Table 1. Effect of Wind Velocity on Sprinkler Spacing

Wind	Maximum Triangular Spacing
0 to 3 miles per hour	60% of the diameter
3 to 5 miles per hour	50% of the diameter
5 to 7 miles per hour	40% of the diameter
8 to 10 miles per hour	30% of the diameter

should keep in mind the amount of chemical to be injected; this should be in proportion to the flow rate of water through the system. Only in this way can he be sure of avoiding the danger of applying excessive amounts of chemicals. Chemicals should go only where the water goes. Thus, the need for uniform application of water is apparent. The sprinkler system should also apply water at a rate that precludes runoff and insures an adequate amount of water at each irrigation.

Wind Conditions

It takes very little wind to affect the performance of large sprinkler systems, but many do not realize how great this effect is. Since there is only a slight difference in the effect of wind on various pop-up sprinkler heads, Table 1. can be used as a guide to head spacing required for several different wind velocities.

The effect is greater than it seems at first glance, because the number of heads required increases in inverse proportion to the square of the spacing. Therefore, four times as many heads are required to operate successfully in an 8- to 10-mile-per-hour wind as are required in a zero to 3-mile-per-hour wind.

Whenever possible, most growers prefer to schedule watering times for periods of the day or night when wind velocity is low, rather than to pay the much greater cost involved in installing a system that will provide good water coverage in the wind. However, the prospective buyer must thoroughly understand the effect of local wind conditions before he sets out to purchase an irrigation system.

Precipitation rate is the average rate, in inches per hour, at which sprinklers deliver water. A low rate is considered to be under .30″ per hour; a medium rate is around .45″ per hour; and a high rate is anything over .50″ per hour.

Good soil conditions on flat ground can successfully use a high rate of application. Heavy soil, soil compaction, sloping areas, or any other condition that results in a low infiltration rate, indicate the need for a lower rate of water application. Sometimes it is difficult to tell in advance how high a precipitation rate can be used successfully on all parts of the sod area, so it is usually best to specify the lower rates of precipitation, which will give the least trouble with runoff in problem areas.

Uniformity of Precipitation

This is a measure of the efficiency of the system, and there is considerable difference between a good and a poor system in this respect. Sod farm irrigation requires a uniform application of water since most grass varieties are shallow-rooted. For this same reason, frequent irrigation is needed during periods of high moisture use. Thus, sprinklers selected should be from a quality manufacturer and should be designed for scientific uniformity of water application.

Service Life

There is also a considerable difference in the life expectancy of the various components used in sprinkler systems, even under ideal conditions. Adverse conditions can cause further shortening of life expectancy. For example, water hammer, or associated high pressure, can cause premature failure of pipe and fittings. Abrasive or corrosive water can shorten the life of rotor heads, especially where the mechanism is exposed to the water stream. On rotor heads, the total effect of these variables can result in an operating life from as low as 50 hours to as high as 5,000 hours.

It thus becomes very important for the prospective buyer of irrigation equipment to specify durability of system components. It should be possible to obtain five-year usage of heads, controls, and valves, and 15-year usage of pipes and fittings.

The sod grower planning a new irrigation system should know and specify just what it is he expects of the system. Then, if he wishes, he can leave to responsible experts the job of designing the system that will meet his specifications. In this way, the grower can be more sure of getting a system that will meet his own needs and problems.

Fall Turf Care Important

Bluegrass should be mowed, fed, and watered as long as it continues to grow, Colorado State University extension horticulturist, C. M. Drage, says. He explains that fall conditions are favorable for the growth of cool-season grasses, which should be fertilized at this time, even though results will not be as obvious as in spring fertilization.

The grass responds by increasing its root system and storing extra plant food for new top growth in the spring. Fall fertilization also stimulates tillering, which takes place when new plants rise from rhizomes near the mother plant and contributes to a dense stand of grass. Nitrogen, generally the most important element in turf fertilizer, should be provided at 1 to 2 lbs. per 1,000 sq. ft., Drage recommends. For conditions of average fertility, lawns will require 3 to 4 lbs. of available nitrogen per 1,000 sq. ft. each year. This can be applied half in spring and half in fall; but if grass is fertilized only once a year, fall is probably the best time.

Recommending against overfertilization as unnecessary and impractical, Drage adds that lawns should be mowed in fall at the regular height of 1½ to 2½ in. Grass will need less water in the fall, but soil should not be allowed to dry out.