

requirements of his grass. Whenever, possible, the clippings should be left on the area to decay.

The grass should be cut less often and the height of cut of the mower should be raised during very dry periods in the summer.

The grass should not be clipped late in the fall in order that the blades may make as much reserve food material as possible for the following early spring growth.

ARTIFICIAL WATERING OF TURF GRASSES

By L. S. DICKINSON

- I. Artificial watering should be considered only as a supplement to a deficiency in normal rainfall.

Unless water supply contains an excessive amount of any element, artificial watering affects soil similarly to rainfall, i. e.:

1. Makes plant food available;
2. Washes out plant food;
3. Increases acidity of the soil;
4. Puddles clay soils;
5. Starts erosion;
6. Accumulates in low areas;
7. Runs off to slopes, etc.

- II. Three periods in development of turf grasses:

1. Seed and seedling. Water requirement high.
2. Development or root training. Placing of water supply important.
3. Mature stage. Both placing and amount of water important.

- III. Considering mature turf:

Why water? 60% for color effect, 40% for health of grass.

When is water needed? Not until after wilting has started and soil supply of capillary water exhausted as determined by examination of soil.

- IV. Fundamental factors determining methods of applying water:

Is the soil condition practically uniform in all ways?

If yes, large coverage sprinklers permissible.

If no, small coverage sprinklers desirable.

- V. Quantity of water desirable and rate:

Enough to wet to a depth of 4 to 6 in.

If your greenkeeper

could save the club money by using ALL of the raw materials when making his compost;

could overcome weather delays by making his compost from sod or lumps—wet or dry;

could save in time and labor by making compost faster and more uniform—and easier to handle—

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Apply as rapidly as soil will absorb the water.

Ohio State College Experiments show during 3 summer months $1\frac{1}{2}$ times normal rainfall ample amount.

At Amherst that means 18.16 in. or a 75 ft. diameter range sprinkler throwing 15 g.p.m. on 4,000 sq. ft. must operate a total of 50 hours during the season. This amount is probably excessive for New England.

- VI. Late spring and early fall watering sometimes needed.
- VII. Incorrect watering has cumulative bad influences which may not become prominent for three or more years.
Kentucky bluegrass becomes very thin from excessive watering.
- VIII. Conclusion: Artificial watering of fine turf grasses is very beneficial if correctly done; otherwise, it may be very harmful.

More water requires more fertilizer and more frequent clipping, resulting in costs that are constant and seldom considered when planning a water system.

CHANGING THE SOIL STRUCTURE

By HOWARD B. SPRAGUE

Desirable soil structure is highly essential on turfed areas, from the standpoint of drainage and aeration, and of water-holding capacity. Soils naturally differ greatly in soil structure and subsequent treatments are responsible for further changes. Three vital factors affecting soil structure are the texture, lime content, and humus supply.

The natural differences in soil structure may be indicated by the water-holding capacity of 12 soils of three geographic provinces in New Jersey. These soils ranged from a capacity of 594 gal. of available water for a sandy soil to a depth of $6\frac{2}{3}$ in. over a surface of 1,000 sq. ft., to 1787 gal. for a silt loam soil. Not only did these soils differ in capacity to store water, but they also differed greatly in their ability to permit ready entrance of rainfall. Thus, Merrimac sandy loam allowed water to enter 7 times as rapidly as Wethersfield gravelly loam, under equal conditions. Obviously, the Wethersfield soil is a very inefficient soil, even though it has equal water holding capacity, as a