

## Efficient Watering of Turf

Although the amount of rainfall received in the Northeast is generally ample, it is not always uniformly distributed throughout the year. It occasionally becomes necessary to provide supplemental irrigation to keep turfgrasses growing well, especially during summer months. Water is lost from the soil through gravitational drainage, evaporation, and plant use. If plant or soil water content becomes limited, drought stress, followed by turfgrass death, may occur.

### When is Irrigation Necessary?

Many variables influence the amount of water used by turfgrasses. These include amount of solar radiation, humidity, grass species and rate of growth. Rooting depth and soil texture also affect the water requirements of turfgrass. Grasses which are more deeply rooted can extract water from a greater volume of soil and may be more drought tolerant than shallow-rooted species. Finer textured soils hold more water than coarse soils and require less frequent irrigation. Because so many factors interact to determine turfgrass water use, it is difficult to give a general estimate of how often to water a lawn. The best technique for determining when to irrigate is to observe both soil and plant conditions in the lawn and then water when the turf needs water, rather than based on the calendar.

### Turfgrass Drought Tolerance:

The following turfgrass types are listed in order of their tolerance to drought:

Fine-leaved Fescues Tall Fescue Kentucky Bluegrass Perennial Ryegrass Bentgrasses	High Tolerance     Low Tolerance
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The fine-leaved fescues include hard fescue, creeping red fescue and Chewings fescue. Sheep fescue is a fine fescue which has excellent drought tolerance, but which is more suitable for areas mown only once or twice per year.

### Detecting Wilt and Drought Stress:

To conserve water and avoid the detrimental effects of overwatering, water lawns just prior to the development of wilting and drought stress. Wilting occurs because the plants internal water content drops so low that the plant cannot remain turgid (stiff), and plant cells begin to shrivel. Turfgrasses undergo a series of visible changes when they begin to wilt. Development of bluish-green coloration and the rolling or folding of leaf blades are two noticeable changes associated with wilting. If footprints remain visible on lawn for several minutes after walking on it, the turf is not very turgid and wilting is occurring. Although these initial symptoms of wilting will not usually presage permanent injury to the lawn, the lawn should be watered soon to avoid drought stress and possible turfgrass death. Examining the soil is also helpful in determining when to irrigate.

Use a soil probe or garden spade to observe the soil to a depth of approximately six inches. If the soil appears dry, it is time to water.

### **Effective Watering Practices:**

Frequent lawn watering often encourages shallow rooting and may predispose the lawn to increased disease and greater susceptibility to stress injury. Watering deeply and less frequently provides for improved turf growth and increased water conservation compared to light, frequent watering.

When irrigation becomes necessary, wet the soil to a minimum depth of 4 to 6 inches. This amount of water varies with soil texture, but approximately 1 inch of water should thoroughly wet most soils to a depth of 4 to 6 inches. Placing several empty cans (tuna or cat food cans work well) under the sprinkler allows you to determine when an appropriate amount of water has been applied.

Irrigation can be applied at any time during the day or night. Both day and night watering have advantages and disadvantages. Midday watering cools the turf and reduces heat stress on hot summer days. If drainage is poor, pools of standing water can become very hot and result in turf death due to scalding. Midday watering is also relatively inefficient due to substantial evaporation losses. Night watering may incite or aggravate disease problems. However, the turf is usually wet during the night anyway, even if irrigation is withheld, because of dew formation. Recent research has suggested that the duration of leaf wetness (the number of hours that the leaf blade is actually wet) has a greater impact on disease incidence than night watering per se. In that case, watering during early evening or late morning (just prior to or following dew formation) could result in increased disease by prolonging leaf wetness. Night irrigation helps to conserve water because of minimal evaporation at night. Night watering should be avoided, however, when disease is present and actively damaging the lawn, or during periods of very hot, humid weather. **Very early morning watering, before dew has dried, is the best solution, because it provides for efficient use of water (low evaporation) and does not contribute to disease pressure.**

### **Summer Dormancy due to Drought:**

Under periods of prolonged drought, some turfgrasses have the capacity to avoid death by entering into a state of dormancy. Kentucky bluegrass is the most common turfgrass exhibiting this drought avoidance mechanism. Dormant turf appears straw-colored and does not grow. When drought conditions cease, usually due to late summer or fall rains, the turf is capable of resuming normal growth. Although the lawn may recover when water is no longer limited, the grass is much more susceptible to disease, insect, traffic and wear injury when it is dormant, because it is not growing. Disease and insect injury may also go undetected because the turf is already brown. This can result in the loss of large areas of turf, a loss which may have been prevented if the lawn had not been dormant. Weed infestations can increase because the grass is not actively growing and cannot compete with more actively growing weeds. If a quality green lawn is your goal, drought-induced dormancy can be prevented by timely watering.