



HOLMES CORNER

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I spent the first two weeks in July making visits in southern Indiana and Kentucky. The problems these men have maintaining adequate turf and playing conditions are manifold. I have repeatedly heard, and it is true, that in this transition area there simply is not a grass suitable, especially for use on fairways. As well, it is extremely difficult to maintain what would be considered top putting conditions during July and August every year. The question asked most frequently is, "just what can we do in order to develop suitable fairways?" To the best of my knowledge and observation, there simply is no answer to this dilemma.

Up until about 5 years ago, the thought was that Bermudagrass, primarily U-3, was the solution; that is, if the club had sufficient funds to establish this turf. During the past 5 or 6 years, the malady referred to as spring dead spot, as well as winter-kill itself, has greatly reduced Bermudagrass stands in this transition area. A few have made sincere and expensive attempts to establish and maintain bentgrass. To date, results have not been particularly encouraging, even though some superintendents think they can do it.

Gordon Duguid, golf course superintendent at Big Springs Country Club in Louisville, inherited eighteen U-3 Bermudagrass fairways. He was aware that gradual to extensive winter-kill was expected. As a precaution, Gordon developed a large Meyer Zoysia nursery. Sure enough, the expected winter-kill was real and for the past 3 or 4 years, Gordon has been plugging, stripping and sodding-in Bermuda dead spots with sod from the Zoysia nursery. If this operation continues as planned, Big Springs Country Club will have Meyer Zoysia fairways for all intents and purposes within the next ten years. To date, no specific winter-kill problems have developed on Meyer Zoysia. The development of a thick mat and thatch continues to be a problem. But, machines are becoming available which can cope with this mat situation. Regardless,

we must be patient a little longer to determine if diseases will "catch up" with Zoysia as they have with Bermuda.

Another method initiated by a few men in Kentucky is to overseed fairways heavily with common Bermudagrass in spring. A number of different types of Bermuda develop from overseeding, and a few of these at present seem to be quite winter-hardy and may gradually present a usable turf. Nonetheless, we have pretty well come to the conclusion that even if a certain Bermudagrass is selected, diseases will gradually catch up, or problems will develop.

While there, I got into a discussion with a few of the boys regarding pros and cons of removing "dew" from putting greens, or any turf for that matter. Upon returning to the office, I checked into this a little more closely and the following was submitted to Tom Sams, superintendent at Audubon Country Club, and editor of KENTUCKIANA KLIPPINGS, for use in their publication. I thought perhaps it might be of interest to readers of the BULLSHEET.

There seem to be three good reasons why benefits are obtained if "dew" is removed from grass in early morning, and no reason except labor why it shouldn't be done.

- 1) Golf course superintendents report that a better job of mowing can be done if moisture is removed.
- 2) On days when greens are not to be mowed, the early morning golfer benefits from a better putting surface and drier feet.
- 3) But without doubt, the most important reason and the one least understood, is that of guttated water. I have been familiar with this for a number of years, but in order to freshen my memory and to pick up anything new, I placed a long distance telephone call to my professor and advisor at the University of Rhode Island, Dr. Frank L. Howard, Head, Department of Plant Pathology and Entomology. As a result of our discussion, the following seems to be the crux of the situation.

It has been proven that plant juices are extruded from cut ends of leaf blades through hydathodes or more specifically from ruptured veins. This extruded material contains glutamine as well as numerous salts in solution. Actually, these materials can give a salt burn later in the day when water of solution has evaporated. However, Dr. Howard said this is not of particular significance.

But, a number of fungi find subsistence in extruded (guttated) water when such subsistence is found, filaments or hyphae of the fungus can enter leaf tissues, probably through vein endings. It would be difficult to conceive of a better prepared or more appropriate site of infection for parasitic fungi.

Most of the water or moisture present on putting green grass, or any rapidly growing plant for that matter, is not a result of dew formation, but rather develops as discussed above from extruded water and solutes. Specifically when dew forms, a relatively thin film of water covers entire surfaces such as a plank, a rock or for that matter the flat surface of growing plants, and droplets are not formed. Any droplets noticeable or which have formed in effect must result from guttated moisture

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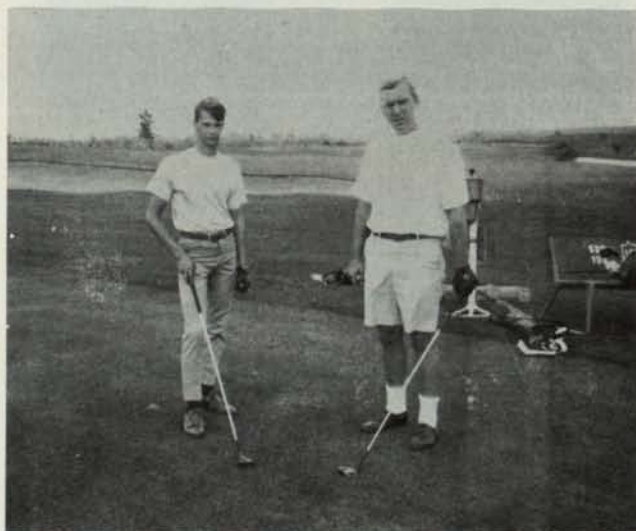
which contains nutrition for fungi. It would seem as a result of numerous observations that the vast majority of surface moisture on putting greens results from this guttated water phenomenon and not dew formation. Most moisture is extruded during cool nights following hot days.

Even though a number of fungi can subsist and get started in guttated water, Dr. Howard said the most active or damaging fungus in this regard is the one which causes dollar spot or *Sclerotinia homoeocarpa*. This is quite interesting as at the time of my visit in Kentucky, dollar spot was definitely a problem and had been for some time.

There seems to be little or no doubt whatever that removal of guttated water whenever it forms, but specifically in early morning hours, gives a significant assist in retarding disease conditions and especially the disease condition brought about by dollar spot fungus. This might be of interest to Gordon Leishman, pro-superintendent at Idle Hour in Lexington, and also the superintendent at Louisville Country Club, as these two men are attempting to grow bentgrass fairways. This grass is especially susceptible to dollar spot. The removal of guttated water from fairway areas, especially when dollar spot is a visible and known problem, is likely to be of highly significant importance to them. In early morning hours when dew, dew drops or guttated water are visibly apparent on bentgrass

fairway turf (or greens for that matter), inspect cut end tips closely and you will note that hyphae of dollar spot fungus is bridging from one guttated water drop to the next.

Even though I referred to removal of dew or guttated water by poling, there are a number of methods which can be followed. All such methods seem to be successful. As well as poling, many golf course superintendents remove dew when greens are mowed in the morning with the mower itself. Others use such things as hoses, dragging them over greens, or watering greens lightly. For removal of morning moisture from fairway turf, a hose drag between tractors seems to be the most accepted method and one of greatest celerity. As far as that's concerned, any method for removing guttated water from grass would be o.k.



Left to right — Mike Redmond, Art Hall

WHY INSIST THE ENGINEERS SEAL PLANS

The Illinois Professional Engineering Act requires all plans, drawings and specifications prepared by a Professional Engineer, or prepared under his supervision, to bear his seal which shows his name and registration number.

The following are some of the reasons for the above requirement:

An engineer's seal on plans —

1. is a symbol of competency, for to use such a seal a man must be qualified through examination and registration.
2. pinpoints responsibility and tells the client who actually was responsible for the design.
3. gives stability, quality and authority to plans and drawings.
4. seeks to protect public health, safety and welfare.
5. provides legal record, long after the project is completed one can look back at original plans and determine the person responsible.
6. makes it difficult for unregistered persons to falsely claim engineering ability.
7. establishes a criteria, for persons without seals have probably not passed their registration examinations.
8. lends dignity to the engineering profession.

C. E. Stewart