TURF ROUND-UP

By O. J. NOER

Second worst year for golf turf taught brutal lessons in water management, shortage of able labor, iron chlorosis prevention.

(First of a two part review of this year's maintenance.)

THE summer of 1955 will go down in history as one of the two worst for golf turf in the region east of the Rockies and north of the Ohio and Missouri Rivers. Only 1928 compares with it. Both summers were terrifically hot and humid. Downpouring rains were general in 1928 and were bad this year in some places. In referring to 1928, one superintendent remarked "We did everything wrong in 1928." This statement explains why loss of grass was more extensive that year than in 1955. At some courses there was not a single blade of grass left on any one of the greens in 1928.

All records for sustained heat were broken in 1955. In Milwaukee there were 33 days when the thermometer registered above 90 degrees and many more close to that temperature. The same thing prevailed elsewhere. The heat alone would not have been bad had there been no rain and no humidity. Most people think all turf woes are caused by drought. The superintendent prefers that kind of weather, provided he has a good irrigation system and an adequate supply of water. He fears hot, wet, humid weather.

Some of the finest greens seen last year were at Yuma, Ariz. The turf was Seaside bent. There was no serious disease problem despite daytime temperatures exceeding 100 degrees day after day. It never rained and humidity was low. Greens were watered each night and showered lightly every afternoon.

There was less trouble in Kansas City in 1954 despite higher temperatures than in 1955. The season was dry and humidity was low. Every superintendent was plagued with trouble and problems this season due to high humidity and flash rains. They brought every known kind of disease.

Troubles this year started with the long July 4th week-end. Greens got enough water to carry them over until Tuesday. They were a bit on the wet side. Then came drenching rain in some places to make the soil overly wet. Warm windy weather followed. Heavy play on wet greens was bad for the turf and when wilting started in early afternoon nobody was available to shower the greens.

Labor Problem Gets Worse

There is an acute labor problem on many courses. The situation is becoming worse from year to year. Too many clubs rely upon temporary, inexperienced help. The purpose is to reduce the over-all cost of labor.

The superintendent recruits a new labor force every year. He shuns the floater Rescue Mission type of workmen in favor of vacationing college students. They are very satisfactory for some tasks but require constant supervision. Their big interest is in the pay check rather than acquiring a "know how" for the job. This leaves nobody but the superintendent to check for wilt, for disease, for insect damage, etc.

In bad weather it is a seven-day week because a half hour delay may spell the difference between keeping and losing grass on greens.

The time has come for club officials to recognize the need for a nucleus force of workmen with year around employment and future security assured. These men can be trained to do the operations of watering, fertilization, disease, and insect control. They can be taught to recognize wilt and how to stop it.

Some workmen must be on hand during the daytime in bad weather on Saturday and Sunday as well as week days, even though it means pay at overtime rates. Unless clubs do these things and make provision for retirement pay and the like, there will be no young men available to replace retiring superintendents.

Wilt Loss Terrific

Loss of grass from wilt was terrific during July and August. This remark by Farnham hits the nail on the head: "Until this year I thought Noer overemphasized the necessity for showering greens during daytime. It was the only way we stopped seri-

ous loss of grass and it had to be done on Saturdays and Sundays."

In desperation some superintendents did the work themselves on week-ends because there was nobody else at hand. By the time they rounded up a crew it would have been too late to save the wilting grass.

There were two distinct types of wilt. The customary dry wilt was common everywhere. Besides that there was a wet wilt. It occurred on water-saturated greens with the cups full of water. There were no roots of consequence. Surfaces dried quickly. Grass could not use the water below because there were no roots.

Unless the grass received a little water, just enough to stop wilt and no more, grass succumbed and the brown area was referred to as scald.

Golfers could not understand the reason for showering a wet green. They thought the use of water in midday would kill grass.

Another reason for wet wilt is the fact that roots do not absorb water or nutrients from a waterlogged soil which does not contain free or dissolved oxygen.

Hoagland demonstrated that fact years ago. He grew tomatoes in water culture. The leaves wilted and died in some of the jars even though roots were plentiful and surrounded completely by water. No wilting occurred in the jars where a minute amount of air was introduced into the water culture solution through the bottom of the jar.

The startling effect produced by any one of the aerifying tools when used on a waterlogged green results from the introduction of oxygen as much as anything else.

Soil Burning Hot

During the extreme heat parts of the greens were so hot one could not keep the palm of the hand on the spot. The temperature there was 20 to 40 degrees above that on nearby spots of higher moisture content. Heat developed rapidly on these spots because of the low soil moisture content.

Less heat is required to raise the temperature of soil than of water. Unless a little water was used promptly the grass wilted and died in a matter of minutes rather than hours. A light showering cooled the spots.

Water is a poor conductor of heat and soil temperatures are lowered as it evaporates. A thermometer inserted at the surface registered in the 135 to 140 degree Fahrenheit range. It dropped to 100 degrees or less after the green was showered with water.

Instead of showering the green some workmen overwater even when watering by hand. They apply water uniformly over the green instead of directing it to the high spots and letting surface run-off wet the low areas. With good pressure and the right size hose a man can shower a green in not over 5 to 10 minutes. All that is needed is just enough water to stop the wilt. More than that will aggravate pythium, brown-patch, and every other type of disease.

In ordinary weather one showering in early afternoon may suffice. In extreme weather applying more water then will not prevent wilt again later in the afternoon. The better way is to shower lightly twice rather than overwater once. A rose nozzle should be used because the smaller droplets absorb more oxygen from the air.

Sprinklers are of little use when roots are sparse and confined to the top inch or less. Some superintendents abandoned sprinklers altogether when they lost roots as a result of heavy downpouring rains. They changed to early morning watering and applied enough to restore evaporated and transpired water.

Morning watering destroys the droplets of dew and gutated water on the blades of grass. This helps dry the turf and lessens disease. Somebody should check greens for wilt later in the morning, right after lunch, and toward the end of the afternoon if necessary. The entire crew of 12 men were showering the greens toward the end of the afternoon one bad day on a course in Missouri. No grass had been lost despite bad weather because the superintendent had learned the hard way years before.

Overwetness and Thatch Ruinous

Overwetness and thatch, especially buried layers, have cost grass on many greens during hot, wet spells. The buried leaves and stems are highly combustible and undergo decay readily.

Some of the byproducts of decomposition under waterlogged conditions may be toxic. The marked improvement from a light application of hydrated lime following a drenching summer rain tends to support this supposition. The initial compounds of decomposition are soluble and are acid in character. Their calcium salts are insoluble so hydrate transforms them from soluble toxic compounds into insoluble substances which the plant does not absorb.

Heat is associated with anaerobic decomposition. The heat generated in a pile of clippings is evidence of that fact. Temperature rises quickly and the pile becomes uncomfortably hot. The same thing happens to the buried clippings in a green when the soil is waterlogged. The problem of thatch and its control will be touched upon later.

The experience of a Kentucky club sup-

IT'S DONE THE BIG WAY IN TEXAS

Looking up the 18th fairway at the Dallas Athletic Club's Country Club course you can see the space that golf architect Ralph Plummer used wisely in providing a night-lighted practice putting green and a practice fairway and lesson tees, in front of the clubhouse.

Inconvenient location of practice fairways and practice green is a handicap to many older clubs but modern architecture is making these valuable features handy for members' use, day and night.

ports the above theory, but it must be considered as a theory until subjected to a carefully controlled test. In July some of the worst spots on the greens were patched with sod from the bent nursery. Grass on the new sod collapsed quickly after the first rain. When a plug of soil was removed later the foul stench was unbearable. There was a peculiar black charcoal-like layer below the surface. Grass on the nursery was an over-all brown color. The imbedded layer was there also. One could distinguish the buried grass stems and leaves. Topdressing never made contact with the soil.

Bad Year in Algae

Algae was worse than in any recent year. This green, scum-like growth appeared in the wet spots of greens where the grass became thin. Algae are present in every soil. They are green plants and are held in check under the shaded cover of a dense turf. The grass deprives these minute plants of needed light. When anything happens to the grass and the soil stays wet algae go to town.

Some blame stagnant water from lakes and ponds. They see the algae in the water. The use of such water may aggravate but will not induce algae, because those already in the soil will multiply rapidly if given the chance.

The black, skin-like cover which forms as the algae die retards recovery of the grass. Its formation can be prevented by dusting the surface with a little hydrated lime. The rate need not and should not exceed 2 to 3 lbs. per 1,000 sq. ft. More than that might scorch the grass.

In aggravated cases Bordeaux mixture can be used at up to 2 oz. per 1,000 sq. ft. An occasional application of Bordeaux is all right, but repeated use should be avoided because of its copper content.

Iron Chlorosis Troubles

Iron chlorosis has been very bad on many greens. It is associated with overwetness, high organic matter content, alkalinity, and high phosphorus content of the soil, singly or in combination. In aggravated cases grass is chrome yellow in color. Occasionally it is a slightly yellowish color and may be mistaken for a nitrogen deficiency.

Sometimes leaf spot was blamed for loss of grass when iron chlorosis was the real culprit. Leaf spot got the blame because of its obviousness. Only too often iron chlorosis paved the way for an attack of leaf spot by weakening the grass. It could not resist that disease or anything else.

Chlorosis can be stopped quickly and effectively by using a little ferrous sulfate, or one of the chelated forms of iron. The supposed lasting effect of the chelates has not been marked on bent greens. For that reason most superintendents have returned to the use of ferrous sulfate because it is much cheaper.

Ferrous sulfate (Copperas) must be sprayed on the leaf and left there for direct absorption into the plant. If washed into the soil the iron will be transformed into forms which the grass roots cannot absorb. The secret is to deposit a minute amount on the leaf with a minimum of water. Rates over 2 oz. per 1,000 sq. ft. may scorch the grass with the small amount of water which should not exceed 20 to 30 gals. for an average-sized green. The deeper green color produced by the iron will become apparent in a matter of hours.

The effect of iron was very apparent in Cleveland where one-half of a green was

being treated with an experimental fungicide. That half was so much better after several heavy rains that the presence of iron in the material was suspected. The sample being used contained more than 10 per cent iron in the chelated form.

Water Management Emphasized

By the way of summary, the past summer emphasized the important role of water in golf turf management. Too little is bad, but too much is vastly worse. Overwet soil, whether it be from the sky or from the sprinkler, invites troubles of all kinds. It brings pythium, brownpatch, iron chlorosis, scald, algae, leaf spot — just to mention a few.

A knowledge of the factors underlying sensible water usage is the first thing for anyone charged with the care of golf turf to master, and impart to his workmen.

Poa Annua Persistent Problem

Poa annua got off to a good start in the spring but took a terrific beating in the hot months of July and August. There was loss of it in the greens, but many of the bad and bare unsightly aprons were that way because poa annua disappeared. The same was true of approaches to the greens. The bruising effect of the power driven drum on the power green mower hastened loss of the wilting poa annua. The tractor and gang mowers did the same thing on the approaches.

Resodding of aprons from a nursery is believed by some to be a better way to eliminate poa annua on aprons than spiking and seeding. The minute weather becomes cool, poa annua comes back so fast from seed that it chokes out seedlings of other grasses. Resodding can be done quickly and cheaply with a modern power sod cutter.

The kind of grass to use is still a matter of debate. Merion bluegrass has been tried with indifferent success. It can be cut close, but does not thrive when subjected to the amount of water needed for bent greens. Common Kentucky bluegrass will not survive the close cutting demanded on aprons.

The bent grasses would seem like a better bet. In cases where bluegrass from the rough or from waste areas is used it should be spiked and overseeded with Highland, Astoria, or a mixture of these bent grasses immediately, so bent will take over before poa annua. Once a good cover of turf is obtained, aprons should be fertilized with the greens and should be treated for disease control also.

Poa annua behaved well on tees where the hot spell was not prolonged. The secret of keeping it is to use fertilizer every two to three weeks and to keep the soil moist but not wet. Poa annua likes nitrogen and water.

Grasses for tees elsewhere continue to be a controversial topic. Merion blue grass is in disfavor with some where play is heavy. Recovery is not sufficiently rapid to prevent poa annua invasion. Deterioration has been gradual over a period of several years.

In the latitude of Milwaukee and Chicago there are many good creeping bent tees, mostly vegetative, planted ones with Washington, Toronto, and the like, but a few of Seaside also. They are cut close with putting green mowers mostly.

In the Philadelphia-Kansas City belt there are many fine tees of U-3 Bermuda grass, despite the fact that U-3 winterkilled in many instances. The fact that the grass survived in many instances and did not in others would indicate that we have not learned everything connected with the maintenance of this fine grass. Those who admire it in Philadelphia, St. Louis, and Kansas City ought not try to advocate its use much farther north at the moment.

Even in the Philadelphia to Kansas City belt, U-3 Bermuda grass tees should not be used in the wintertime. Some use U-3 on the back two-thirds of the tee and put the markers on the front third in winter. Others provide alternate tees for wintertime play. The bad effect of winter play may not show the first or even the second year. The weakening effect is a gradual one.

Low temperature is not the sole reason for winterkill. Windburn or desiccation is another bad thing for Bermuda. It happens farther south in open winters.

The injury resembles windburn on bent grass greens. Loss from this type of injury can be prevented by springtime watering even though the Bermuda is still dormant, and by giving the turf a good soaking in late fall. One club in Kansas City did not lose any of the U-3 Bermuda on its tees while the loss on other courses was complete. The U-3 that came through was watered several times in early spring, which happened to be very dry.

The turf on U-3 Bermuda grass tees is kept tight by close cutting. Some use power greens mowers, other a Park Special type with a catcher. None of the triplex type mowers seem to do the right kind of cutting on this tough-to-cut grass.

(To be concluded in January, 1956 issue)

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