



Dealing with Drought Stress in Home Lawns

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Although cool-season turfgrasses in South Dakota typically suffer from summer stress during July and August, many lawns in the state experience stress earlier than normal during drought. You can make cultural modifications in lawn management to reduce injury or loss of turf and to conserve water resources.

The majority of South Dakota lawns are a composite of one or more cool-season turfgrasses plus a number of assorted plant species considered weeds. Although Kentucky bluegrass is generally the major component in turfgrass seed mixtures purchased by homeowners, perennial ryegrass and fineleaf fescues are often included. Fineleaf fescues, such as hard fescue, chewings fescue, creeping red fescue, and sheep fescue, typically tolerate moderate drought conditions fairly well. Perennial ryegrass drought tolerance tends to be relatively poorer.

Several options are available that will reduce watering costs and conserve water resources.

Option 1: Induced summer dormancy

Considerable supplemental watering is needed to keep Kentucky bluegrass green and growing during South Dakota summers. You can, however, conserve water by temporarily withholding the water from the lawn and inducing summer dormancy. The objective is to supply just enough water to keep the turf alive until conditions improve.

Although active shoot growth will cease and leaves will turn brown and may actually die, the crown, rhizomes, and roots may survive for 4 to 6 weeks without additional

water. Survival longer than 6 weeks is unlikely without significant precipitation or irrigation.

Applying 0.25 to 0.5 inches of water once every 2 to 4 weeks during summer is recommended. You want to keep the turf dormant but provide sufficient moisture to keep the crown and underground parts of the plant alive.

An increase in summer annual weed infestation will be likely because of decreased competition from the dormant turfgrass. Regular mowing may be required to limit actively growing weeds in a dormant turf.

Shoot growth of dormant turf will resume in the fall with cooler temperatures and seasonal moisture.

Option 2: Indicator-based irrigation of actively growing turf

This option is suggested for homeowners determined to maintain a green, actively growing cool-season turf throughout the summer.

If you use this option, you will schedule watering by watching for visual signs that indicate the plants are becoming water-needy. Delaying irrigation until the turf exhibits symptoms of slight moisture stress can conserve water and still meet the water requirements of the turf.

Typical symptoms of moisture stress in Kentucky bluegrass include a change in color from green to a dark bluish-gray, folding and possibly twisting of leaves, and "footprinting." Footprinting indicates internal moisture deficit and loss of turgor pressure. Leaves remain pressed

to the surface from traffic, leaving visible footprints for an extended period. Turfgrass leaves with adequate tissue water content bounce back relatively fast.

When watering, irrigate to a depth of 6 to 8 inches, where the majority of turfgrass roots are located. Frequent irrigation with small amounts of water benefits annual grassy weeds, such as crabgrass and foxtail that have shallow root systems, at the expense of the deeper-rooted turfgrasses. Irrigate during early morning to reduce water loss due to the wind and heat of midday.

Consistently watering during evening hours is not recommended because this extends the duration of moisture on leaf surfaces. Water remaining overnight on leaf surfaces combines with dew and guttation, providing a microenvironment favorable for growth of fungal pathogens, which may lead to disease problems.

Ponding or runoff of irrigation water indicates that water is being applied faster than the turf and soil can absorb it. Turning off sprinklers for short periods during irrigation—"multiple cycling"—will allow water to soak into the soil.

Water infiltration may be impeded by excess thatch or soil compaction. Although some thatch is beneficial, thatch thickness in home lawns should not exceed 0.5 inches. To improve water infiltration, consider core aeration annually in the spring or fall to reduce thatch thickness and relieve surface compaction.

Summer is not the appropriate time to fertilize cool-season turf. Proper fertilization at the right time will improve the lawn's tolerance to stressful conditions. A typical fertilization program for home lawns includes application of a complete fertilizer containing nitrogen, phosphorus, and potassium, at the rate of 3 to 4 pounds of nitrogen per 1000 ft² annually, with 30 to 40% of the nitrogen in a slow release form. At least one-half of the annual fertilizer requirements should be applied during fall.

Consider purchasing a fertilizer with minimal or no phosphorus, since most South Dakota soils contain adequate phosphorus. Potassium has been shown to enhance stress tolerance. A nitrogen:potassium ratio of 1:1 is generally appropriate.

Since turfgrass growth in summer is minimal, and summer annual weeds utilize applied nitrogen at this time of the year more effectively than the turfgrass, delay application until late summer/early fall. Later applications also reduce the possibility of foliar burn from fertilizer, which is likely during periods of high temperature and drought stress.

Homeowners often will raise the mowing height during midsummer. Slightly raising the mowing height may be beneficial, but raising more than 0.5 inches may be detrimental. Cool-season turfgrasses tend to lose much of their root systems during summer, reducing the total amount of water that the taller plants would need. In addition, increased water loss from transpiration, particularly on hot, windy days, accelerates moisture deficit. Water uptake will not be sufficient to meet increased water loss resulting from additional shoot and leaf surface area when mowing heights are substantially raised in a short time period. Maintain a mowing height of 2.5 to 4.0 inches from spring through the summer.

Consider "syringing," the application of small amounts of water to the turf. A 5-minute sprinkler application of water on hot, windy days will provide a cooling effect as water evaporates, reducing turf canopy temperatures.

Do not apply herbicides to turf at this time of year. Synthetic growth regulator herbicides, such as 2,4-D, will not be readily absorbed and translocated, resulting in poor weed control. Additionally, herbicide injury may occur on stressed turfgrass. Volatilization of these herbicides, particularly at temperatures greater than 85 F, may injure desirable plants in the landscape.

Option 3: Consider a reduced-input turfgrass species

The third option is to replace a cool-season turfgrass lawn with a drought-tolerant, reduced-input turfgrass species. Turf-type buffalograss requires less water, fertilizer, mowing, and pest control than typical cool-season turfgrasses. A single irrigation applied once a month is usually adequate to keep buffalograss green and vigorously growing from May into September.

For additional information on reduced-input turfgrasses, contact the horticulture Extension educator in your area.