



Better Turf for Better Golf

TURF MANAGEMENT

from the USGA Green Section

WATER USE ON THE GOLF COURSE

The USGA Green Section conducted its fourth annual Educational Program at the Biltmore Hotel, New York, January 29, 1960. The Chairman was William C. Chapin, Chairman of the USGA Green Section Committee. The Vice-Chairman was Edwin Hoyt, Northeastern District Chairman of the USGA Green Section Committee.

Moderators were Alexander M. Radko, Eastern Director, USGA Green Section, and William H. Bengueyfield, Western Director, USGA Green Section. Also participating were James L. Holmes, Mid-Western Agronomist, USGA Green Section, and Charles K. Hallowell, Mid-Atlantic Director, USGA Green Section.

The morning session was devoted to the topic, "The Mechanics of Applying Water."

The afternoon session was devoted to the topic, "Water Requirements of the Golf Course."

A part of the program was summarized in the April issue of the USGA Journal. The following summarizes the remainder of the program:

Quick-Coupling Sprinkler System

By T. T. TAYLOR

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The stationary quick-coupling system is the irrigation system most commonly used in the northeast region. There are also other types used, such as the traveling sprinkler, and hose system, to a limited degree. Fairway irrigation probably had its introduction in the East in the Long Island area. Adapting ideas originated in California and the West, Long Island proved to be a fertile field for the expansion of complete irrigation systems. Beginning with spot application of water and make-shift equipment, the contrast of color obtained between watered and unwatered areas had an immediate and

lasting impact on the golfer. But there were stages of development through which complete irrigation was to evolve before finally attaining its present stage of development.

Because of a combination of circumstances, Long Island was particularly suited for exploratory fairway irrigation. The soil is sandy, the summers hot, dry, and windy, and their fescue fairways habitually browned off during the summer months. Green grass rather than turf texture and density became the measure of quality. The business boom of the 1920's contributed to the impetus of in-

stallations. During the depression of the 1930's, the national economy was not favorable for expenditures such as golf course irrigation, consequently, little, if any, expansion in golf course irrigation was noted. It was during the depression period that some reassessment was made concerning the unrestricted use of water and its relation to the tolerance by fescue, bluegrass, and the bentgrasses, which at that time were the grasses which were predominant in our northeast fairways. Having passed through the initial stages of complete irrigation, some important factors were beginning to shape our thinking; when to irrigate, how to irrigate, and where to irrigate.

Both the agronomic aspects and the mechanics involved in the use of water were to be evaluated. The agronomic aspect is a topic for discussion in itself and we are primarily concerned here with the mechanics of applying water. Keeping in mind that turfgrass management means both adapting grasses to water as well as the reverse of adapting water to grasses, it became evident that some adjustments in management must be made as a compromise in the use of irrigation systems. Today, in the Northeast there is a growing tendency to introduce more bent and bluegrass into irrigated fairway mixtures and less use of fescue. By this means it is hoped the playing period will be extended from the extreme of ample moisture in the spring through the drought periods of summer and into the more favorable growing conditions of the fall. As turf management adjustments are made to fit into irrigation requirements better fairway turf may result with judicious use of water.

This was the picture as we entered a period of prosperity and expanded development of complete irrigation about 1937. Activity in the expansion in golf course irrigation paralleled the economic recovery in other fields. Both new and old courses were thinking in terms of complete irrigation.

The fact that the quick-coupling system was the first type to really become established may account in part for its popularity. Also, at that time, installation costs were relatively reasonable with sources of municipal water supply quite accessible, and the simplicity and efficiency of operation were considered su-

prior to other types which had not been fully developed. With its flexibility and adaptability to a wide variety of conditions as they existed in the Northeast, the quick-coupling system found ready acceptance in the field of golf course irrigation by those who were receptive, and financially able, to undertake a complete irrigation system.

These are some of the reasons why the quick-coupling sprinkler system predominates in the Northeast.

The golf courses of many clubs are now equipped with complete irrigation systems, and to them the complexities of irrigation are not new. All golf courses have the conventional system embracing the greens and tees; some have the partial, semi-complete, system which includes greens, tees, and landing areas. It is perhaps to those clubs whose systems fall into the categories of conventional and semi-complete that the installation and the mechanics of applying water by means of the quick-coupling sprinkler are of most interest, and in particular those whose antiquated systems have been in use for thirty years or more. Some brief comments here might be pertinent to their interests.

First, it is extremely important to employ an irrigation specialist.

Second, fundamentally the quick-coupling system is not intended for the unrestricted use of water. Usually one inch of rainfall per week is the unit of measurement commonly used to denote the amount of water necessary to keep grass alive. Therefore the source and distribution must be capable of supplying the equivalent of one inch of rainfall per week at any given time, either as a supplementary requirement to natural rainfall or as a maximum requirement during extended periods of drought.

Third, the effectiveness of irrigation is directly proportional to management rather than the mechanics of the system itself. Professional turfmen, both practical and technical, agree that the application of too much water may sometimes be more detrimental to turfgrass than too little.

In general, quick-coupling systems are designed with facilities capable of producing and distributing efficiently one inch of water per acre per week. Underground pipe is installed down through

the center of the fairway with outlet valves spaced according to the width of the fairway and the range of coverage and capacity of the sprinkler head. The sprinkler is attached to a coupler which is inserted into the valve, and with a single twist of the coupler, water is released from the valve to the sprinkler. The action of the water and the setting of the mechanism on the sprinkler determines the speed at which the sprinkler revolves. Special type sprinklers such as pop-up, part-circle, and low altitude sprinklers are available for tees, greens, and other specific areas. Various management practices are used in applying the water required, such as (1) alternate use of the valves and (2) grouping of certain areas as units of operation, taking advantage of the overlap as an adjunct to controlled application and labor modification, or to fit into specific operating hours determined by play or restricted use of water by local ordinances. The time required and the amount of water applied at any one time is regulated by the circumstances peculiar to each situation.

The comparative costs of installing the quick-coupling system is in between the completely automatic system and various hose systems. Installation costs depend on the conditions encountered and the obstacles to be overcome at each individual golf course. While installation costs may be higher than hose systems, they are considerably less than estimated costs of completely automatic systems.

From the standpoint of efficiency, under reasonably good labor management

the quick-coupling system may be handled by one man under normal conditions, plus some extra labor for abnormal periods of drought or need for increased application.

The quick-coupling system is capable of efficient water distribution. It is flexible as to sources of water supply, and to the mechanics of operation such as required by players and local restrictions. Distribution to remote areas by means of hose or portable pipe is simple and various size sprinklers may be used to adjust coverage on any outlet.

In conclusion it would seem important to emphasize the following points with regard to any system of irrigation:

1. Management of water is more important than the simple mechanics of operation.
2. Installation costs should be considered with a view to maintenance and labor costs.
3. Sound judgment based on all available knowledge and technique should be used in determining where, how, and when to water.
4. Conservation of water is becoming more and more a matter of national concern and lack of support of conservation possibly could further restrict the use of water on the golf course.
5. The critical stage of fairway irrigation is the transition period from unwatered to watered turf—give the grass a chance to get adjusted to more intensive irrigation practices, or be prepared for *Poa annua* and weeds.

Turfgrass Culture and Soil Water Relationships

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Golf turf is as good as the agronomic watering practices it receives. A good source of water, a good distribution system, or a good sprinkler system does not insure good turf; it merely makes the watering program easier or feasible. Also, the green that is wet enough to hold a golf shot pleases the golfer, but does not make for the best turf or the least turfgrass troubles. The needs of the grass cannot be compromised without harm.

A golf course that has consistently good turf, is always the highest tribute to the superintendent's watering program. Some accomplish this result with an inadequate watering system, poor drainage, and compacted or clayey soils. I have told students that we have many golf course superintendents who can grow grass on top of a table in summer. Unfortunately too many are doing this. Even though a superintendent can suc-