

IRRIGATION

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(Continued from last month)

Surface irrigation is not common for golf greens and fairways, graveyards, and other such horticultural uses, they are preferred for agricultural purposes. Therefore they have no place in this talk.

Sprinkler irrigation then or hose coupled-sprinklers will therefore be our means of spreading water. Sprinklers require portable pipe, hoses, and spinkler head; it can connect from underground main pipes to hose risers with sprinklers on the ends of the hoses, or can be replaced by complete underground piping systems where sprinklers are attached to the couplers of the underground pipe.

Solid systems, i.e. systems that operate all sprinklers or outlets at once; or selected sequence sprinkling will have an important part in determining the type sizes to be used.

III. What is a logical sequence for developing an irrigation system?

The size of the reservoir or the water flow rate through a meter from the city are allowed for in a stream will set the maximum amount of water flow that can be used in the system. The next item to consider is the rate at which the soil will accept moisture. This should be determined for the worst conditions of mean irrigation. From the soil intake rate, a selection is made of a suitable sprinkler head which will match this rate. At the same time that the sprinkler is selected, a determination can be made of desirable sprinkler spacings. Sprinkler spacings and sprinkler sizes will control the uniformity of water application and the rate at which it is applied on the surface of the ground.

From these determinations, a simple sum will determine the number of sprinklers that can be run at any one time. This sum is: capacity divided by the sprinkler rate equals the number of sprinklers to be run.

Having the selected sprinkler system and the number of sprinklers to be running at any one time, the piping layout can be developed and pump and pipe sizes determined. In this way, the system can be designed for present operation, and such designs include facilities for future improvement at a later date. Such improvements

would be the use of underground main lines, increased water availability, and so on.

IV. When do we irrigate?

This question has given researchers trouble for a long time. All research and all practical irrigators know that irrigation must take place before the soil reaches the wilting point. Scientists have been developing accurate, simple, rugged water or moisture measuring devices. To date, they have found to be too delicate, and they tend to incomplete coverage of the desirable moisture range. It is felt, however, that sometime in the future they will have a desirable moisture measuring device.

The logical use of this proposed device will be the complete automation of irrigation. At present, we can automate irrigation by using time switches and time-sequence controls for automated water application. These operate successfully in the more rigid areas of the continent. With the inclusion of a moisture measuring device and a time clock, we can then automate our irrigation completely in that when the plants require moisture, and the area to be irrigated is in a non-use period; such as night time or after dark, the sprinklers will pop up from underground containers and the area will be irrigated to the desired level and the systems disappear underground again. It would then be the responsibility

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of the grounds keeper to maintain and correct the sprinklers and the control mechanism to adjust flow rates and keep the system in operation in the same fashion as a modern automated factory.

Another accurate method in determining the true sprinkler discharge is to attach the sprinkler to a hose and turn it upside down into a container and catch all of the water for a given period. Then weigh the water and be sure to subtract the weight of the container. One gallon of water weighs 8.3 pounds, so by dividing the weight of the water by 8.3 the gallons discharged from the sprinkler is obtained, this amount must of course be further divided by the number of minutes the sprinkler was allowed to discharge into the container in order to know the gallons discharged per minute.

The problem often arises on golf courses for greater volumes of water in the distribution pipe system and the superintendent is often faced with installing new and larger pipe lines or boosting the existing capacity of the existing pipe line with a parallel feeder pipe.

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