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WATERING IN WINTER

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How many times have you seen turf winterkill on high, well-drained areas? Did you realize that the grass died from drought? Have you heard wheat growers wish for a snow cover on their crops so that it would not winterkill? A snow blanket retards desiccation and the wheat or any other grass loses water much less rapidly. Therefore it does not fall victim to these winter droughts. Watering of turf occasionally during the winter months is an effective means of preventing much winterkilling.

Grass species vary a great deal in their ability to withstand cold. Some warm-season grasses, such as St. Augustinegrass, simply cannot tolerate extremely cold temperatures whereas grasses like ryegrass or bluegrass remain green through all except the very coldest winter periods. Cold appears to affect them very little.

Physiological differences in grasses are responsible for the differential reactions of various species to cold. Most of these physiological differences are concerned with the ways in which water is taken up and held by the grass. Winter-hardy plants are said to contain a greater percentage of "bound" water, of "non-freezable" water than do those plants which are not winter hardy. The ability of any given species to withstand cold can be increased by a gradual "conditioning."

When soils are cold, plant roots are relatively inactive and water is taken up very slowly. Many times soils remain cold when the air temperature becomes warmer. Thus we have transpiration, or water loss, occurring from the leaves without an accompanying water uptake by the roots. The inevitable result is "wilting" or desiccation.

Cold affects desiccation in another way. When grass is subjected to freezing temperatures, the water contained in the living plant cells is drawn out of the cells and is frozen in intercellular spaces. When the ice crystals thaw, the water does not go back into the plant cells. The living part of the grass has lost water during the freezing process and because the roots are not functioning normally in the cold soil, water is not being taken up for replenishment of the supply in the cells.

It has been found that plants "harden" quite rapidly when exposed to cold. Chemical and physiological changes in the sap occur which makes the plant more resistant to cold. These changes are often noticed after as little as three or four days of exposure to cold. Therefore, it is the rapid changes of temperature which do the most harm. The sudden dry "northers" which are accompanied by temperature drops of 30 or 40 degrees are extremely injurious to all plants. Sufficient moisture in the soil lessens the injury caused by rapid changes in temperature to some extent. Water temperature does not change as rapidly as air temperature and the plant has some opportunity, sometimes very slight, to harden itself against the cold.

This discussion is the basis for one single point. It sometimes pays to water in the winter. In the Great Plains region where high knolls are exposed to drying winds, there is likely to be a great deal of drying-out of both the grass and the soil. Occasional watering will help to protect the grass from winter injury. When dry "northers" are forecast and the soil is dry, it's a good idea to do some irrigation before the "norther" arrives. The soil temperature will change more slowly, and the grass will not dehydrate so rapidly. Grass will be saved that otherwise might die from drought.

FROM THE EASTERN OFFICE

By ALEXANDER M. RADKO

ACTING EASTERN DIRECTOR, USGA GREEN SECTION

The months of August and September are fast becoming known as the turf-field-day months in the Northeast. Four major turf field days were held during these months, with a total attendance of more than a thousand. Following is a summary of some of the developments which attracted particular interest:

Rutgers

This year for the first time the aerated plots showed to better advantage than the unaerated plots. These plots are four years old. Previous reports indicated little or no difference between treatments. . . . The cadminates and PMA formulations showed to best advantage on putting-green turf in the control of copperspot. These fungicide trials are six years old. This year copperspot was the only disease which occurred in sufficient quantity to warrant tests . . . Meyer (Z-52) zoysia had more clover infestation than at any previous time. The Kentucky 31 fescue looked good under ¾" and 1½" heights of cut. Merion (B-27) bluegrass didn't show to particular advantage over the other bluegrass selections.

Dr. Ralph Engel was the leader.

Rhode Island

The PMA-treated putting-green turf was outstanding with regard to freedom from crabgrass. . . . Dr. Howard reported that two PMAS treatments applied in April to bluegrass turf controlled Helminthosporium which causes leafspot. . . . The 2,4,5-T trials showed good clover control in late fall and in April, when applied at the rate of one pound to the acre. In June the control of clover was not good when 2,4,5-T was used at the same rate. . . . Renovation trials proved that success with spring renovation was difficult due to the problem of crabgrass encroachment before a good turf cover could be established.

Dr. Jesse A. De France was the leader.

Penn State

The creeping red fescue plots at Penn State suffered more this year than in previous years. The terrific heat and extended drought hurt the creeping fescues more than ever before. Plots of Kentucky 31 fescue and Merion (B-27) bluegrass looked excellent despite these adverse climatic conditions. They had beautiful color (almost looked as if the plots were