



Extension FactSheet

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Managing Turfgrass Under Drought Conditions

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The primary turfgrasses grown in home lawns in Ohio are cool season grasses. The most common species of cool season grasses used in residential lawns include Kentucky bluegrass, perennial ryegrass, fine fescue and tall fescue. Cool season grasses perform best when daytime temperatures are in the range of 60 to 75°F along with adequate soil moisture. These lawns possess the best color and quality attributes during the spring and fall seasons. Being cool season grasses, good to excellent winter hardiness allows established lawns to survive even the harshest Ohio winters.

The most stressful time of the year for cool season grass home lawns in Ohio is typically encountered during the summer (i.e., June through August) period. This period is often characterized by hot, sunny days with daytime temperatures routinely in the low to mid 80's. In addition to high temperatures, moderate to severe moisture stress is often imposed on the turfgrasses during this summer period. The combination of high temperatures and dry soils will often lead to significant declines in quality and losses in turfgrass unless proper management practices are implemented.

Turfgrass plants need soil moisture to sustain normal growth and development. The water use rates of cool season turfgrasses during the summer period will often exceed the rate which natural rainfall returns water back into the soil. Once the soil moisture reserves are nearly depleted, the turfgrass will begin to wilt. This condition is evident as the turfgrass turns from green to either bluish-green or gray-green. Wilt is a sign of water stress and is usually most evident during mid to late afternoon periods. A period of continual water stress that limits or prevents the growth of plants is termed drought. Once drought conditions develop, the lawn will stop all growth and development and proceed into dormancy.

Dormancy is characterized by the development of brown turfgrass. The turfgrass is not dead but instead in a condition to preserve the vital parts of the plant. By becoming dormant, turfgrasses reduce water usage and can concentrate the lim-

ited amount of available moisture into the crown, rhizomes and roots. This dormant condition will allow the turfgrass plant to survive adverse conditions for extended periods until soil moisture reserves are replenished. The length of time lawn grasses can survive in a dormant condition is contingent on a number of factors including soil moisture levels, daytime temperatures, condition of the turfgrass at the onset of dormancy, etc. In general, turfgrasses can be expected to survive in a dormant condition for up to 4 to 5 weeks with limited damage if temperatures are at or below normal. If daytime temperatures are elevated (mid-80's or higher) consistently through the stress period, only 3 to 4 weeks of survival should be anticipated. Dormant grass is lost once the crowns, rhizomes and roots begin to dehydrate. Homeowners will often find the areas of the lawn along sidewalks, curbs, driveways, south facing slopes, etc., to encounter the most stress and will be the first areas to be lost during extended periods of drought.

Homeowners have limited control over the daytime temperatures in the lawn. However, they can improve the survivability of the turfgrass in their lawn by proper management. This management includes the implementation of proper cultural practices and/or the implementation of irrigation.

Proper Summer Cultural Practices

The ability of lawn turfgrasses to survive drought conditions is enhanced if proper cultural practices are followed. The practices should be implemented in early June and continued until late August. The most important cultural recommendations include:

Proper Mowing

The mowing height should be a minimum of 2.5–3.0 inches prior to, and during, drought periods. Taller cut grass will have deeper, more extensive root systems than short cut grass which will help enable the turfgrass plants to withstand summer stresses. Taller cut turfgrass will provide more shading

of the soil thereby keeping soil temperatures cooler and reducing evaporation of soil moisture. Mow the lawn only as needed and preferably during the morning or evening hours when less stress is being imposed on the lawn. Also, make certain the mower blades are properly sharpened to avoid “tearing” the ends of the grass blades.

Fertilization

Proper fertilization can play an important role in maintaining summer quality. However, the lawn should not receive more than a total of 1.50 pounds of actual nitrogen per 1000 square feet of lawn during the spring/early summer period. Homeowners who routinely apply two spring fertilizations are encouraged not to exceed 0.50 to 0.75 pounds of actual nitrogen in the initial spring application. Overfertilization at that time can stimulate excessive topgrowth and deplete the plant’s food reserves in the roots. Also, overfertilized grass will be succulent and more prone to certain disease organisms. Under conditions of moisture stress, fertilizer imposes an additional stress and does little to improve turfgrass. Preceding periods of anticipated stress (i.e., mid-June to late August), at least 35 to 50% of the nitrogen in a fertilization should be in a slow release form, preferably 50% slow release.

Weed Control

Deep rooted broadleaf weeds and stress tolerant grassy weeds will compete with desired grasses for precious nutrients and soil moisture. Homeowners should control these weeds either during the spring or fall period. If weed plants do encroach the lawn during the summer period, only spot treatments should be applied on stressed turfgrasses.

Insect Control

It is important to check lawns carefully for insect problems since symptoms of an insect damage often look like drought effects. Insects such as Chinch bugs, Sod Webworms and Bluegrass Billbugs can be a problem in the summer, even during hot, dry weather. Damage from the feeding activity of these insects is often even more severe since little or no recovery will occur when the turfgrass is in a stressed condition. Masked Chafer and Japanese beetle grubs will normally not be a serious problem in dry lawns. However, homeowners should check for grubs in late August and early September and treat with the proper insecticide if necessary.

Disease Control

In general, damage from turfgrass diseases is less likely during dry periods than during periods of moderate to high

precipitation, especially if the abundant moisture is accompanied by above normal temperatures. Outbreaks of turfgrass diseases should be addressed with either the appropriate cultural control and/or application of the proper fungicide. By minimizing disease pressures, turfgrass quality will be preserved during periods of stress.

Limit Activities

Stay off the lawn as much as possible.

Lawn Irrigation

Even if homeowners follow the recommended summer management practices, irrigation is often necessary to prevent lawns from becoming dormant during extended rain-free periods. Without rainfall, a lawn will normally require supplemental irrigation of approximately 1.0 inch water per week to keep the lawn green. A concern with this recommendation is that most turfgrass areas will encounter runoff if this amount of water is applied in one irrigation event. Runoff can be minimized if irrigation is performed every 4 to 5 days with 0.50 to 0.75 inch applied. Another option is to irrigate until runoff begins, delay irrigation for 1 to 2 hours to permit infiltration, then resume the watering activity under this format until the desired amount of water has been applied to the lawn.

The amount of water applied during irrigation can be measured by placing several empty straight-sided containers, such as pet food containers, in the sprinkler’s pattern. Watering is sufficient once the desired volume of water is collected in the containers. Irrigation should be performed early in the morning. At this time of day the grass is already wet from dew, temperatures are cooler, humidity is high and calm conditions usually exist. These conditions all favor infiltration of the water into the soil and utilization of the supplemental water by the turfgrass plants.

When the water supply for lawn irrigation is limited or when watering restrictions are in place, the homeowner should designate priority areas of the lawn and water those areas first. The priority areas usually include the front lawn, areas around the patio or deck, and children’s play areas.

If the homeowner cannot water, or elects not to water a dormant lawn, a light watering or rainfall of 1/2 inch every two to three weeks will help minimize damage to the lawn during the dormancy period. This watering practice will supply enough moisture to keep crowns, rhizomes and roots hydrated and alive. This volume of water *will not* regreen a dormant lawn, however, it will help to insure good recovery once rainfall occurs later in the summer.

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