

Turf Roundup of 1947

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The 1947 season was a tough one in turf management. The season offered the greatest extremes of rainfall, temperature and humidity experienced for many years. In general, turf got a poor start with a long, cold, wet spring which was just right for *Poa annua* and weeds but just wrong for many turf grasses. Nature's overwatering in the spring developed shallow root systems just the same as when it is done accidentally or on purpose with the hose and sprinkler. Drought periods and high temperatures with high humidity, came along and a lot of turf simply "cooked" and gave up the ghost. As a result there have been endless reports of clover and crabgrass everywhere with few exceptions—and the exceptions are extremely interesting and highly significant.

This has been a year when many turf grasses displayed inherent weaknesses which often are hidden behind a screen of skillful management. This year many of those weaknesses came out of hiding where they could be recognized for what they are. Likewise, the trouble that was built into the course as part of the original design rattles the bones of the skeleton in the closet until finally the door swings open and the "secret" is out.

PUTTING GREENS

The "secret" of putting greens that came through August and September with flying colors is **drainage**. Drainage is not a simple

thing but consists of at least three distinct phases.

1. Surface drainage. Excess surface water must be removed rapidly in at least two directions. Scald develops where all the surface water from a 6,000 square foot green is taken to one outlet—usually the approach. Water moves slowly through a dense turf increasing the necessity of making it travel the shortest distance to get off the green.

2. Internal drainage. This is by far the most important phase of the drainage problem. Where nature, or inexperienced or careless help, consistently keep the turf overwatered and the soil saturated, it is highly important to carry the excess soil water downward and away from the roots of the grass. To accomplish internal drainage there must be (1) tile under the green to carry the water away or (2) a porous bed of sand or gravel to serve the same purpose. In heavy clay soils tile is absolutely necessary. Where the subsoil is sand or gravel, tile is not necessary. As soil water is carried downward, air moves into the soil to fill the pore spaces. It is the air that gives grass roots a new lease on life.

3. Air drainage. Most greenkeepers are conscious of the need for air drainage. A putting green set into a "hotspot" or "pocket" three-quarters surrounded by trees and brush usually does a fade-out in



Diagonal view of Quonset building at Maple Lane GC, Detroit, which provides Clarence Wolfram, grnknpr., with spacious work shed and ample storage facilities.

August. The axe and chain saw work wonders in reviving the green by allowing nature to sweep away the stagnant air which breeds disease.

On this subject of **Drainage** we invite the attention of the architects and the construction engineers to the wholesale slaughter of good turf on otherwise artistically-designed courses, under capable maintenance, which could have been avoided by proper construction. Even the best greenkeeper can not do the impossible when the skies open up and loose torrents of water onto soil that already is saturated. The "secret" of a perfect putting green is not surface drainage; it is not artistic contours; it is not the strain of grass; nor fertilization practices, nor mowing procedure; it is a combination of all of these things, superimposed upon a soil with **perfect internal drainage**. It has taken years to develop the conditions which finally add up to partial or total loss of turf in a bad season. Sadly enough, golf courses are being built today on impervious clay soils with **no internal drainage** being planned or built into the greens. It will be only a question of time until these greens go bad and the management will say, "What's wrong with the greenkeeper?"

The only known method of achieving perfect internal drainage in a green is to use enough sand in the top-mix so that the water will go **through** the soil into the tile or gravel in the base of the green. Hundreds of golf courses are **rebuilding** their greens because they were poorly constructed without adequate drainage and because it has been impossible to maintain satisfactory turf. This is costly procedure as club management has learned. Our best advice to architects and construction engineers is to either be a greenkeeper for 10 years on a poorly built course or to maintain on their staff competent greenkeepers who know the true relationship between construction and maintenance.

Golf courses today have access to a number of superior putting green grasses. If a green is poor because of the grass, the sod should be replaced. Turf nurseries are again in style on many courses for this express purpose. Emphasis is on **natural** disease resistance and **natural** resistance to weed invasion.

Too many greens are poor from the playing standpoint (the only one we can consider) because the grass is not cut closely enough. The best height of cut is 3/16" to 1/4". Higher cut tends to form a "mat" which encourages disease and "scald" and which interferes with the "trueness" of the putting surface.

Too many greens are watered in the evening which keeps the grass wet all night

and encourages disease. The best plan is to water in early morning and use the **least water possible** and still grow good grass. A "dry" green, built with good soil, with a dense turf, will hold a properly-hit shot as well as a soggy green. Less footprinting will result and less topdressing will be needed.

An unsolved problem on greens is the oriental earthworm or stinkworm.

Another unsolved problem is how to keep Bermuda grass out of bent putting greens. This will be of increasing importance as more winter-hardy strains of Bermuda grass push the frontier northward.

Reduction in amounts and frequency of topdressing on greens generally is being practiced. During the war when most clubs could not topdress they found that they could produce good putting greens without topdressing—if the drainage was good!

Top spot for fungicides goes to **cadmium** preparations for dollarspot control. (They have not been satisfactory for brownpatch.) Carbide & Carbon's 531 and Gallowhur's Puratized 177 apparently share the honors. New ones are being tested. Du Pont's Tersan is favored for brownpatch control because it does so much less damage to bent turf than the inorganic mercury compounds.

Good (3 way) drainage, a good strain of grass, morning watering, minimum water, and adequate balanced feeding—all combined—have been outstanding in disease control.

Chlordane controls **all** ants according to independent reports from Rhode Island and Connecticut.

COLLARS AND APPROACHES

On many courses the poorest turf is immediately adjacent to the putting green where it should be the best. A well-hit ball landing 12 inches outside the putting surface (pin-high) may be 50 yards beyond the green. Had it been 12 inches closer to the pin the player would have a possible putt for a par. The answer to this is not simple. Much more study must be given this important area. Approaches should have turf so good that a player, if he so elects, could approach with a putter. Too often the approach is a mass of clover, goosegrass, knotweeds or just bare ground. The soil usually is dense and compact as a result of the repeated turning of fairway equipment in that small area. The soil usually is wetter than the fairway because it is watered when the green is watered and this extra watering tends to increase compaction and drown the grass. The answer may lie in the selection of grass species which can thrive under these conditions or it may be that periodic cultivation

of the soil will remedy the situation. More likely, it will be a combination of the two.

The most encouraging trend in fairway management is the growing practice of cutting the grass to suit the game of the majority of the golfers rather than to suit the requirements of any particular grass.

TEES

A grass that will grow on the clay tees of a public golf course represents close to the ultimate in hardiness. It should repair itself, resist weed invasion, and hold a green color with little or no irrigation. The perennial grass that comes closest to this goal is Bermuda grass. Goose grass (*Eleusine indica*), also called silver crab, or crowfoot, thrives on compact clay soils yet, on tees in Washington, D. C., where Bermuda grass has been introduced, the goosegrass is crowded out, the turf is weedfree, it withstands close (1/2") cutting, divots heal rapidly, and it stays green without irrigation. The Zoysia grasses fulfill all requirements except that of rapid healing of divots. The Green Section believes that a northward extension of Bermuda grass for use on tees is long overdue and is willing to risk the wrath of those who are prejudiced against it. We know of no other grass that has the inherent capacity to take abuse under nearly impossible conditions. Rigid selection of fine-leaved, winter-hardy strains will be necessary.

FAIRWAYS

Crabgrass is still the No. 1 pest on fairways over a large part of the United States. This is true because we have failed in one way or another to cope with nature and to grow a turf which is stronger than crabgrass at the same time that crabgrass is at its peak. Bluegrass, fescue and bent grass grow naturally in the cool months of the year but, except under unusually good management, these turf grasses are unable to hold crabgrass in check during a season like 1947. Crabgrass even invades Bermuda turf except where the Bermuda is fertilized adequately.

Washington, D. C. is one of the recognized "hot spots" for crabgrass. Lawns and fairways a week after a hard frost bear mute testimony to this fact. It must be placed on record, however, that virtually the only crabgrass-free (and clover-free) turf on close-cut fairways in the open sun in the Washington and Baltimore district are those areas where Bermuda grass has become established. Zoysia grasses enjoy the same freedom from crabgrass and clover. The virtue of these grasses is that they stay green during the growing season without irrigation and they can be cut closely without injury.

The "secret" of crabgrass control is to

keep the soil shaded with turf so dense that the seedlings of crabgrass are smothered and shaded to death before they can get started. To accomplish this on fairways that are mowed closely enough to make it FUN to play golf is little less than an art. On a few courses one sees bluegrass and bentgrass mixtures which are crabgrass-free. They are the exceptions.

Clover in fairway turf is an expression of lack of aggressiveness of the turf grass being grown. Since the brilliant work of Robinson and Sprague of State College, Pennsylvania has been published, let no greenkeeper or green chairman who depends upon straight bluegrass turf under irrigation, labor under the delusion that clover can be kept out by nitrogen fertilization at a fairway height of cut. The heaviest clover in irrigated bluegrass turf was produced at the highest rates of nitrogen fertilization.

Another encouraging trend is for more judicious use of irrigation systems on fairways. There is a growing tendency to divert the cost of excess irrigation of turf into more fertilizer.

ROUGHS

Many roughs are maintained so as to produce the greatest possible quantities of weed seeds to infest the fairways. Any weed control program should start in the roughs! Few roughs are seeded to those grasses which are able naturally to control weeds. For low-cost maintenance in the dim future when this item may be extremely important, this factor should be considered seriously. One of the worst "weeds" of the south is Dallis grass. Another is "sand spurs." In the north it is crabgrass. (Note—broad-leaved weeds are no longer considered a problem since 2,4-D has come into general use.)

An outstanding, naturally weed-free area of rough on a golf course is at Philadelphia Country Club, Spring Mill Course. It is a *Zoysia japonica*—bluegrass combination. A 10' x 10' plot was seeded in 1930 to common Japanese lawngrass in the old Green Section Demonstration Garden bordering No. 6 fairway. In 17 years it has spread 75 feet crowding out every weed in its path. Bluegrass has remained and, each fall when the Zoysia turns brown, the bluegrass, not in evidence through the summer, comes through to give the area a green winter color. The height of cut on this area may be varied to suit any class of golfers and yet remain weed-free. Sadly, no seed is available and plantings must be vegetative at present.

Another grass which offers great possibilities for naturally weed-free roughs, which is capable of thriving over a wide range of climate and soils, which may be

(Continued on page 79)



Greenkeepers in attendance at Connecticut Turf Meeting held at Country Club at Waterbury.

TURF ROUNDUP

(Continued from page 56)

cut at various heights to meet golfing requirements, and which is available as seed at a low price, is tall fescue (Alta fescue or Kentucky 31 fescue). Alta fescue currently is available on the open market at half the cost of Kentucky 31, production of which is still limited. Performance of the two types virtually is identical. At the Beltsville Turf Gardens four-year-old Alta fescue turf, mowed 3 to 4 inches in height, has remained weed- and clover-free. Seeded in May into heavy crabgrass infested soil and kept at rough height, Alta fescue has survived the summer in the worst crabgrass year in a long time.

EQUIPMENT

Among the new developments in turf maintenance equipment there isn't much doubt but that the orchids go to the Mascaro boys at West Point Lawn Products, West Point, Pennsylvania, for their Aeri-fier which (1) is simple and sturdy in construction, (2) requires only common sense to operate, (3) is reasonable in cost, (4) has many uses, and (5) is available. The reason for the orchids is that, for the first time in turf history, it is possible to cultivate the soil under a cover of turf without destroying the turf. The need for cultivating and loosening compacted soils has long been recognized.*

Chet Mendenhall at Mission Hills, Kansas City, Missouri, was among the first to use the machine on 18 Seaside bent putting greens using the 1-inch spoons.

Jimmie Hamner, Memphis Country Club, Tennessee was one of the first to aerify

18 fairways ahead of the lime and fertilizer program and to use it on his Bermuda greens while they are in play.

Joe Valentine at Merion Golf Club, Philadelphia, was the first to report excellent results for cultivating tees.

Alex Strachan at Old York Road uses it to sprig Arlington (C-1) bent into his fairways.

At the Beltsville Turf Gardens it is used to sprig U-3 Bermuda grass and to reseed turf areas to other species. Even the casual observer can see how moisture penetrates the soil after its use, resulting in slower runoff and greater moisture conservation.

GRASSES

Bentgrasses—Arlington (C-1) bent is nominated for the best "all-round" creeping strain, producing superior results over varied climatic regions, in successful use on tees, greens, fairways and lawns, highly disease-resistant and capable of rapid recovery from attacks of disease, exceptionally drought and heat-tolerant and non mat-forming. Other strains may produce putting turf under high cut (over 1/4") but, to our knowledge, Arlington has produced better turf at lower cost over a wider range of conditions than any other bent tested with it.

At the Rhode Island Station the untreated half of the Arlington plot is indistinguishable from the half treated regularly for disease since 1940. The untreated half of the Washington plot is virtually ruined.

In North Carolina *Poa annua* invaded Arlington more slowly than any other bent tested.

In St. Louis it resists heat and grows in heavy clay soils better than any other bent.

***NOTE:** The Green Section recognizes the risk of censure in "plugging" any piece of equipment. To fail to recognize an outstanding achievement would render us equally open to criticism because our policies are founded on the goal of "Better Turf." We take this risk because we sincerely believe, not in the machine as such, but in the principle which it embodies. To our knowledge there has been no other similar machine built or offered which has equal uses and possibilities. The Green Section will recognize each year in this "Roundup" the outstanding achievements in turf maintenance as their value is demonstrated.

In Tulsa, Oklahoma, mowed at fairway height, it survived a long summer drought without irrigation.

In Minneapolis it has performed consistently well in fairways and at putting green height.

Seed has been produced from the pure strain and has been sent to 10 different cooperating stations in the United States for testing and for further possible selections. It appears to set seed well.

On the basis of its performance, Arlington bent may well be used as the standard of comparison for newer and more promising strains of creeping bent. Arlington is in wide commercial production.

Seeded bentgrasses—The trend today, particularly in fairway seedings where the use of bentgrasses is increasing, is to make a blend of the available bentgrasses produced from seed. Lacking specific data on adaptation, the maximum of "Safety in numbers" is a good one to follow. Seaside may predominate in regions free from snowmold. The Colonial types tend to be more drought-tolerant.

A vigorous, widespread, cooperative attack on the problem of producing superior bentgrass turf from seed is in progress.

Bluegrasses—We nominate B-27, recently named Merion, for top honors in the Kentucky bluegrass field. Seed production will not reach commercial volume for several years and then probably will always command a premium price until replaced by a superior strain. We mention it here because it offers greater hope to lovers of Kentucky bluegrass turf. Merion is rich in color, low-growing and is highly resistant to leafspot.

At Beltsville it has been more free of crabgrass than any other strains or source of bluegrass.

At Rhode Island it has resisted the natural invasion of bentgrasses more than bluegrass from any other source.

Through **TIMELY TURF TOPICS** the Green Section will announce the availability of samples of Merion bluegrass seed to USGA member clubs and to Green Section subscribers for practical testing.

Red Fescues—Testing programs in progress at cooperating experiment stations are not sufficiently mature to warrant statements on "top honors" in this group. Named strains are available but their comparative values are still in doubt.

Tall Fescues—Alta and Kentucky 31 are the best known grasses in this group but their comparative value for turf is not yet known. Finer-bladed strains of tall fescues are known but as yet have no practical significance. Many golf courses have seeded Alta fescue under varied conditions but

reports on progress are lacking. Alta has found wide use on airfields, roadsides, and athletic fields. It has promise for park turf where fine texture and close cutting are neither necessary nor desirable. The tall fescues give us drought tolerance, toughness, and ability to survive under extremely unfavorable conditions and over a wide range of climates and soils.

Zoysias—A full scale breeding and testing program, begun in 1946 by the Green Section and the Division of Forage Crops (USDA), is still too new to have produced measurable results. Promising progress is that selected strains of **Zoysia japonica** set seed well at Beltsville and the seed can be treated to produce good germination in the field. The first turf plots from seed of these selected strains were established in June 1947. Three-months-old turf was solid in September with no crabgrass or other weeds being removed.

The most promising selected strain of **Zoysia japonica** which sets no seed at Beltsville is that designated as Z-9. Among the purely vegetative strains, this one receives top honors at this date. Leaf width is intermediate between **Zoysia matrella** and common **Zoysia japonica**. It has a yellowish cast, thin "white" stolons, spreads relatively rapidly, and is apparently winter hardy at State College, Pennsylvania. It was first selected by Mr. S. B. Detwiler and was given to the USGA Green Section in 1939. It can be mowed at any desired height without injury and produces a dense, firm, weed-free turf.

Poa Annua—This grass is included in the "roundup" because it has proved to be a blessing in disguise where the North meets the South and vice versa. Bermuda and Zoysia tees, closely mowed for better golf, are invaded naturally in the fall by **Poa annua** when these summer-growing grasses lose their color and go dormant, with cold weather. The density and vigor of **Poa annua** (when it is good) are admired openly by many (secretly by others) for its turf value. When it "melts" in summer leaving behind a "desert" condition everyone reviles it—everyone, that is, except those who have a strong summer-growing grass like Bermuda or Zoysia under it. Perhaps this opens a new chapter in turf maintenance.

Bermuda Grass—Alternately loved for its virtues and damned for its persistence, and aggressiveness this grass has won a high place in the turf picture. For fine texture, deep rich color, freedom from disease, and extreme winter-hardiness, we nominate the Green Section-selected and developed U-3 strain of Bermuda grass, not named as yet, for top honors in the northern-most regions where Bermuda grass can be grown. Its northern limit has

not been determined. It has spread continuously in bluegrass bent turf since 1940 at State College, Pennsylvania. In this combination it has not been conspicuous even in the dormant season. No sweeping claims are made for this strain because wider testing is required. Samples are offered to anyone for trial.

The testing program at Tifton, Georgia of the fine-bladed strains of Bermuda for southern putting greens is still too new to be able to rate the several promising strains on a comparative basis.

Centipede Grass—Reproduced vegetatively only heretofore the future of this excellent southern turf grass appears brighter because it can be encouraged to produce good viable seed. Seed production is not yet on a commercial scale because research on seed production by Dr. G. W. Burton at Tifton, Georgia was begun only two years ago. Adapted as far north as southern Virginia, this grass offers hope for fairways and lawns which chiefly for financial reasons, do not receive sufficient plant food to grow good Bermuda turf. It produces a dense, firm, weed-free turf and stands drought and close cutting well.

CLUB MANAGEMENT

The most encouraging trend in club management is that growing tendency to retain able green chairmen in office for relatively long periods. The practice of changing the green chairman every year fortunately is on the decline. The value of a good greenkeeping superintendent is being recognized more fully and the trend is to place full responsibility for course upkeep on that office.

There is also a significant trend toward more golf matches between the greenkeeper, the professional, the green chairman and a member. More clubs are recognizing that, if the greenkeeper is to see the course as the members see it, (and maintain it as they like it) he must be encouraged to play more golf as part of his official duties.

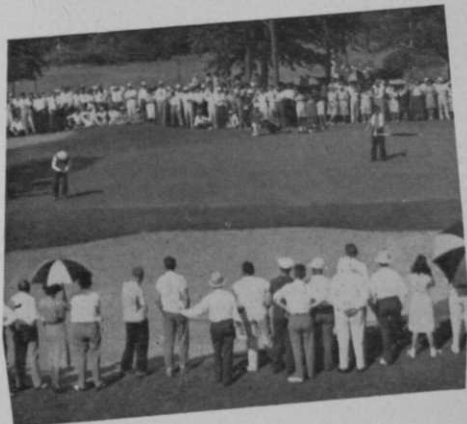
PERSONNEL

O. J. Noer is nominated as the "Turf Man of the Year" for his unselfish devotion to the cause of "Better Turf," for his willingness to cover the trouble spots at a moments' notice, and for his wide and accurate knowledge of the field and for the dissemination of that knowledge (with pictures) through Golfdom and The Greenkeepers Reporter and various meetings all over the United States. Mrs. Noer receives Honorable Mention.

COOPERATION

A highly significant trend is the growing desire of various turf interests to cooperate in matters of mutual interest. One matter

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of mutual interest to all turf interests is the training of more young men so that the extension or service phase of turf may be expanded. In the absence of interest on the part of State Extension Services to recognize the value of Turf in their work of service, commercial interests are hiring qualified men with whom turf management comes first and salesmanship second.

Another mutual interest is that of convincing state experiment stations and state legislatures that turf management is a legitimate and important part of the GRASS program and that any Grass program (research, teaching or extension) which omits turf is not complete.

Highest praises go to the state experiment stations and their personnel who are cooperating in the national turf program. Orchids go to the many golf associations and other turf groups who have contributed over \$11,000 in two years to the Green Section's decentralized research program. The trend in contributions is still upward.

SUMMARY OF TRENDS

Mixtures of grasses rather than pure stands.

Fewer and lighter topdressings.

Better drainage.

Unsatisfactory greens being rebuilt.

Less watering.

More crabgrass and clover resistant grasses.

Closer mowing on greens and tees.

Management of turf to make golf more FUN.

Morning watering of greens.

More cultivation of compact soils.

Weed-free roughs, naturally and with chemicals.

Better grasses on the way.

Fewer "new" green chairmen.

More golfing greenkeepers.

Fewer ants with chlordane.