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Turf Round-up of 1949

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Was the summer of 1949 worse than the summer of 1928? Some seasoned golf course superintendents say that it was. Others say it was the worst **since** 1928. The difference of opinion will be good for many friendly discussions in the "bull sessions." The fact remains that Dame Nature, the one with whom we are always trying to work, never tells us what she intends to do, and this year the boys who were not fully prepared got the royal doublecross.

For some strange reason, explainable in unintelligible terms only by a meteorologist, tropical weather moved north **and stayed there** much longer than it did at any previous time in our memory. Following a short, very wet spring, the weather unaccountably turned sizzling hot while grass roots were still shallow from the wet weather. There was no time for grass to "harden off" for the heat of the summer and to get its roots down for the months ahead. A lot of it just "cooked" in the heat and the drought, and the result was crabgrass in many areas. Even Denver and Salt Lake City were interested in crabgrass control this summer!

The damage to turf in New England can be judged by the staggering losses to crops in that area. Pastures burned out and gave no feed. Potatoes produced half a crop to no crop. This is one year when supplemental irrigation paid dividends, especially on farm crops. With the drought came unprecedented heat and, in some cases, high humidity. This combination has one disastrous result on specialized turf, and that is **disease.** Some superintendents sprayed greens every day for ten days to keep brownpatch in check. **Pythium,** that dread disease of bent turf which every greenkeeper fears (or should fear), appeared on some of the best putting greens. There seemed to be no stopping **Pythium** because no known chemicals seemed to be effective. Everyone just prayed for a break in the weather. Even the improved strains of creeping bent were affected.

Weak Points Revealed

The weather had various quirks in different sections of the country but one thing became evident and crystal clear. **Every weak point in the system was disclosed.** In some cases it was **weak grass.** In others the weakness was shown in **poor soil structure,** in **imperfect drainage,** in **excessive compaction,** and in **management.** The weak points in management were disclosed principally in the (mis) use of **water** and in the attention to **disease control.** Virtually every weakness permitted weeds to develop, and crabgrass

Keep Informed .....

This issue of Golfdom is packed full of information and reports that make it a valuable reference to keep on file for current and future use. Manufacturers list salient features of 1950 products, professionals report in detail on the year's experience and plans for 1950, and greenkeepers and turf authorities outline the methods and practices which have obtained the best results in course maintenance.

..... Read Golfdom

was the principal invader. Goosegrass (silvercrab) wasn't far behind. The boys in Washington, Cincinnati, St. Louis, Tulsa, and Kansas City did not get panicky because normally they get some fiendish summer weather and they expect it and prepare for it. It was the more northern golf areas that got hit worst because in normal seasons they can hold **Poa annua** through the season. This year most of them lost it. The superintendents in the South who have bermudagrass greens chuckled with a justifiable bit of satisfaction to see their northern brethren who have bent greens, toss and squirm and lose sleep on those hot summer nights. A bit of extra heat and humidity doesn't mean a thing to bermudagrass because that is what it thrives on.

The boys who have Aerifiers, especially those who had used Aerifiers during the previous fall and spring, fared much better than did those who "had not." **Oxygen in the soil** made the difference between success and failure in many instances this year when, in other seasons, the lack of air in the soil was not quite so striking in its effects. Not only did Aerifiers work overtime, but Turferators, tubular-tine forks, and even the lowly manure fork got polished this summer in frantic efforts to get **air** into the soil.

Ferguson, my No. 1 man in the Green Section office, attended the Mineral Nutrition Conference at Madison, Wisconsin, on September 1, 2, and 3. There he learned from a noted physiologist that when a plant root is deprived of air it can not absorb water. This, in effect, means that "when a plant has too much water it can't get enough water because it already has too much." A plant, like an animal, can drown, but it isn't the water that kills it—it is the **lack of air!** Now you can appreciate that the Noer-Grau team at the conferences really wasn't crying "wolf" when the subject of **drainage** and **aeration** was expounded.

Sand Important

Putting greens that were built with **lots of sand** came through the summer in near-perfect condition. One that I saw (and there are many others that bear testimony to the value of sand) was a small green that Nelson Monical built on the Portage CC Course at Akron, Ohio, for members to putt on while waiting for their turn on a short hole. He **overdrained** with tile and gravel and **oversanded** with coarse sand in the topmix and **underwatered** in comparison with most greens. On September 8 a sampling tube, which takes plugs out to a depth of 12 inches, showed that many grass roots had **broken off** at that depth! This green was in full sun.

Another near-perfect green was on a 9-hole course in Magna, Utah. It, too, was built on an **overdrained** base. The topmix soil was mostly sand, and we couldn't find the lower end of the roots by ordinary means.

In the Spring 1949 issue of the **USGA Journal** appear some startling data on the physical composition of putting green soils on golf courses over a large part of the United States. The conclusion reached was that **sand** in the topmix was the principal ingredient for success in building putting greens that are easy to keep in near-perfect condition. Up to 85% of sand was found in some greens; up to 85% clay in others. The "sandy" greens suffered the least this summer, other things being equal. Sadly, though, many new courses are being built and finished, and many of the new greens will have to be reconditioned soon because they don't have enough **sand** nor enough **sub-drainage** in them! The lesson is difficult to learn, and many clubs will learn it the hard way. More rebuilding of greens is going on this fall than at any time in my memory. This includes the Washington area, too. Some of the golf course architects are getting a liberal education on the value of sand. Unfortunately, some of them who already are sold on sand have difficulty in convincing the club officials to spend the extra money to do the job right in the first place. When they don't succeed, the club will pay it out in added maintenance and reconstruction costs in the future, but they have to find that out the hard way, too.

Water Use Observed

The misuse of water was the outstanding weakness in management this year. The effects were observable in every section of the United States. Strange as it may seem, **overwatering** was most prevalent where there were definite **shortages** of water. The biggest single thing ahead of us is the **Conservation of Water.** Not only will we be doing agriculture and industry a real service, but we will grow better turf and we will save clubs untold thousands of dollars.

One way to save water is to convert turf gradually to those species which are more drought tolerant. See your 1948 U. S. Department of Agriculture Yearbook **"Grass"** for a more complete discussion.

Another way is to keep the soil open and porous so that rainfall will be absorbed. Up to 85% of a single rain may be lost in runoff, carrying with it much humus and fertilizer.

Fertilize heavier to grow deeper-rooted, denser turf. Turf that is well-limed (acid soils especially) and well fertilized stays

green longer during a drought than starved turf.

Don't let the high-handicap players panic you into keeping the greens soggy so that the greens will hold any kind of shot. When they complain that the greens are hard, maybe the thing to do is to aerify and topdress them with a sandy loam and give them a good feeding. A dense, deep-rooted turf which grows on a sandy loam will hold a well-played shot even when it is on the **very dry side.**

Don't forget also that even a well-played shot from a fairway that is cut too high will be a "balloon" or a "floater," and no one can make the shot hold. A dense, firm, closely-cut fairway will improve shot-making, and the ball will hold the green better because then it is possible to put backspin on the ball.

Overwatered fairways and approaches are all too common and that produces the dull heavy "mushy" shot that will refuse to hold the green. In these areas we also see the most trouble from **Poa annua** and weeds in general.

Grasses Are Appraised

The demand for better tee and fairway grasses continues strong. The Green Section, accordingly, has shaped its research program in that direction.

Bermudagrass is the favorite grass for tees because of its rapid spread, rapid healing, resistance to injury (divots), ease of planting, its tolerance to close mowing, and its low irrigation requirements. Weeds virtually are non-existent in bermudagrass when the nitrogen feeding program is on a high level. No grass suffers more from a **starvation** program than does bermudagrass.

Among the improved strains of bermudagrass the top performers are the Green Section's U-3 for northern climates, and Tifton's 57 for southern turf. Both have been proven and have been released. The next steps are those of larger commercial production and the increased use by golf clubs. U-3 has been successful in trials up to a line running from Norfolk, Nebraska; Chicago; Cleveland; State College, Pennsylvania; and to New York. It rapidly is becoming a favorite in Washington, St. Louis, and New Jersey, where its ability to choke crabgrass without chemical treatments is strongly in its favor. It appears to be a natural companion to **Poa annua.**

Tifton 57 is so free from disease and so aggressive that it invades and chokes common bermuda under putting green, tee, and fairway management. Southern clubs which fail to develop nursery stock of this improved strain are missing a good bet.

Research on the zoysiagrasses continues at Beltsville cooperatively between the USGA Green Section and the Division of Forage Crops and Diseases. Studies include seed production, management, evaluation of strains for suitability to specialized turf, methods of establishment, and combinations with cool-season grasses.

The Z-52 strain appears to be outstanding for golf and lawn turf, and it has performed in a superior manner in ease of establishment and rate of spread as compared with the Z-9 strain mentioned in the 1947 Turf Roundup. Z-52 is so similar in texture and color to B-27 bluegrass that the two appear identical in adjoining plots. The Green Section urges wider testing of this particular combination of a cool-season and warm-season grass. Z-52 is receiving praise from homeowners who have it in their lawns. Turf established from Z-52 seed appears nearly identical to the parent turf, even though there is a wide variation in the appearance of space-planted individual seedlings. It appears that Z-52 will begin to move into home lawns as soon as commercial stock is available. It has been winter-hardy at State College, Pennsylvania; at New Jersey; and at Purdue. Probably it will move much farther north than will manilagrass. It also is performing admirably as a summer companion to **Poa annua.**

In the bluegrass field the B-27 strain is superior in every respect. Coordinated tests during the past two years leave no doubt but that B-27 bluegrass is the one which everyone will want. Crabgrass invasion of B-27 turf is scarcely noticeable, whereas common commercial bluegrass beside it and under the same set of conditions, becomes heavily infested. It will be a boon to homeowners who want bluegrass turf and who want to have a closely-cut turf. Now they can have both. To have crabgrass-free turf with common blugrass one must cut turf 2 to 3 inches high. B-27 does a better job at a half-inch cut. Every effort is being made to increase seed production, but it will take several years to even satisfy the demands of golf courses. It means that the homeowners still will have to wait awhile.

Among the fescues, Alta fescue is taking long strides ahead. Its ability to thrive on unimproved soils and under low levels of moisture makes it a heavy favorite in turf mixtures where fine texture is not important. It has proved itself in athletic mixtures from coast to coast. It is being seeded into many golf course roughs and it is not exactly out of place in fairways. It is an excellent winter companion with common **Zoysia**

japonica, and the combination is singularly weed-free. Kentucky 31 fescue is very similar to Alta fescue but the price differential still gives Alta fescue the advantage.

No new red fescues are in production. Illahee, Penn State Chewings, and Oregon red creeper are the preferred buys when choice is available. This picture may change as some of the new Penn State selections now being tested are proven and released for production. The new strains are being tested cooperatively at the Beltsville Turf Gardens, where they have to prove themselves under the brutal weather conditions which we know so well.

Bentgrass Situation

No significant change has occurred in the bentgrass picture. The good vegetative creeping bent strains still are good. Toronto (C-15) is moving ahead and is pushing out Collins (C-27). Arlington (C-1) and Congressional (C-19) still are performing admirably as a team. Old Orchard (C-52) is strong and vigorous and it has many friends. Cohansey (C-7), in spite of its light color, is gaining favor because it is so aggressive and so heat-tolerant. Washington is still good but it is gradually losing its popularity because it is so slow to start in the spring, which gives **Poa annua** a chance.

The brightest spot in the creeping bents is the possibility of a better creeping bent from seed. So far seaside bent is the only commercially-available seed that produces a creeping bent turf. Penn State, in the cooperative setup, is making strides in crossing the better strains of creepers to produce a commercial seed which will result in superior turf. The strongest new selections tested at Beltsville are going into this breeding setup. The future is bright.

Among the colonial bents we still have Astoria, Highland, and New Zealand. There has been no advance in producing Rhode Island colonial. We continue to use these colonial bents because they are the best we have, but something better is long overdue. The Green Section has been helping to finance a program to develop superior colonial bents at the Rhode Island Experiment Station. It is hoped that this program will begin to bear fruit in the near future.

Fungicides Extensively Tested

The most significant step forward in the development of better fungicides was the initiation of the coordinated testing program under the guidance of the American Phytopathological Society. Identical materials are tested by all cooperators, and results are evaluated on a comparable basis. Details are not available so that at this time we can not discuss the merits of many new materials. There has been no significant change in the recommendations for standard materials such as calomel, bichloride of mercury, Tersan, Crag (F-531), and Puratized 177.

Weed Control Results

Since 2,4-D has settled down to the routine job of killing broadleaf weeds, major attention is being given to crabgrass control. Crabgrass flourishes because so few adapted turf grasses are used that are able to compete with crabgrass on its own terms. The **improved** turf grasses will need little or no help from chemicals in the fight against crabgrass. At the present writing there are no improved turf grasses in general use, with the exception of the vegetated strains of creeping bent on putting greens. As U-3 bermuda and the better strains of Zoysia develop along with B-27 bluegrass, crabgrass will cease to be the No. 1 public enemy.

Sodium arsenite is still a good material in experienced hands because it combines insect control with weed control. It is tops for renovating turf. Phenylmercury compounds and potassium cyanate are holding the spotlight in tests at many stations. It is impossible at this point to summarize results or to predict the future. The non-poisonous materials naturally will get public acceptance if they are effective and relatively "fool-proof." It must be remembered that, with many of our ordinary turf grasses, we still don't have a good turf even when the crabgrass is controlled. What is needed is a safe effective chemical that can be used in connection with the establishment of our improved turf grasses. This comes under the head of **renovation.**

One of the best examples of crabgrass control that I saw this year was that done by mechanical means. Flexi-combs were used on the fairway mowers all season, and crabgrass never had a chance to develop either runners or seed heads. The turf was remarkably dense, firm, and upright, and it had been cut under ¾-inch all season. The first combs on fairway mowers that I ever saw were in 1936 at the Merion Golf Club Course, where Joe Valentine had devised a set for his mowers. For some unknown reason the idea didn't "catch on" until recently. It is my belief that combs on all types of mowers greatly will increase in use.

In some areas bermudagrass is not wanted. Work on the control of bermuda with TCA has been published in Oklahoma and Kansas (see the July, 1949, USGA JOURNAL). Results are not perfect yet and the soil remains sterile for too long a time for golf course work

when the trichloroacetates are used. There is some hope that methyl bromide or chloropicrin may be used so that reseeding can be done at once.

Insect Problems Diminished

There have been fewer requests of the Green Section for information on insect control than ever before in history. We credit that to the splendid job which is being done by the state entomologists (research and extension) and to the effectiveness of improved insecticides. DDT and Chlordane are now being used as casually as are lime and fertilizer. As a result there has been a great improvement in turf conditions because the first line of defense against weeds is a good insecticide program. Turf damaged by insects can't fight crabgrass.

The American Association of Economic Entomologists also must be credited with recognizing the problems of turf areas and with stimulating a great deal of investigational work.

We deprecate the practice of killing skunks on golf courses. If the insect food of skunks is eliminated by use of insecticides, the skunks will seek food elswhere and will tear up no turf. Starlings, likewise, are cursed for ruining greens, when actually they are only after cutworms and sod webworms, which would have caused great damage anyway.

Personalized Testing Needed

Hundreds of letters in our files bear mute testimony to the fact that far too few golf clubs are trying to find some of the answers to their problems themselves. Too many of them want **all** the answers handed to them on a silver platter. The Green Section, The U. S. Department of Agriculture, and the various experiment stations cooperating in the national turf program can go only so far in developing a new grass, a new tool, or a new practice. After the announcement of a new "tool" it should be the privilege and duty of every golf club to **assist** the program by thoroughly testing the "tool" under its own conditions and reporting it to central headquarters (The Green Section) for the benefit of everyone concerned. If more clubs would do this, progress would be speeded immeasurably. The technical staffs of the Green Section, the U. S. Department of Agriculture, and the experiment stations, all are too limited (as are funds) to do this personalized testing on a club's properties. More and more the responsibility for progress in this direction falls on the shoulders of the state agronomists.

Extension Teaching Opportunities

The most crying need in turf work today is Education through a corps of extension agronomists who are trained in specialized turf work as well as in the fundamentals of agronomy. It is possible properly to assist in a turf project only when a visit is made to a site so that details can be discussed and put into practice.

Extension teaching in any phase of agronomy is a service rendered by the state extension services (at no cost) to those who request it on an organized basis. This service is not rendered if it is not requested. It is the method whereby the results of research are taken into all parts of the state and demonstrated.

To be successful, the request for extension services must be made on an organized basis to the Director of Extension in the state. For an example as to how it works, ask the boys in Pennsylvania. They have had an extension agronomist in turf continuously since 1935.

Book On Turf Management

The USGA book, "Turf Management for Golf Courses," has made satisfactory progress in spite of some expected and some unforeseen delays. As I write this, Professor Musser, editor, is selecting photographs for the cuts. The manuscript is ready to go to the printer. The publication date is unpredictable but we hope for a release early in 1950. The USGA office, 73 East 57th Street, New York 22, N. Y., will announce details of publication in the various turf and agronomy periodicals.

Cooperative Work Budget

The Green Section has spread its limited funds to encourage cooperative work at various experiment stations, meanwhile encouraging local, state, and regional turf interests to participate and share the financial burden and glory. Most of the money used by the Green Section for this purpose comes from the Education Fund, which is derived from Green Section Subscriptions and does not come from the budget. When the local turf interests are able to carry the program the Green Section generally shifts its financial support to an area where help is needed the most.

At the present time the Green Section actively is supporting work at stations under formal memoranda of agreement, as follows:

Pennsylvania Experiment Station	$4,500.00
USGA Green Section Research Fellowship, 3 years Study of compaction and irrigation on fairway turf. This is to be extended for another 3 years	
H. L. Wagner Grant for breeding superior creeping bents and fescues	$6,000.00

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we sell at a reduced price rather than leave the old price on the item. We continue to sell merchandise script to the ladies for their weekly ladies day prizes so they can save the tickets until they can buy something worthwhile.

Courteous and prompt service plus efficient operation of the business the same as any lawyer or doctor as to appointments plus courteous dealing is the only way to operate.

Harry Whiteman, Morgantown (W.Va.) CC reports they have had the best year in the history of the club — **Ed Tabor, Westshore CC, Camp Hill, Pa.** says records show 10% increase in play and drop of 25% is expected in pro shop business. Play at the **PGA National GC, Dunedin, Fla.** has more than doubled this year, including the summer months, according to Alex Cunningham. Play has increased 20% and pro shop business is up 15% at the **Country Club of Lincoln (Nebr.)** where Bud Williamson is pro.

TURF ROUNDUP

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New Jersey Experiment Station ..... (a year) $ 600.00
Joint Research Grant between USGA and U.S. Department of Agriculture from Service Offset Funds. This will have to be discontinued for lack of funds

Rhode Island Experiment Station ..... (a year) $ 300.00
USGA Green Section Research Grant for breeding superior Velvet and Colonial bents

Univ. of Massachusetts (a year) $ 300.00
USGA Green Section Research Grant for studying the performance of **Zoysia japonica** with cool-season grasses

Cornell University ..... (a year) $ 300.00
USGA Green Section Research Grant for studying the performance of the Mole-Drain in turf areas

Georgia Coastal Plain Experiment Station ..... (a year) $ 400.00
USGA Green Section and U.S. Department of Agriculture joint Research Grant to study the development of superior southern turf grasses

Florida Experiment Station ..... (a year) $ 300.00
USGA Green Section Research Grant, to provide nursery material for distribution and to study performance of southern turf grasses

Texas Experiment Station ..... (a year) $ 300.00
USGA Green Section Research Grant, to study fertilization and other management practices on bermuda turf

Oklahoma Experiment Station $6,474.68
Research Grant to study control of bermudagrass. Funds provided by Tulsa Golfers' Fund for War Wounded

Missouri Experiment Station
Research Grant to study performance of warm-season grasses for tee and fairway turf
Funds provided by clubs in St. Louis District ..... (a year) $ 400.00
Supplemented by Midwest Regional Turf Foundation funds ..... (a year) $ 500.00

Purdue University $4,500.00
Joint Research Fellowship between USGA Green Section, Indianapolis District Golf Association, Indiana Golf Association, and Midwest Regional Turf Foundation, for 3 years, to study combinations of warm-season and cool-season grasses for tees and fairways

Michigan Experiment Station $4,500.00
Joint Research Fellowship between USGA Green Section, Detroit District Golf Association, and Midwest Regional Turf Foundation, for 3 years to study fairway management

Supplementary funds are being provided for the several stations by these organizations:

Pennsylvania — Golf Association of Philadelphia.

New Jersey—Metropolitan Golf Association, New Jersey Golf Association.

Rhode Island—Samuel S. Clapper Memorial Fund, New England Golf Association.

University of Massachusetts—Massachusetts Section of New England Turf Association.

Georgia—Southern Golf Association, Southern Turf Association, Masters' Tournament.

Texas—Texas Turf Association.

Oklahoma—Oklahoma Turf Association.

Commercial concerns are contributing large sums of money for special grants to do specific lines of research. No information is at hand to indicate these amounts at the various stations.

The Green Section periodically is asked to increase its financial support at certain stations. The answer to such a request must be based on these factors:

1. Amount of money available
2. Satisfactory progress on the project selected
3. Extent of application of findings over a broad area

The Green Section prefers to contribute its limited funds to a project that, wherever possible, lends itself to a research fellowship. This means that the funds of Green Section must be supplemented by funds from local and state turf interests. A research fellowship leading to a Ph. D. degree requires a minimum of 3 years and $4,500. These funds must be assured before the fellow and the project can be selected.

The shortage of funds makes it necessary that the Green Section budget be reimbursed for any funds expended for travel. Exceptions are the two official visits to clubs which have been selected for USGA tournaments.

Equipment Developments

"New" developments within the past year include the following:

The fairway mower that cuts the grass before the tractor rolls over it,
The mole-drain that fits the Aerifier frame,
The Flexi-comb that controls crabgrass mechanically, and
Hand-operated tubular-tine forks.

We use the word "new" advisably because it is the tool that is new—not the principle. The push-type mower is old in principle; so is the mole-drain, the comb, and the tubular tine. These are improvements with adaptations to modern turf maintenance. Mechanical aids are essential to low-cost and efficient management.

Recently we saw a new sod cutter that is self-powered. We have not seen it in operation but the principle is good.

Since U-3 bermuda and Z-52 zoysia are proving so useful in the crabgrass belt we have been studying rapid, low-cost methods of planting these grasses into existing turf without interruption of play. The mole-drain offers one simple solution to

the problem. Another good possibility is that of setting 2-inch plugs. Methods of vegetative planting will become increasingly popular until seed of these grasses is available, which may be many years.

The Aerifier represents the most important advance in soil conditioning and turf maintenance in many years. Some greenkeepers regard it as their most valuable piece of equipment Its use results in saving rainfall, providing deeper-rooted turf, requiring less irrigation water, and improving soil structure. In a renovation program it has no equal for preparing the soil to receive seed.

Fertilizer Education Advances

The general tendency on specialized turf is to underfeed and overwater. A better balance is needed. Great improvement can be seen as the result of education in this field.

The "new" fertilizer which we are watching with great interest is the Ureaform fertilizer, which is made by combining urea and formaldehyde. The product is a white powder containing up to 38% of nitrogen. It has controlled slow availability, and one application lasts through an entire season. It is non-burning on bent turf even at high rates. Ureaform is still in the pilot-plant stage and none has been released for sale. Cooperative experiments indicate that it will be highly desirable for specialized turf.

It is encouraging that many clubs are discarding the practice of having a new green committee chairman every year. This news will be welcomed by many harassed greenkeeping superintendents. A good green committee chairman is almost as important as is a good greenkeeper.

Many readers undoubtedly will be disappointed to find so few specific details in this Roundup. In attempting to cover such a diverse subject, details must be left to specific articles, of which there will be many in the months ahead. Part of our job is not to tell people what to do but to help them to THINK and to ACT! Too many greenkeepers stay so close to the job that they sort of get out of the habit of thinking. One maxim to go by is to "Learn by the mistakes of others because you will not live long enough to make them all yourself." Another good principle to develop is to continually ask yourself, "Isn't there a better way to do it?"

Above all, we urge all greenkeepers everywhere to "Learn by Doing," and to try out a new grass or a new tool the moment they hear about it.