

1957 Turf



O. J. Noer

NOER: Heavy Rains Hurt; Advantages of Bent Greens; Bermuda for Fairways

THE 1957 season was good or bad — depending upon the particular spot in the country. Weather was never more variable. Courses in the East, from Mass. south to Washington, were plagued with extreme drought. This has created an interest and demand for complete water systems. There was too much water in many parts of the Midwest. Chicago and Ind. had several heavy rains of 3 to 6 ins. in less than 24 hours followed by hot, humid weather.

Poa annua took a beating and there was extensive damage in flooded, low-lying areas. The same type of injury occurred in the Minneapolis-St. Paul area. More than the normal early summer rainfall prevailed extending west to Omaha and beyond. Heavy infestations of crabgrass and goosegrass followed in its wake. Parts of Florida were drenched with excessive rainfall. Bermudagrass turf became thin as a result of continuous overly wet soil. Complaints came from California about performance of grass on putting greens and on other areas of thatched grass. Nighttime temperatures were said to be higher than normal. Wilting and localized dry spots must have been responsible for part of the troubles. Both are associated with hot day and nighttime weather.

Supts. in the Kansas City to Philadelphia belt have learned to expect these things every summer. They know how to prevent damage or loss of turf. It would be well for others to learn their secret. When grass turns blue and shows footprinting they promptly apply a little water by hand to revive the wilting grass and to reduce surface soil temperatures. During bad spells of hot weather they watch seven days a week. These supts. have learned the im-

portance of using water lightly at the first sign of wilt. A delay of half an hour can be the difference between saving and losing grass in critical weather.

Learn to Use Aprons

The winter was not too bad in the snow mold belt — north of a line through New York, Chicago, and beyond. Fungicides gave good control. Clubs have learned to include aprons around the greens and adjoining slopes which drain onto the green as parts of the treated area. Tersan, the phenyl mercurials, etc., have been acceptable except in areas where unusually severe attacks can be expected. The trend there is toward the 2/3 calomel, 1/3 corrosive sublimate mixture at 3 to 5 ozs. per 1,000 sq. ft., either by liquid or dry method. In the Prairie provinces of West Canada the use of corrosive sublimate alone is the favorite treatment at 3 to 4 ozs. per 1,000 sq. ft. It is applied dry with sand or dried activated sewage sludge as the carrier to facilitate uniform distribution and lessen grass discoloration.

In eastern Canada, notably in the Montreal area, turf on the greens appeared to have wintered well. The grass got off to an early start. Then there was a cold snap followed by windy, drying weather. The greens at some clubs fared badly. The grass was mostly poa annua. Recovery was slow and did not start until temperatures were favorable for seed germination. At other clubs there was no loss of consequence. Their greens had a good cover of bent grass with very little poa annua. Its loss was not noticed.

Clubs with bad greens blamed the man in charge rather than the grass because
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Roundup

GRAU: Diminishing Water Supply Calls for New Appraisal of Fertilizers



Fred V. Grau

The 1957 Turf Roundup could well be resolved around a single subject — water. During the year, the northeastern part of the country suffered one of the worst droughts in history. Parts of the southwestern region had seven years of rain dumped on it within a few weeks. In Kansas and Chicago, two months of rain fell in one day. Recently, in Florida, we learned construction work that was started in May couldn't be finished until August because of continuous heavy rains. Other sections in the central area had nearly perfect rainfall — just enough at proper intervals. On the west coast, where they really know what drought is, the 1957 Turfgrass Field Day, sponsored by the S. Calif. Turfgrass Council, featured Water Supply, Water Quality and Water Management.

Mountain springs in Pa. (Fountain on the Mountain) that apparently had flowed unceasingly so long as old settlers can recall, now are bone dry. It is a matter of conjecture if they will run again. Wells in many parts of U.S. have gone dry. Deeper drilling has not been successful in all cases.

It is reported that, by 1975, industry will require 215 billion gals. of water daily. This is a 100% increase over current industrial consumption and more than we now consume for all uses combined.

It is estimated that nearly three-fourths of all water that falls is lost through evaporation. Part of this loss is being reduced by floating a monomolecular layer (1 molecule thick) of cetyl alcohol (hexadecanol) on the surface of enclosed bodies of water (lakes and reservoirs). This cetyl alcohol is tasteless and odorless and can be floated safely on reservoirs being used

for drinking. It has been calculated that 70% of the evaporation from a surface of water can be prevented by this thin layer of material.

Experts are working hard on the problem of saving and utilizing the water we have and to trap and hold the rain that falls. It is a task of gigantic proportions. Other scientists are learning how to make fresh water out of salt water. Several methods are feasible and some are in operation but the cost is high.

It also has been proposed to tow icebergs into a harbor, close the gates and let the bergs melt into usable drinking water. Fresh water floats on top of heavier salt water, thus providing a supply of good water.

In some areas streams are being diverted into deep wells, storing seasonal excesses below ground and recharging the ground water, which often is used 40 times as fast as rain and snow can replenish it by seepage.

In the turfgrass field, attention is naturally being directed to those grasses which can use water efficiently and are drought resistant and drought tolerant. Among these are Bermudagrass, bluegrass, tall fescue, buffalograss, bahiagrass, centipedegrass, red fescue and zoysia. Destruction of bentgrasses during the severe drought periods has been of such magnitude it is doubtful if they will be included in any future seed mixtures for unwatered turf. *Poa trivialis*, another moisture-loving grass, has perished by the acre. Lawns that have been planted to mixtures containing this grass have suffered severely where water was denied.

Good grasses, well fertilized, turn brown
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Closeup of turf, ball shows fine lie player gets on U-3 fairway at St. Louis' Westwood club.



U-3 Bermuda fairway at Westwood CC. James Cockburn addresses ball as Al Linkogel and Supt. Ralph W. Sehr watch.

there was no loss at a nearby club. Their greens came through because turf was bent grass. Bad injury was confined to greens which were mostly poa annua. In the areas where there was nothing else, the spots became bare ground when it died. Cold nights retarded recovery by inhibiting seed germination. The permanent cure at these clubs is to secure a uniform cover of bentgrass rather than change supts. The same thing will happen to the new man if nothing else is done.

The contention that poa annua is sometimes biennial or perennial was supported by its behavior in one Montreal green. In June the poa annua on the protected part of the green was in bloom because it survived the winter and got off to an early start. In the spots alongside which were bare ground in early spring, the poa annua was not in flower because it was new seedling grass from viable seed carried over winter in the soil.

The quickest way to change a poa annua green to bent is to strip the green with a power sod cutter and re-lay with new sod from a good bent nursery. Before laying the new sod the surface should be re-shaped, if necessary, to eliminate pocketed areas and provide good surface drainage. There should be three ways at least for surplus water to leave the green by surface run-off.

Poa Annua Countered

The only other way to increase the amount of bentgrass at the expense of poa annua is to do some re-seeding, to apply lead arsenate spring and fall to discourage poa annua and use enough fertilizer to make bentgrass more



Bermuda fairway, No. 1 hole, Blue Hills CC in Kansas City. It was seeded with pre-germinated seed last May. This photo was taken in August.



This Bermudagrass turf at Glen Echo CC in St. Louis was planted by Bob Foulis 20 years ago.

aggressive. This type program made a vast difference in the greens at Blue Hills in Kansas City over a span of three years. At the start there were good sized areas of pure poa annua. It is still present but these spots have a good basic cover of bent turf.

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Sipula can offer liberal allowances on clubs that are traded in because he has developed several sources that take used clubs off his hands. This, and the fact that the Ottawa pro always has carried such a large inventory that he can supply the customer from stock without having to go through the ordeal of sending a special order to the manufacturer, are, Mike feels, the secrets of his success as a merchandiser. Sipula is particularly adverse to having golfers wait for from three to four days to as long as two weeks to get items that have to be ordered. "Too many sales go out the window when that happens," he says.

Near Year-Around Play

As for the length of the season at Pine Hills, there is no set pattern as to when it begins or ends. Ottawa is only a few miles south of Chicago but it isn't uncommon for tournaments and golf outings to be staged there anytime from November through February. A Jan. 1 tournament is an established event, for example. There are perhaps 20 or 30 good golfing days during the winter months, even at this northerly latitude, and Sipula usually has everything in readiness for the surprisingly large number of golfers who want to play

at this time. Keeping the course available practically around the calendar has, in Mike's estimation, done a lot in bringing Pine Hills a large following during what is generally accepted as the regular season.

If you have any illusions about the pro-owner operation of a 9-hole course being a nice, comfortable affair where a fellow makes money while working out in the open, Mike Sipula probably will dispel them. But at the same time he'll point out that a fellow could do a lot worse in spite of the responsibilities and long hours. That's what has kept him at Pine Hills all these years.

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The rate for lead arsenate should be in the range of 5 to 7 lbs. per 1,000 sq. ft. spring and fall. The seeding rate need not exceed 1 lb. of bentgrass seed per 1,000 sq. ft. at any time. Cross aerifying followed by thorough spiking is advisable before seeding. Enough nitrogen should be used to maintain a vigorous growth without causing grass to be tender and lush.

Clamor for a complete water system in places of severe drought is understandable. Frequently important details about the de-

sign and operation of the system, and about maintenance problems associated with the use of water, are overlooked. The first necessity is an assured supply of water in an amount that will be adequate to carry the turf through a period of severe drought. Reliance upon the city water supply for all the club's requirement is dangerous and may be disastrous. The city or water company may place restrictions at a time when water is needed most. The wisdom of installing a well designed system which will give uniform coverage with a minimum amount of labor is obvious. The system should be capable of delivering enough water so the course can be watered reasonably quick. That is no reason for overwatering. Too much water is bad for the grass and encourages weeds and clover. Scrutiny of the turf and soil conditions should be a part of the preliminary water survey. Where the existing grass is not the right kind for watered fairways, other grasses should be introduced. The maintenance budget must be adequate to pay for the water and its application, besides additional mowing and increased use of fertilizer.

Bent for Fairways

In northern regions where cool season grasses are the only dependable ones, bentgrasses form the backbone of permanent turf on watered fairways. Quaker Ridge (N. Y.), Hollywood (N. J.), and Saucon Valley (Pa.), are good examples. Some years ago these clubs renovated with sodium arsenite and reseeded with bentgrass seed. Under skillful management the bentgrasses eventually overpowered poa annua. The change paid off this year. Fairways came through the summer with a minimum amount of water. Club members were proud of the fairways and satisfied with the playing condition of the turf.

The fairways on the new nine holes at Seaview now in play were seeded to a 50-50 mixture of Merion bluegrass and K-31 fescue. The seeding rate for each was about 40 pounds per acre. Ordinarily when Alta or K-31 fescue is seeded with other grasses it is impossible to get a smooth even cut with a reel type mower. The Merion seems to hold the K-31 erect so it can be cut clean. This combination was tested in a plot for four years, so Warren Bidwell had field experience to justify his faith in the combination. These fairways are watered sparingly. They will be worth watching. If the combination succeeds at Seaview, it might be a good one for unwatered courses.

Kentucky bluegrass and fescue continue to predominate on unwatered northern fairways, but may give way to Merion bluegrass alone or in combination with Kentucky bluegrass or K-31 fescue, especially if the current moderate price of Merion continues.

Revolution in U-3

A revolutionary change in fairway turf may be in the making in the region across from

Washington and Philadelphia to Kansas City. Some of the clubs in that belt are introducing Bermudagrass into the fairways. It is mostly vegetatively planted U-3. Westwood at St. Louis has converted all 18 fairways to U-3 Bermuda grass. The turf was singularly free of crabgrass and goosegrass this season, in contrast to heavy infestations on some courses. Old Warson, Algonquin, Norwood Hills, and other St. Louis clubs are turning to Bermuda-grass fairways.

Bermuda turf on an approach at Glen Echo in St. Louis is exceptionally good. It was planted by Bob Foulis more than 20 years ago and has survived winters ever since. This suggests that once Bermuda becomes well established in that area it has a good chance of survival.

Bermudagrass is being introduced into fairways in Kansas City, Louisville, Washington, and Philadelphia. In the western area the Bermuda is machine planted in rows approximately 18 ins. apart. In the East some clubs use 2 to 4-in. plugs, others use the Ryan Power Sod cutter attachments. It cuts a narrow slice of turf. In practice, the slice of Bermuda from the nursery is cut into 12 to 14-in. pieces. They are inserted at 2 to 3-ft. intervals into similar strips cut across the fairway.

Less Fluff and Thatch

Several clubs in Washington, D. C. express a preference for common type Bermuda grass from seed. They claim there is less fluff and thatch in the resulting turf. Instead of seeding, they get their planting stick from patches of native Bermudagrass on the property.

Blue Hills in Kansas City seeded the approach on the first fairway with hulled, pre-germinated Bermudagrass seed in late May. There was good cover by early July. The area was cross-aerified and cross-discd enough times to prepare a seedbed. Fertilizer was then applied. The seed was mixed with two to three times its volume of Vermiculite and kept damp at a temperature of 70 deg. F for 4 to 5 days before seeding.

Winter Survival

Failure to survive the first winter is the common objection to the use of Bermuda seed. Blue Hills intend to let the seeded Bermuda develop 1½ to 2 ins. of growth this fall to check loss of soil moisture by direct evaporation. The fairways will be watered heavily just before winter. They plan to start watering early in the spring if the season is dry and windy.

One objection commonly raised to the use of Bermudagrass is the possibility of invasion into the bent greens. It seems to be less serious than in Texas and Oklahoma because invasion so far has been confined to surface runners. In Washington, D. C., they are cut back periodically. Danner at Richland CC in Nashville has used the Ryan edger very successfully. It cuts around the edge of the green once a week, and the severed Bermuda stems are swept off the green.

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too, but they maintain good playing turf and recover quickly when rains come. This represents the wisdom of maintaining high fertility levels to produce good turf and utilize water more efficiently. In many cases, fertilizer has been a "good substitute for water." In Texas, underfed Bermuda required 12 ins. of water to grow enough grass to make one ton of dry hay. When this same grass was fertilized with 600 lbs. of nitrogen to the acre it produced a ton of hay with only a little more than 3 ins. of water.

These gems of research data should be spread far and wide, so that overeager committees, thinking that a water system is the "answer to all problems" may realize that, watered or unwatered, the first principle of growing good turf is adequate fertilization.

The turf plots at Rhode Island University were squarely hit by the drought and they provided magnificent comparisons of various grasses variously fertilized. When the results are in, and are published, they should make "required reading" for everyone in the turfgrass profession. Merion bluegrass stood head and shoulders above all other lawn and fairway grasses when adequately fertilized. Under starvation conditions, it

produced ordinary weedy turf. Tall fescue performed well under drought conditions where it was well fed. Red fescue suffered severely over a wide range of fertility levels.

Urea-Forms Scrutinized

Ever since K. G. Clark and associates at Beltsville, Md., proved that urea and formaldehyde could be combined to produce solid materials with high agricultural value as an organic nitrogen fertilizer, there has been increased interest in the materials being manufactured and marketed. Experiment Stations have sought to determine their value for various uses, including turf. So far, their practicability on turf has been proved and demonstrated with only minor reservations. Here are some of the reservations:

A single application does not necessarily last a full season on putting green turf. Two or more "split applications" appear to be more practical. On tees and fairways and lawns single treatments have been adequate.

Excessive rates of application can and do cause injury even though the material does not actually "burn" the grass. Applied in "smothering doses," the material has a desiccating effect, which looks like "burn." Not all soils have the capacity properly to nitrify Urea-forms at the first application, especially sandy soils where inorganic fertilizers have been used constantly.

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Fertilizer Mixtures with UF

1957 marked a sharp increase in the use of complete fertilizers which derived part or all of the nitrogen from solid Urea-forms. The May, 1957, issue of *Golf Course Reporter* carried the first report of its kind, based on the work of Mruk, Wisniewski and De France at the University of Rhode Island. Results indicate that these fertilizers "tailored to turf" are practical and sound.

Fertilizer usage on turf is increasing with continued education and emphasis on weed control and drought resistance through fertilization as well as wide publicity on the size of the turfgrass industry. Grau and O'Donnell, before the American Chemical Society in New York in September, said if all turf in the U.S. received the modest rate of 100 lbs. of nitrogen per acre, it would take 7 million tons of a 10-5-5 fertilizer to do the job. Some turfgrass areas consistently receive many times this amount, some over 1,000 lbs. of nitrogen per acre per year. The new inter-state highway program alone is expected to consume half a million tons of fertilizers just for planting slopes and raw areas.

Choice of Grasses

When the question comes to me like this: "What grass would you recommend for my new area?" my first impulse is to ask in return: "How are you going to manage it?" It has been said before, and we will say it again, better to plant a mediocre grass and manage it well than to spend the money for an improved grass and handle it poorly.

Many new greens are being built all over the country and many old ones are being rebuilt. The choice of the grass to plant is a mighty important decision. It is my conviction that greens should be built and planted to produce results with minimum irrigation and maximum fertilization. Water shortages must be reckoned with sooner or later. There is no foreseeable shortage of fertilizers.

Penncross creeping bent seed is desirable for new and rebuilt greens for several reasons. Seed is plentiful and reasonable in price. A recent quotation was in the vicinity of \$6 a pound. It is economical, since only one lb. to 1,000 sq. ft. is needed at seeding time. It "adapts itself" to a wide range of management procedures, soils and climates. The broad gene base of the grass (three good

parents) fits it to various environments. It covers the entire range of bentgrass adaptation.

We do not mean to imply that the excellent existing greens of Washington, Co-hansey, Arlington, Congressional, Toronto, Pennlu, Old Orchard, Seaside, Velvet and all the rest should be scrapped — far from it! What we see coming is an increasing difficulty in obtaining good stolons of all the named varieties, plus an increasing cost of planting and maintaining them. Ed Geary, laughs every time I tell him that we are not recommending Seaside bent for putting greens. Every time we say this in print he tells us that he sells more Seaside than ever before. Seriously, though, Penncross is out-performing Seaside on every count.

Bermudagrass greens are changing complexion at a rapid rate. The introduction of soil sterilants have given great impetus to changing over to better grasses. Many old greens are being re-contoured and provided with better drainage. Bermudagrass requires good drainage, just as bentgrasses do.

Tifgreen (328) is being planted on many new greens over a wide area. Two features are liked universally: rapid initial coverage and good color. This is in addition to good medium texture. But not every planting is being managed according to the specific requirements of that particular grass. This brings on disappointments which are in no way the fault of the grass. This will happen with every new grass until management requirements are known and publicized as a part of the initial sale of the grass.

Bayshore (Gene Tift) strain has many supporters. Houston CC is covered solidly with this grass. It has performed well in tests at the University of Florida.

Everglades I performs differently than all the others and is preferred by some, particularly in So. Florida. This grass received a great deal of discussion at the recent Florida Turfgrass conference.

Ugandagrass is growing in favor where it has been managed according to its requirements. In its favor are finest texture (looks and putts like bent), rapid coverage, ability to maintain good color and playing quality under minimum of irrigation (water once a week during a severe drought). There are no worries about disease. Fertilization is generous.

Seeded Bermuda greens rarely are heard of except in outdated specifications which someone forgot to change. Compared to the improved strains, seeded Bermuda is lacking in quality.

Sand greens steadily are being converted to grass. Minimum irrigation and maximum fertilization appeal to low-budget courses which ask for grasses that "can take it." At Davis, Calif., heavily fertilized Bermuda remained green and playable for 100 days without irrigation in daily temperatures of 100°F.

Tees today are receiving as much attention

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as greens used to get. With improved Bermudas, Merion bluegrass and better bents, we have better tees than ever. Two factors help in a large measure: less irrigation and heavier feeding. Tees of large size are of great benefit in rotating play to permit recovery. Teeing areas practically equal putting areas in size at many courses. When the turf on a tee is unsatisfactory, it is a fairly simple matter to strip the old sod with a power sod cutter, re-work the seedbed with additions of soil amendments and fertilizer and lay new, mature sod of improved grasses taken from the nursery.

This leads directly into the subject of the sod nursery. We find that too many courses have no nursery at all on which to make necessary mistakes. A rule of thumb on many courses is to have enough putting green sod to replace one full green at any time and enough tee sod to replace two tees. In addition to this, there should be ample areas for testing of new materials, new tools, new chemicals, new fertilizers and getting new men acquainted with turf.

On fairways, the need for devices to remove clippings is becoming more acute. Many drought-damaged fairways are being renovated and planted to improved strains of grasses. In the bluegrass area Merion bluegrass, along with improved fescues, is becoming more popular on new fairways and on renovated fairways. In the south, some of the improved strains of Bermudagrass,

such as Ormond and Everglades and Gene Tift, and in the central part of the country, Uganda, are being planted on fairways. These disease resistant strains produce relatively more clippings because they are not thinned by disease periodically.

With longer lasting fertilizers and a relatively higher level of fertility, and with more disease resistant strains, fairways are going to be clogged with clippings that will have no place to go. Paul Weiss called this to our attention many times on bent fairways that were so thick and dense the clippings could not enter the turf. Finally, the blowup had to come and in a particularly severe period of high temperature and humidity, many bent fairways simply exploded.

Suggests Study of Conservation

Another factor that is contributing to the accumulation of clippings on fairways is the high degree of control that is being exercised on the insects that normally would eat a large part of the grass that was produced.

Still on the subject of fairways, it is our contention that the supts' associations might well devote a portion of their time to discussing ways and means of conserving water on the course and how to grow the best possible turf with the least amount of water.

The Noer-Grau Roundup articles will be concluded in January GOLFDOM.