. Aamodt conducted the tour, Fred V. Grau assisting. Interest centered on airfield and roadside management, traffic tests, sports fields, and golf courses. Additional tours for other classes are planned. Included in the tour, and assisting in discussions, were H. B. Musser, Pa.; M. E. Farnham, Philadelphia Country Club; E. R. Steiniger, Pine Valley Golf Club; Earl C. Murdock, 3rd Service Command.

MARYLAND: The Greenkeepers' Conference at College Park, Md., 7 March, 1946, sponsored by the Middle Atlantic Greenkeepers' Association, was attended by over 100 representatives of many classes of turf. Three panel discussions were featured; (1) weed control (L. W. Kephart, leader). Speakers were: O. J. Noer, Marshall E. Farnham, Fred V. Grau, Paul Marth; (2) "Looking Forward in Turf," led by Fred V. Grau. Speakers were: R. P. Thomas (Soils), W. B. Kemp (Breeding), O. S. Aamodt (State and regional research), O. J. Noer (Irrigation and maintenance), H. B. Musser (Educational opportunities); (3) "The Machinery Outlook," H. F. Cotterman, leader. Speakers were: Purdy Carson, T. L. Gustin, John S. Connolly, C. F. Armiger. Other speakers were: F. L. Howard (Kingston, R. I.) and R. S. Filmer (New Brunswick, N. J.).

Highlights - Maryland "Speaker Statements"

Weed Control with 2,4-D: No real difference is apparent among the nearly 30 formulations on the market....No real difference seen between 50, 150 and 200 gallons of water to the acre, using the same quantity of 2,4-D to the acre....Manufacturers should clearly label product, stating how many pounds or pints of product are required to yield 1 3/4 pounds of active 2,4-D. Turf men are interested principally in quantity per unit area.... Finding out what a new material will do under your conditions is better policy than waiting for some one to hand you the answers....After using 2,4-D all season, more sodium arsenite was used last fall than ever before....Each material fills different specific needs -- they are complementary, not competitive....Esters of 2,4-D are volatile. Rising gas may affect surrounding susceptible vegetation....Urea added to 2,4-D spray did not affect weed-killing properties....2,4-D in warm moist soil disappears in about two weeks. In dry cool soil it may remain from 1 to 2 months. The safest procedure is to use 2,4-D at least 2 to 3 weeks before the desired seeding date. (Weed Control Summary)

Hopes for finding one "overall" fungicide are fading. Diagnosis and treatment of each disease are essential to success....Isonol DLI (a new chemical) promises to eliminate the need for "poling" greens. In preliminary trials dew did not form on treated grass for five mornings after application....Spergon (1 1/3 ozs. in 10 gals. water to 1,000 sq. ft.) has checked damping-off in newly seeded Colonial bent....Top-ranking chemicals for brownpatch are Zerlate, Puraturf, Tersan, Calo-Clor. "Suspension-type" Calo-Clor appeared to be superior to ordinary material....Dollarspot has been best controlled with Tersan, Puraturf, Calo-Clor....Copperspot responded best to Puratized 177, Puraturf, and Zerlate. (Howard)

A strong coordinated intensive national turf program is needed. We are on the threshold of great developments. Breeding programs are basic to strain development for natural resistance to diseases, insects, drought, and for superior turf-forming qualities. (Aamodt)

Replacements are needed in the broad field of turf. Education is needed to assure adequate training of replacements....Short courses in turf can be taken to groups in the field through competent instructors provided by State extension service, thus supplementing and enhancing the value of turf conferences. (Musser)

Bent grass may be the answer to watered fairways but better bents are needed. We must satisfy the players rather than the grass and continue to search for the grass which will thrive in spite of treatments. (Noer)

War developments with organic substances offer hope of modifying soils. 1/10 of 1% of a material called Vinsol X added to soil flocculates it and helps to absorb water.... The future of fertilizers is "cloudy." Organics produced synthetically may become important. (Thomas)

Refinement of grass strains limits adaptation....Bluegrass kept growing all summer with water and fertilizer uses up its food reserves and can not produce sufficient reserves in the fall. Result: weak, weedy turf. (Kemp)

The problem in turf management is to reduce man hours and save labor through mechanization. (Cotterman)

Machinery picture confused. Some lines in production -- others stopped. Overabundance expected in 2 to 3 years. Take good care of present equipment....Lack of engines seriously hampering production of power mowing equipment. Lack of parts retarding other machinery. Can't balance materials. One 25¢ spring may hold up a $500 machine....Ultra-simplification of machinery is indicated. (Machinery Summary)

IOWA: The 12th Annual Greenkeepers' Short Course sponsored by the Iowa Greenkeepers' Association at the Memorial Union, Ames, Iowa, 11 and 12 March, 1946, had nearly 100 registered for the course. H. L. Lantz arranged a well-balanced highly-informative program. The first day was devoted entirely to fairway turf and related problems. The second day covered putting green turf and related problems. Interest was keen and support for the research program at the college gained considerable ground. A complete list of those in attendance has been distributed since the conference. In addition, Ted Adams, Secretary-Treasurer of the Iowa Greenkeepers' Association, has sent out an excellent summary of the highlights of the course. It is well worth reading and filing. Address T. E. Adams, State House, Des Moines, Iowa, c/o Iowa Greenkeepers Association.

Speakers on the program included:

B. S. Pickett	Jack Welsh
H. L. Lantz	T. E. Adams
Fred V. Grau	Wm. Keating
O. J. Noer	Jack Anderson
Paul Burdett	H. E. Lambert
Maurice Peterson	Paul W. Neff
L. C. Grove	Ivor Johnson
Clarence Yarn	C. B. Whitson
Joe Benson	

The round table discussions and "experience discussions" were well done and are features well worth repeating.

Highlights - Iowa "Speaker Statements"

Fairways fall into two categories; (1) watered (2) unwatered. Chickweed, clover, Poa annua predominate on (1); dandelion, buckhorn, plantain on (2)....Arsenic is needed for the job on (1); 2,4-D will handle most weeds under (2)....Arsenic has an added advantage of a degree of insect control. (Noer)

Sinox is finding a place in the weed control picture....Properly handled, no discoloration results....One and one half ounces of Lawn Sinox to 1,000 square feet in 50 gallons of water (summer rate), two applications, controlled milk purslane (spotted spurge--Euphorbia maculata)....Diseases are reduced and grass is stimulated....Repeated often enough, all weeds can be controlled. (Burdette)

Short day (hours equivalent to fall) gave 41% increase in number of stems of Kentucky bluegrass in a unit area over long day (15 hours -- similar to mid-summer).... Short-day growth averaged 3-1/2" in height against 6" for long day. Both are excellent additional reasons for fall fertilizing bluegrass. (Peterson)

War-abandoned fairways returned heavy bluegrass seed crop and three hay crops during lay-off. (Yarn)

Rotary hoe reversed, used ahead of lime spreader, helps get materials into root zone....To get results from water on fairways the fertilizer program must be adequate or weeds will be the final result. (Jack Welsh)

Soil-testing is available (pH and P_2O_5) at Iowa State College at 50¢ a sample.... Soil testing is like taking inventory -- until you do it you don't know how you stand.... Soils should be checked regularly to determine lime needs....Get good turf on fairways before installing a water system....Maintain high fertility. (Benson)

Balls in rough are more easily found and played if weeds are controlled. Arsenic acid is a favorite to check weeds, reduce mowing costs, and check grubs. (Noer)

Every plant breeder should have an interest in a golf course to study types of grasses. Good turf types have been picked up in pastures - at least one shows particular promise for turf. (Johnson)

Turf management is a phase of agriculture. C-1 and C-19 are outstanding for Iowa conditions. (Lantz)

C-1, C-19 and C-27 three-way mixture reported to produce best putting turf at Fairfax Country Club in Virginia. Mixtures of bents need more exploring. (Noer)

Soil preparation for greens at Des Moines Country Club included 5 cubic yards of buckshot gravel and 5 cubic yards of peat to 1,000 square feet, well-mixed. Each 7,500 square-foot-green received 100 pounds each of sulfate, superphosphate, muriate of potash before planting. (Keating)

No bent is worth planting unless it is taken care of. Burying excess mat with top-dressing brings trouble. (Welsh)

C-1 bent on putting greens has produced good playing surfaces with two topdressings a year and no disease treatments for seven years. (Yarn)

C-1 mowed at 3/16", topdressed, and fertilized, has produced no objectionable swirl. (Anderson) [Note: This is confirmed by Wm. Mellon, Lancaster, Pa.] [Ed.]

C-19 is the preferred grass on Ames Golf and Country Club Course. (Lantz)

Regardless of the high standards of maintenance, alibis can be found for a poor shot. (Adams)

Grass a little on the hungry side is the healthiest grass in summer. (Lambert)

When trouble hits, find the cause and reverse it. (Neff)

MINNESOTA: The Annual Turf Conference and Business Meeting of the Minnesota Greenkeepers Association was held 13-15 March at the Curtis Hotel, Minneapolis. Over 50 members and guests were registered. Interest and enthusiasm ran high and plans were laid for a bigger and better conference next year.

Speakers on the program included:

Leo Feser	M. R. McLaren
Fred V. Grau	O. J. Noer
A. A. Granovsky	C. O. Rost
A. H. Larson	Harold Stodola
Paul Mills	

Highlights - Minnesota "Speaker Statements"

Panel discussion on 2,4-D by Grau, Noer, and Larson covered much of the ground discussed previously on the subject....Chicago District used about 30,000 pounds of 2,4-D preparations in 1945 in large-scale treatments on turf.... Dry applications of 2,4-D appear promising. It seems to require from two to five times the quantity, depending on conditions, to get results equivalent to the spray method. No recommendations are available at present....Each new material further emphasizes the basic need of doing a good job of growing grass. (2,4-D Panel Summary)

The Annual Dinner was a highlight of the Conference. Frank McCormick, Director of Athletics, University of Minnesota, acted as Master of Ceremonies and carried the affairs of the evening to a brilliant conclusion. Speakers included: Dr. Rost, Mr. Holman, and Dr. Grau.

Your Director's scheduled talk on "New Horizons in Turf" and "Turf Factors in Weed Control" by mutual consent evolved into a discussion of Green Section activities, support, and assistance to State and regional programs and problems. The Minnesota greenkeepers offered to cooperate with the U.S.G.A. in developing wider representation and increased membership.

Rehabilitation of turf depends upon finding the cause of the trouble, correcting the conditions, and selecting the proper grass to fit the needs....Weedkillers on putting greens may be justified where they have been neglected for several years but under proper care, herbicides have little place on putting turf....Drainage is one of the most portant factors in producing superior turf....Fairway improvement is our most important golf course problem today....Thorough spiking and broadcast seeding offer the best combination for successful reseeding of renovated fairway turf....Economical and effective control of chinch bugs and other turf insects may bring bent grasses into greater prominence for fairway turf....Lessons learned during the war indicate that fairway watering in the future will be less frequent to avoid excessive encouragement of clover and Poa annua. (Noer)

Thorough cleaning of the fertilizer spreader after using will save equipment and many man hours of labor. (Picha)

U.S.G.A. dues are less than the weekly wages of one man - and worth more to the club. (Feser)

Many conflicting statements are bound to arise in connection with a new material or a new procedure. Continue the practice that has been successful but try each new idea on a small scale. (Picha)

MIDWEST: The Purdue Turf Conference was held in the Memorial Union, 18-20 March, 1946. The largest gathering of turf men known to attend a turf conference (G.S.A. National Turf Conference excepted) was enthusiastic about the results. Over 250 registered and attended the banquet. Herb Albrecht deserves recognition for correctly "guesttimating" the number of places to set for the dinner.

The first annual meeting and election of officers and board of directors of the Midwest Regional Turf Foundation was held in conjunction with the turf conference. The Foundation had a balance of $3162.22, as of that date, to support research work at Purdue and at other experiment stations in the 7-state region.

John McCoy, Chairman of the Nominating Committee, placed these names before the meeting for election as directors, who were elected unanimously:

Three-year term:	G. O. Mott, Purdue University
	Carl Bretzlaff, District Greenkeeper groups
	George T. Donoghue, City Parks, Chicago
Two-year term:	F. V. Grau, U.S.G.A. Green Section
	A. L. Brandon, G.S.A.
	C. R. Runyan, Cemeteries
One-year term:	Joe Graffis, member-at-large
	Neil Ransick, District Golf Associations
	W. E. Lyons, Industry

A review of turf problems in the region, with the conference as a whole sitting as an advisory committee, brought out these topics for attention:

Evaluation of bent grasses for tees and fairways
Poa annua
Tee grasses
Combinations of 2,4-D with other chemicals
Soil mechanica applied to putting greens
Traffic tests for cemeteries and parks
Study of height of cut for various uses
Weed control in sand traps
Irrigation studies
Fertilization problems
Drainage
Measurement of turf quality
Crabgrass control
Insect control
Industrial wastes for soil building

Speakers on the program included:

O. J. Noer	T. E. Shaw
F. V. Grau	C. W. Baker
H. R. Albrecht	James D. Standish, Jr.
G. O. Mott	H. A. Burkhardt
H. L. Lantz	A. C. Dunn
K. C. Barrons	C. E. Stewart
C. R. Runyan	Kenneth Welton
D. Den Uyl	

One of the cooperative arrangements between the U.S.G.A. Green Section and Purdue University is the increase of desirable creeping bent grasses at Purdue for distribution to U.S.G.A. member clubs, M.R.T.F. members, and others within the region. Material distributed from Beltsville must pass rigid quarantine inspections for Jap beetle which frequently results in delays and arrival of material in unsatisfactory planting condition. Distribution from Purdue eliminates delay in quarantine because it is not in the Jap beetle territory. U.S.G.A. member clubs in the region requesting planting stock will be referred to Purdue University.

Highlights - Midwest "Speaker Statements"

Noer and Grau covered the subject of "Fertilization and Maintenance of Turf Grasses" during a three-hour period the first afternoon; George Scarseth, Chairman. A unique feature was an alternating discussion on related subjects, five minutes for each speaker, each speaker introducing the next topic.

Putting Greens: 40 minutes:

New grasses	- Grau	Insecticides	- Grau
Grass mixtures	- Noer	Fungicides	- Noer
Topdressing	- Grau	Weeds	- Grau
Fertilizers	- Noer	Watering	- Noer

Fairways: 40 minutes:

Grasses	- Grau	Pests	- Grau
Fertilization	- Noer	Causes of trouble	- Noer
Height of cut	- Grau	Weed control	- Grau
Irrigation	- Noer		

Tees: 20 minutes:

The Problem - Noer; The Approach - Grau.

Roughs: 15 minutes:

Maintenance and weeds - Noer
Grasses - Grau
Interrelationships - Noer

Sports Fields: 30 minutes:

Airfields, Roadsides - Problems and Approaches - Grau
Lawns, Parks, and Cemeteries. Discussion and Questions - 35 minutes.

Inhibition of germination of crabgrass seed with 2,4-D was reported. (James Tyson)

Fan nozzles placed to give 50% overlap give best coverage in large-scale spraying. ....Pressure at 125 pounds is maximum; 50 pounds is minimum for best results in spraying turf....Better results are obtained when 2,4-D is sprayed two days after mowing turf.... 2,4-D salts generally are cheaper for large-scale treatments and are satisfactory for most turf weeds....Oil solutions of 2,4-D seem to give better results on waxy leaves. (Barrons)

Sinox has given good results on crabgrass but results have not been consistent.... With adequate moisture, Sinox applied in spring has been effective on nimble-will (Muhlenbergia schreberi) (Runyan)

"The publicity value" of 2,4-D is stimulating a great deal of research and testing at many experiment stations. The value of each piece of work will be greatly enhanced if the results can be correlated. Workers are urged to forward results of their work on turf weeds to the U.S.G.A. Green Section, Beltsville, Md., as soon as possible after publication been assured. (Grau)

James Tyson, Michigan; F. A. Welton, Ohio; and Bob Fuelleman, Ill., participated in a discussion of turf research in the Midwest region. Man power and the world food situation prevent immediate expansion of turf programs. Graduate assistantships, when available, represent the favored method of support from M.R.T.F. for State programs. (Research Committee)

Too often the club's funds are devoted to building improvement when turf improvement is the first requirement....New creeping red fescues give promise of greater drought tolerance and better summer color....Hard fescue and sheep fescue do well for golf course rough, airfields and parks....Poa trivialis, when abundant, may be a good "nurse grass" for spring seedings....New seedings do better if rolled when grass is 3 to 4" high before the first mowing....High-nitrogen fertilizers at seeding time are to be discouraged. First requirements are Ca, P, and K to develop roots. (Baker)

Creeping bent stolons develop more satisfactorily when planted if they are pulled apart rather than chopped. Chopping shocks the grass and the finer it is chopped the worse the shock....A rototiller may be used to pull stolons from bent nursery. The grass which is left will grow and fill again. (Darrah)

In 1926 the U.S.G.A. had 1136 member clubs, the largest number to date. Foreign subscribers represented 12 different countries. Thirty-two hundred copies of the Bulletin were published. In 1931 Bobby Jones hit the top, U.S.G.A. members numbered 1138. The Green Section budget was $45,230.14, or 150% of the dues collected. The total amounts expended by the Green Section since 1921 have averaged nearly 100% of the dues collected from member clubs. The immediate goal is $40,000 annually for the Green Section for the decentralized program. New publications are planned, and an indexed reference manual is being considered. The Midwest Regional Turf Foundation and other state and regional programs under way and in planning have the whole-hearted support of the U.S.G.A. (Standish)

A good operator can adjust a mower by sound....The power-driven reel is here to stay....Units to cut grass ahead of tractor wheels will be standard equipment.... A good repair shop is essential equipment wherever turf machinery is used. (Burkhardt)

A radio-operated pipe locator may save its cost many times over. It is best to rent one, accompanied by a skilled operator. (Dunn)

Eight feet per second is the maximum flow velocity in turf irrigation design.... Water flow is caused by "difference in pressure" which is converted to velocity....Doubling the size of pipe increases the area 4 times and the quantity of water carried 5.7 times....One 4" pipe line is equal to 32 1-inch lines....Asbestos-cement pipe walls absorb about 25% of water by weight which ruptures pipe on freezing. They are not recommended where the soil freezes solid. (Stewart)

Drainage is essential because grass roots must breathe....Quick elimination of excess water is needed.....Porous sub-surface eliminates need for tile....Making mud pies is a good way to learn about your soils....Water enters tile from below as result of difference in pressure. (Welton)

NATIONAL GARDEN CONFERENCE: The National Garden Conference was held in Washington, 26-28 March, 1946. A. L. Brandon, St. Charles, Ill.; and Fred V. Grau, Beltsville, Md., attended in the interests of National turf improvement. A report, prepared jointly by Brandon and Grau, was submitted to the Chairman of the Conference, Paul C. Stark, U. S. Department of Agriculture; and to Dr. MacDaniels, Cornell University, Chairman of Committee on "Long-Range Planning for Civic Improvement." It is recognized that full development of the turf phases of the program must be subservient to the present food emergency. For the record, the report is reproduced here:

> "The improvement of our home, civic, and industrial surroundings include, in addition to vital garden areas for the production of food, such universally essential features as lawns, parks, playgrounds, sports fields, roadsides and cemeteries. The basic pattern for the improvement of all open areas is grass. It is the most practical and the most economical way to convert a barren area into a thing of usefulness and beauty.

"No long-range plan for the improvement of surroundings where people live, work, and play, would be complete unless it included sound recommendations for the establishment and maintenance of turf.

"As representatives of our respective organizations, we, the undersigned, recommend to the committee charged with the responsibility of developing a long-range national garden program that these policies be adopted.

"1. The expenditures of energy, materials, and money, so often dissipated in their improper application to turf, may be guided into more efficient and useful channels by providing adequate timely information on the subject of turf.

"2. Through agricultural extension methods and channels, it is possible to build sound leadership in the field of turf by providing extension specialists and county agent assistants who are trained in grass production as well as vegetable production.

"3. That national leadership and coordination through existing organizations be utilized for the development of the overall program."

Excerpts from the Statement to the National Garden Conference by M. L. Wilson, Director of Extension Service, are quoted here to indicate the potentialities of this organization in developing the educational phases of a balanced civic program, including turf improvement:

"....The purpose of cooperative extension work is.....to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture and home economics, and to encourage application of the same....We need extension agents in the cities to do what the county agricultural agents do for farmers....The initiative in the cities, as has been the case all along in the country, must come from those cooperating groups who see the need for such service and who want it badly enough to do something about it....Such a civilization, however, will require the fullest expansion of educational effort."

[Turf is an agricultural subject; useful and practical information is needed; largest turf areas in relation to population are around cities; turf groups generally have not requested extension assistance; education must be further developed to achieve the goal. Ed.]

NAMES FOR BENTGRASSES: There have been numerous requests to assign names to some of the leading bentgrass strains, now known by C-numbers. TIMELY TURF TOPICS for December, 1943, listed many of the strains and their origin. Those strains which have been most widely distributed and used, some of which are in commercial production, are listed here. Suggested names are also listed, with reasons for assigning the name.

C-1 Arlington bent. This grass was discovered in 1928 at the Country Club of Atlantic City. The name Atlantic was suggested but this name has been commonly used in so many other categories. The name Utility was suggested but the grass has not been evaluated to the point where the name would be truly significant. Now that the Arlington Turf Gardens are history, and since this grass was first tested there, the name Arlington is suggested to commemorate the contributions to turf improvement which took place there.

C-15 Toronto bent. This grass was selected at the Toronto Golf Club, Long Branch, Ontario, in 1936. The name is a "natural," crediting the place of origin and our cooperating neighbors to the north.

C-19 Congressional bent. This is a selection from the Congressional Country Club, Washington, D. C., in 1936. The name is based on origin.

C-36 Norbeck bent. This is a selection made at the Manor Country Club, Norbeck, Md., in 1937. The name is based on origin.

The name Old Orchard bent will be used exclusively instead of C-52 since this was a named bent in commercial production when it assumed the C-52 designation for testing purposes.