

Water Management Affects Playability

A Panel Discussion

Moderator: Stanley J. Zontek, Northeastern Director, USGA Green Section.

Panelists: John E. Rhodenbaugh, M.D., Radiologist; Executive Committee of Northern California Golf Association; Member and former Green Committee Chairman of Castlewood Country Club, Pleasantown, California.

John A. Zoller, Golf Facilities Manager, Pebble Beach Corporation, Pebble Beach, California; USGA Green Section Committeeman.

Edward C. Horton, Golf Course Superintendent, Winged Foot Golf Club, Mamaroneck, New York; President of Metropolitan Golf Course Superintendents Association, and Co-Editor of *Tee to Green*.

William S. Brewer, Jr., Northeast Regional Agronomist, USGA Green Section.

Moderator: Gentlemen, let us discuss some of the qualities of a good golf green and fairway, and how these might be affected by water management.

Rhodenbaugh: I represent both the club committeeman and the fellow who sometimes complains to the superintendent, that "nasty" club member who wants the golf course very green and lush. In discussing course playability I am sure we all realize that greens command priority attention. Clifford Wagoner, golf course superintendent at the Del Rio Country Club, in Modesto, California, taught me that the superintendent can do a great deal to change a golf course, but he has to know what conditions the golfers want. There must be communication. The greens should, of course, hold for well-played shots, but they can't be so lush that they show footprints as I walk on them, even though many players incorrectly (I feel) favor wet greens. I don't think it requires too much water to provide proper conditions, but it will demand that the golfer learns to hit good approach shots.

Zoller: Overwatering began with the development of the automatic irrigation system. I think there is a message for us in this. I also believe that the holding qualities of a green is a subject which has been beaten to death. I am much more concerned about the condition of the fairways. If I were able to select my ideal fairway lie, it would be firm and tight, allowing the clubhead to take a good grip on the ball. This matter of fairway lie is, I believe, important to any discussion of the holding qualities of a green. You simply cannot have a firm, good golf green and a soft, lush fairway to hit from, because you cannot impart the needed

spin on the ball for it to hold. Firm, tight greens require firm, tight fairway lies.

Horton: We should not overlook that water is a tool we can use to make different golf courses play uniformly. For instance, assuming that both John and I are watering properly, a man who normally plays one of John's courses can come East to play one of ours, and his handicap will be valid because the interaction of golf ball and playing surface will be much the same at both courses. These fine points of turf conditioning are directly influenced by watering; the amount of thatch, the firmness of the turf surface, the free and true roll of a golf ball, the turf resiliency and, as John was saying, fairway lies which afford clean clubhead-to-ball contact. Excessive water really is one of our biggest bugaboos.

Brewer: I believe that uniformity as a putting surface is the most important quality of a green, not its qualities as a landing area. That is secondary and is, moreover, influenced primarily by the design of the green, the materials it is constructed with and the skill of the golfer. We should discourage using water to modify the characteristics of a green as a landing area. Surfaces that are often overly wet are ripe for weed encroachment, disease, and deep ball pocks from a barrage of golf balls. Greens routinely kept firm and dry will show fewer problems. And those outbreaks and consequent disruptions which do occur will be less debilitating and will mend more quickly.

Zontek: I would like to find out from Ted and John how they manage their irrigation programs to achieve the exceptional playing conditions at Winged Foot and Pebble Beach.



Small volume pop-up sprinklers around greens take care of collar and bank water needs.

Horton: Certainly for me, and I think this would be true for most superintendents, the decision of whether or not to irrigate is the single most difficult decision I must make day-to-day. It is a very difficult decision. Do I water? I know that if I water I can go home, the decision having been made. But it is not quite that easy. We must gauge how much water individual areas should require. Often we must begin the irrigation cycle long before it is really needed, just to insure that all areas will receive coverage in time, some of them perhaps long after the ideal moment has passed.

Zoller: We maintained our golf courses last year under a strict water rationing edict. To give you some idea of the situation, for one of our courses we were allotted 56,000 gallons of water daily, on the others 70,000 gallons. Normally we would use from 150,000 to 200,000 gallons daily for each course, an amount which would not generally be considered extravagant. The rationing forced a very careful day-to-day management of irrigation. What was left after providing for the greens and tees, almost exclusively by hand watering, amounted to only 25 to 30 minutes of irrigation per *week* for the fairways. This we had to use to the absolute best of our ability. Surprisingly, in looking back at the experience, I truly feel that we did not suffer greatly, or perhaps I should have said that the turf responded well. At any rate, the main thing we did each evening after dinner was to check each fairway controller. This might have resulted in as few as one or two changes in programming on each nine holes, and the changes may only have amounted to a couple of minutes more or less in each instance, but this enabled us to pull through. In the end we learned that we can

get by with a great deal less water than we normally would use.

Horton: Let me pick up on this a little further. In 1946 Jim Watson began his graduate work under the late Professor Musser at Penn State. His Ph.D. thesis, summarizing four years of investigation into turfgrass irrigation, said, in effect, to water as it is needed and only so fast as the soil will absorb it. During the course of our discussions, John and I both realized that we have been coming back to these recommendations from Dr. Watson. We are using hand watering in particular far more than we might have been ready to admit. And we are routinely dealing with many small areas individually as opposed to somewhat casually flipping on the entire automatic irrigation system which will throw water everywhere. I also find myself doing more daytime watering than I really want to do, both because I will be on the scene to handle any problems that might develop, and because I can find better, more reliable men to work in the early morning and daylight hours than I can find for night watering.

At Winged Foot our general program is to withhold irrigation in the spring until the grass shows visual signs of stress, allowing the ground which had become water saturated over the winter to drain, and then to dry down quite thoroughly between irrigations. During these cooler days of spring and early summer the grass can tolerate moderate stress and will even become better conditioned to face the more severe weather to come, provided we restrain ourselves from either nursing or forcing it along. Once we have begun our irrigation program in earnest, however, the strategy changes and we attempt to keep the soil near field

capacity throughout the effective rooting depth, without of course permitting any extended periods of saturation to occur. As I mentioned before, this is a tough dance to perform and is surely even harder to choreograph for someone else beyond those rather vague guidelines calling for greater amounts of water infrequently applied in spring and fall, with lighter and more frequent summer irrigations to keep both plant and soil continually within the optimal moisture range.

Rhodenbaugh: I understand what you're saying, but let me explain what I believe the golfing public is after. In addition to that uniformity from one green to another that we spoke of before, the members are looking for that middle condition somewhere between a wet and lush green, and a dry and hard yellow. I have to believe that it is possible to have a relatively dry and firm golf course.

Brewer: You are definitely on the right track, provided you are willing to tolerate a sprinkling of yellow-brown areas. Soils and terrain are not uniform everywhere over an expanse as large as a golf course. As a result it is simply not possible to grow turf that is completely uniform. You have to go overboard in one direction or the other with your irrigation program. If you are overly generous in an effort to keep the high and dry spots green (cosmetic irrigation), then you will have lower areas overly wet and lush. If, on the other hand, your aim is to provide optimal conditions for the majority of the course, you will by design, under-irrigate those high and dry spots and these will show up as scattered areas of yellow-brown, areas which apparently offend the aesthetic sensibilities of a great many golfers and even some superintendents. What we have is an image problem. The British have, perhaps unwittingly, accused American golf courses of this for years.

Zontek: Bill, I think you've led us into a most important area of discussion. Why does over-irrigation take place? What pressures are imposed on the superintendent that can lead to wet golf courses?

Rhodenbaugh: Well, I was surprised to learn during our discussions that a wet golf course can sometimes be attributed to turfgrass managers taking the easy way out. That was a new one to me. I was told that there is a powerful temptation for the superintendent with an automatic irrigation system to habitually push the start button so that he can go home feeling confident that, although the course may be wet, it will survive and be green and therefore the members will be happy. I hear a ring of truth in this scenario, but I should like to hear more.

Horton: Although we may not be saying exactly the same thing, Doctor, I must repeat my own feeling that the easiest course of action is to over-irrigate — the hardest is to irrigate properly.

What are the pressures that I feel when it comes to applying water? Three pressures stand



Ball marks with increased play is becoming a more serious problem. Firm greens offer no real ball mark problem. Wet greens contribute to many problems aside from scarred turf.

out in my mind: the color of my own turf, the degree of firmness of my greens, and the color of the course next door or down the road. Whether or not the heat pressure comes from a minority of golfers, indeed whether or not it is even real, we as superintendents are always sensitive about these matters. We are conscious of the responsibility placed upon our shoulders, and this is part of what makes proper irrigation so difficult.

There is also what I call the snowball effect, by which we can inadvertently turn the screws down tighter on ourselves. This can happen innocently enough by starting the irrigation season a bit early or too forcefully, perhaps in the effort to get the grass growing after a long, bleak and dreary winter. By doing this we of course may actually weaken the permanent grasses and encourage an increase in *Poa annua*. Now we are faced with managing a larger proportion of this failure-prone grass, which generally has to be watered more, once we have committed ourselves to the maintenance of it. Over-watering suddenly has become a way of life and each year the *Poa annua* continues its takeover. After a few years there is no simple or inexpensive alternative. We are now growing *Poa annua* turf. If we want any grass at all for the playing season, we must continue with this insidious spiral in which it is all too easy to become trapped.

Zontek: We have been talking at length about over-watering. What are your thoughts on having enough water available to irrigate your golf courses?



Fairways maintained on the dry side provide firm lies for most of the playing season.

Brewer: There is in the January *Green Section Record* an excellent short piece written by Ted Woehrle in which he relates an imaginative solution to this problem of making more effective usage of available water, a solution which may well be feasible for many clubs. What they did was to design a system for recycling substantial volumes of water from the club's air conditioning system for use in irrigating the golf course, water which had previously been discarded. This idea of recycling is just coming into prominence.

Rhodenbaugh: We are beginning to become involved with two very under-utilized classes of water. If you are not from California, you may not have heard the term "gray water." This refers to shower water, rinse water, etc. This type of water has been recycled for homeowners and is certainly going to play a role in irrigation for recreational areas, including golf courses. We also are working with effluent water. Seven holes of my golf course are now irrigated with effluent. This and other means for improved water utilization, including increased storage facility development, may insure continued availability of adequate amounts of water for golf course irrigation. We in California do not have a choice. The rest of the country may still be able to pursue the course of luxury consumption of water, but we cannot.

Horton: At Winged Foot we didn't run out of water this year, but we did come perilously close. We were purchasing additional water from a local water company which permitted us to draw a limited amount for only four hours a night from a four-inch open discharge pipe. With 36 golf holes and 280 acres to irrigate, this was not much water and we honestly could not have gone another day or two without rain. This also happened to us in the East in 1966. Adequate water is definitely a problem with which every golf course must deal.

Zontek: I think we have to give a little more consideration to the use of effluent water for irrigation. The American Society of Golf Course Archi-

tecs has addressed itself to this concern by arranging a grant for a research study on effluent water usage on golf courses. The results of this study should be interesting.

Zoller: Yes, indeed. All nine courses on the Monterey Peninsula are cooperating in a project to bring effluent irrigation into full use, perhaps by 1981. This shows how critically we view the water supply problem. Our water costs also have doubled in recent years to 80¢ per 100 cubic feet now, with \$1.20 projected in the near future. This degree of price escalation for water may be further down the road for some than for others, but sooner or later we are all going to pay the price no matter what type of sports turf we are maintaining. This cost factor of itself will mandate the search for alternative supplies.

Horton: In a water crisis there is also the question of priority to consider. Some of us have already discovered the low priority given to our golf courses.

Brewer: That may be more true than any of us wants to believe. I recall an incident last July on Long Island where a club was denied access to its own well water for nearly a week.

Rhodenbaugh: The California golfer must learn that green golf courses are a thing of the past. This is the challenge which green committee chairmen and superintendents will have to meet, the challenge of re-educating our golfers. If I might summarize the golfer's point of view, I believe he will accept drier golf courses, but not yellow golf courses. The drier, predominantly green golf courses I see to be a viable goal, and if we do indeed need images to guide us, I must say that for me the epitome of such a nice, dry, green golf course is Del Rio Country Club, so capably maintained by Clifford Wagoner and his crew. Certainly there are others throughout the country I am not familiar with. Perhaps in our crusade to further the objectives of good water management, these courses should be singled out for special recognition.