

Toll of Turf Diseases in '52 Accents Study, Plans for '53

By O. J. NOER

(Continued from September Issue)

During the bad spells of weather last summer, every type of disease was rampant except dollar spot. It came later when weather moderated.

Pythium was worse than ever and was not controlled satisfactorily by any fungicide. A light application of lime, particularly in the hydrated form, seemed to do more good than anything else.

Brown patch was virulent and remained active despite the use of fungicides. During hot humid weather, when grass is continuously wet, no fungicide gives control for long. Some found it necessary to spray several times per week. Tersan was used mostly because it does not shock the grass and usually checks the disease. A few added a little corrosive sublimate, or other mercurial fungicide. The combination stops brown patch effectively and is safe provided the dosage for corrosive does not exceed 1 oz. per 5,000 to 6,000 sq. ft. or, in other words, not over 1 oz. per green. In larger amounts corrosive stops brown patch, but often kills the grass. At times this year one fungicide, which is ordinarily safe, scorched the grass. Dr. Spencer H. Davis of the New Jersey Agri. Exp. Station proved that type of nitrogen affects the severity of brown patch. Since his findings are available in published form, there is no point in further discussion here.

Melting out due to helminthosporium of one kind or another was blamed for much injury in late spring and early summer. In many instances leaf spot was the primary cause of injury, but in some cases helminthosporium was secondary to something else. The attacks came after the grass had been weakened by too much water, too little or too much nitrogen, a deficiency of potash, etc.

Leaf spot seemed to be bad on heavily matted turf. In these instances the obvious cure is to correct primary faults first. In most instances this automatically takes care of leaf spot. But where helminthosporium is the sole offender, a fungicide is needed. The Acti-dione treated plots at Michigan State were singularly free of leaf spot and other diseases. Some other workers have not been equally successful. The velvet bent at the Rhode Island station where PMAS was used each week for crab grass control had no leaf spot, whereas the ad-

joining untreated strips were affected by it.

Dollar spot was not troublesome at any time up to mid-August because of the unseasonably hot weather. It is a cooler weather disease. Cadminate, 531, Crag, Calo-Clor, and Calocure gave satisfactory control of dollar spot. Workers at Michigan got good results with Acti-dione. The PMAS plots at Kingston, Rhode Island, were free of dollar spot.

Nitrogen-Dollar Spot Relation

The nitrogen series of plots at East Lansing, Mich., on Washington bent turf showed progressively less dollar spot starting with the no-nitrogen check and on through rates of 3, 5, 7, and 9 lbs. of nitrogen per 1,000 sq. ft. As pointed out by Dr. Vaughan at the field day meeting on August 26, the check had considerable dollar spot. The amount on the 3-lb. nitrogen rate was less but distinct. There were no spots on the 9-lb. nitrogen rate, and only the odd spot on the 5 and 7-lb.



Recovery started in aerified holes on this bad spot. Green was aerified promptly after grass started to go.

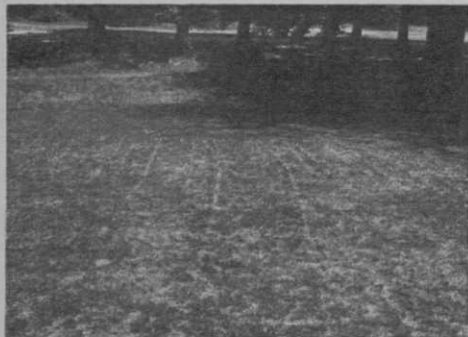
plots. This series of plots got no fungicide all season. These results substantiate the findings elsewhere by Dr. Pierre Miller in Southern California and by Holben and Musser at State College, Pa. Dollar spot is abated and more easily controlled by proper nitrogen feeding.

Balancing Fertilization

Many greens have received excessive quantities of phosphoric acid, and not enough potash. Over-phosphating has ag-

gravated iron chlorosis sometimes. Too little potash has been responsible in part for soft turf. Potash helps to stiffen plant structures and in that respect helps offset one property of nitrogen. The generous use of nitrogen without enough potash produces a darker green color, somewhat on the order of wilt. Then supplementing the nitrogen with potash lightens the color of the grass. Encouragement of clover by potash can be offset by nitrogen.

Clippings from a bent green in Milwaukee removed $1\frac{3}{4}$ lbs. phosphoric acid and $3\frac{3}{4}$ lbs. potash during a five and one-half month growing season. These amounts were from 1,000 sq. ft. of green. It is represented by $8\frac{1}{2}$ lbs. 20 per cent superphosphate and $6\frac{1}{4}$ lbs. 60 per cent grade



Streaks of dead grass in marks made by tee mower. *Poa annua* was in extreme wilt when tee was mowed on hot sultry day. Drum of power greens mower causes similar damage but harder to observe effect.

muriate of potash. An application of 5-10-5 at $17\frac{1}{2}$ lbs. per 1,000 sq. ft. provides 1.75 lbs. of phosphoric acid but only $\frac{7}{8}$ of a pound of potash. It takes 75 lbs. of 5-10-5 to furnish 3.75 lbs. of potash, but this amount contains $7\frac{1}{2}$ lbs. phosphoric acid or five times more than is removed in the clippings. This explains why many greens are becoming low-grade phosphate mines. The ratios of phosphoric acid and potash are of the same order in many liquid fertilizers. These ratios should be reversed—that is, 1 phosphoric acid to 2 of potash, rather than 2 phosphoric acid to 1 potash, which is the case in 5-10-5. Those who prefer to use a 1-2-1 ratio to provide needed phosphoric acid should use supplementary muriate or sulphate of potash in spring and fall or each month during the growing season.

Reduced to its simplest terms, the fertilization of bent grass greens is a matter of providing enough phosphoric acid and potash first. Then nitrogen becomes the key to good grass.

In this connection one must realize that nitrogen is the element most easily lost

by leaching, so the program must be designed to provide grass with a uniform and continuous supply throughout the growing season. Phosphoric acid and potash resist leaching in anything but sand soil. Both are held by the exchange complex which is the clay and organic matter fraction of the soil. Absence of the exchange complex is one of the reasons why pure sand is not the best medium for growth. Because phosphoric acid and potash resist leaching, they can be applied in spring and fall. Then summertime feeding is a matter of supplying nitrogen only—along with a little potash whenever the grass is a bit soft.

Practices with respect to nitrogen are changing with regard to rates and frequency of application. The change is reflected in more frequent applications at lighter rates.

Fertilizing Time Trend

In the dollar spot belt, that is in the region north of a line through New York and Chicago from 1 to $1\frac{1}{2}$ lbs. actual nitrogen per 1,000 sq. ft. each month straight through the growing season is about right. Brown patch is not a problem except in the odd year. The trend is toward fertilizing every couple of weeks rather than once a month. The amount of actual nitrogen used becomes $\frac{1}{2}$ to $\frac{3}{4}$ lbs. each time.

Farther south in the Washington-Philadelphia to Kansas City region spring and fall rates are more generous because dollar spot is the main disease then. The tendency is to ease up somewhat on the amount of nitrogen applied during July and August when the weather is ideal for brown patch. This is done by reducing the rate, or by making the applications every three weeks instead of twice a month. Some few go even farther and apply a little nitrogen each week.

When the weather was at its worst one superintendent thought his troubles were due to the use of too much nitrogen. Both soluble inorganic and insoluble organic nitrogen had been applied in May. He blamed sudden release of organic nitrogen and reproached himself instead of making a test on small 10 x 10 ft. plots. Color of the Washington bent was bad. The color was a pale rather than an apple green. Actually too little nitrogen and potash were responsible. Heavy rains had leached them from the soil.

Within two weeks after two applications of one-third pound nitrogen per 1,000 sq. ft. along with a little potash spaced a week apart wilting was less and grass behaved more normally. Even disease was less of a bother. In this instance the increase in *poa annua* in the past couple of years may have been the result of nitrogen usage.

Turf on irregular areas of variable size

turned brown in a matter of minutes or hours. It occurred during hot, humid, wet spells for no good reason. The cause seemed obscure and should be investigated by somebody. It may have been due to Hoffer's theory of nitrate reduction in gutated water. He found nitrates present in the early morning moisture on bent greens and thinks reduction to highly toxic nitrites responsible for much brown grass. The presence of toxic decomposition products of decaying dead grass, produced in the presence of excess moisture may have been responsible. Usually they are in the nature of soluble organic acids, but their calcium salts are generally insoluble. By forming insoluble compounds light liming should be beneficial.

Damage to Green Fringes

The grass fringes went out around the sides and backs of many greens. Loss was understandable where turf was poa annua, or where the creeping bent was shallow rooted because of an excessive surface mat. Loss was by no means universal. Where the grass stayed good, the fringes were wide enough to permit a sweeping turn of the power greens mower. These fringes got fungicide and fertilizer whenever the greens proper were treated. Adjoining banks were given enough water and not allowed to dry out. The bent had been thinned each spring by close cutting and soil compaction had



Poa annua only grass along edge of this green. Was slow to cover this spring. The Poa died later and was replaced by silver crab grass.

been overcome by cultivating with aerifying equipment.

In places where poa annua is the only grass, steps should be taken to introduce permanent grasses. The outline of cut should be modified where necessary to provide enough width to simplify turning each time the green is mowed.

Tees Badly Damaged

The turf on many tees was deplorable or non-existent by mid-summer. Where poa annua was bad, crabgrass, clover, and goosegrass took possession.

Turf on the best tees consisted of bent, Bermuda or Zoysia. The C-115 selection of creeping bent and Cohansy should be good ones for tees. Many of the other creeping bents are satisfactory in the cooler northern sections, provided tees are cut close, and that means close. Turf must be kept tight.

In St. Louis, Kansas City, etc., U-3 Bermuda has done well. In that region the Meyer Zoysia-Merion blue grass combination could be the answer. With Bermuda and Zoysia there is a feeling on the part of some that they should be played during summer only, and cool weather grass tees provided for winter use. The wear during winter when Bermuda and Zoysia are dormant weakens them to the point where they do not survive after a few years. There are some good Merion bluegrass tees. For the present they should be developed by sodding from a nursery, or by keeping seeded tees out of play until good turf is established. Seeding into established tees has not been too satisfactory up to now.

Some of the fairways, and many approaches fared badly this year, especially where poa annua was the principal grass. The watered courses had the worst time, because, in many of their fairways there was little besides the poa annua. The blow was especially bad because poa stayed in perfect condition during the preceding two spring-like summers. Renovation is in order on many courses accompanied by a change in watering practices. These two things seem like the eventual solution. It is too late to do much this year, except formulate the program.

Preparing for Next Year

Now that the year is drawing to a close the problem is one of preparing for next season.

Faulty surface and under-drainage should receive attention first, and should be corrected this fall. While greens are most important, fairways may need attention also.

Some type of cultivating tool should be used to induce deeper rooting and improve soil texture on compacted greens and fairways.

The Krilium type of soil conditioners, including the soluble ones, should be tried on part of one or more greens. It is important to leave an untreated part to serve as a check. Up to now reports are conflicting and there is no evidence about the after-effects or the permanence of the results.

This fall and in early spring better types of bent should be introduced by plugging or by seeding, especially where poa annua is the only grass on parts or all of the green.

Where the soil is acid, lime should be

used. This applies to greens, tees, and fairways.

The 1952 fertilizer program should be scrutinized and revised, if necessary. In this connection possible need for potash on greens must not be ignored.

On tees the selection of a good grass is of primary importance and on fairways the biggest problems are on the watered courses. *Poa annua* can be conquered, but it is not simple and cannot be accomplished in a single season.

Now is the time to rid fairways of chickweed. It is best done with sodium arsenite, or arsenic acid. The rate need not exceed 1½ to 2 lbs. per acre, but at least three and preferably four treatments should be made, spaced a week apart. Spraying can extend into November and later in some sections. Besides eliminating the chickweed, the sodium arsenite will take most of the clover.

Early next spring while the ground is honeycombed, bare spots in the sprayed fairways should be spot seeded with bluegrass, or with colonial bent on watered courses. A Cyclone seeder is the easiest way to seed.

GCSA Holds Two-Day Tourney Zoller, New Champion

Members of the Golf Course Supts. Assn. had two perfect fall days for their 11th annual tournament, Sept. 22 and 23 at the Columbus (Ohio) CC. The golfers teed off Monday afternoon following a fine buffet luncheon provided by the club. Play was divided into four flights with Emil Mashie, Onwentsia Club, Lake Forest, Ill., Mike Sopko, Pine Ridge CC, Wickliffe, Ohio, and Paul Schurtz, Iron-ton (Ohio) CC the favorites in the championship flight and perennial winner Jim McGunigal, Henry Stambaugh GC, Youngstown, Ohio and Charlie Jones, Indianapolis, Ind., favorites in the Senior flight.

Monday morning members and officials were taken on a tour of the experimental plots maintained by O. M. Scott & Sons at Marysville. Tuesday morning was devoted to discussion of challenging turf conditions found this year in various sections of the country with a probable forecast of what the future may have in store. Discussion leaders were Dr. Fred Grau, USGA Green Section and Dr. William Daniels, Purdue Univ. and the Midwest Regional Turf Foundation. Dr. Grau displayed several plugs of Meyer Zoysia Z-52 and Merion and Z-52 and asked cooperation in making experimental plantings of these newer grasses, particularly Z-52 in all sections of the country.

Prizes were awarded to the tournament winners by GCSA president, Malcolm McLaren, at the banquet following the

final round of play. John Zoller, Berwick GC, Columbus, is the new champion, scoring 72-71—143. Runner-up was Paul Schurtz, Iron-ton (Ohio) CC, the 1951 winner. Mashie and Sopko were other low scorers in the championship flight. McGunigal was the winner in the Senior flight in a "sudden death" playoff after being tied by I. C. "Rocky" Schorr, Blue-field (W. Va.) CC.

Team winners were John Zoller, Paul Schurtz, Jack Kidwell, Beacon Light GC,



Team winners of the recent GCSA tournament representing the Central Ohio GCSA (Columbus area) are: (L to R) Jack Kidwell, Beacon Light GC; John Zoller, Berwick GC; Carlos McCracken, Elk's CC and Paul Schurtz, Iron-ton CC. In addition to the GCSA Team Award each received an individual prize of an electric clock. Zoller and Schurtz were winner and runner-up of the championship flight.

Columbus, and Carlos McCracken, Elk's CC, Rushton.

Handsome prizes were awarded winners and runners-up and especially designed green flags bearing GCSA initials were awarded the first 18 low gross winners.

Special commendation goes to committee members John Zoller, Jack Kidwell, Herman Groezinger, Clyde Hodson, William Utzinger and Lawrence Huber for their work in staging an outstanding, smooth running tournament.

Joe Dey Made USGA Executive Director

Administration of the United States Golf Assn. has been revised so general supervision of all USGA affairs, including those of the USGA Green Section is now vested in the new office of Executive Director. The title of Executive Sec. has been abolished.

Joseph C. Dey, Jr., who has been Executive Sec. since Dec., 1934, continues as Executive Director. John P. English, who has been Assistant Executive Sec., is the Asst. Executive Director.