

## KEEP AHEAD OF LAWN DROUGHT

*Alan D. Blaylock and Rodney L. Davis<sup>1</sup>*

Summer drought is a fact of life in Wyoming. Desert conditions prevail most years throughout the state, and while you can't prevent the drought, you can use a proverbial "ounce of prevention" to help reduce unsightly scorch and/or lawn loss. Whether you are trying to cope with a water shortage, become more efficient with the water you have, or develop a more drought-resistant lawn, waiting until the heat of summer or until that water shortage occurs will be too late. Instead, begin a **turf management system** that will produce a deeper rooted, healthier, and more drought-resistant lawn.

If you are planting a new lawn, there are some things you can do to get started on the right track to produce a lawn that will stand up to periodic water shortages. If your lawn is already established, all is not lost; there are still many management practices that can improve a lawn's drought resistance. The steps to a drought-resistant lawn in the middle of the summer start in the early spring.

Plants depend upon a continuous movement of water throughout their systems. Turf grasses are about 75-80 percent water. The ability of turf to obtain the necessary water depends on the amount of available water in the root zone, depth of rooting, number of roots, rate of root growth, and soil temperature. A deep and extensive root system is your lawn's best tool for supplying the water needed during hot, dry periods. More roots mean more water can be supplied during periods of extreme heat and drying winds. Deeper roots are able to tap a larger volume of soil moisture for your lawn. Deeper roots are also in cooler soil and will continue to grow and take up water and nutrients when hot, dry weather makes surface soil conditions unfavorable.

Many turf-type grasses go dormant or semi-dormant when soil temperatures exceed 70 degrees Fahrenheit. Optimum soil temperatures for maximum root growth of many cool-season grasses are around 60 degrees Fahrenheit. Heat stress and moisture stress are often closely related. Root branching and production of new roots is greater in cool soils than in very warm soils. Encouraging deep rooting will help maintain healthy, attractive turf, even during Wyoming's desert summers.

### SOIL PREPARATION

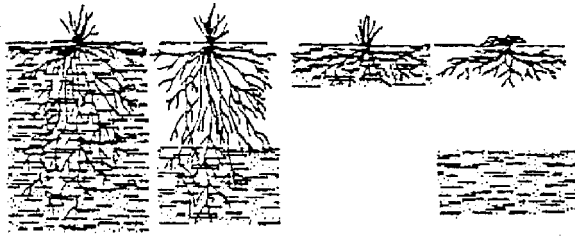
Deep, healthy root systems are important to drought resistance, and such root systems begin with deep soil preparation. Prepare the soil to a depth of 10-12 inches. Compacted areas or dense soil layers must be broken up before planting for healthy root growth. Add 2-4 inches of organic materials such as peat moss, compost, or manure to help condition the soil and improve soil structure. Mix them into the soil by spading or rototilling. These steps will help provide favorable conditions for a healthy root system. Consult the *Wyoming Lawn Handbook* (Bulletin 495R) for more information on soil preparation for lawns.

### DEEP WATERING

Plant roots do not grow through dry soil in search of moisture because they have no way of knowing where the water is. Roots do grow where conditions for root growth are most favorable. This means a proper balance of air, water, temperature, and nutrients. In most soils, grass roots will penetrate to a depth of 18-24 inches if not prevented by lack of moisture or lack of air in the soil. Alternately watering your lawn to a depth of 12 inches or more and waiting until the grass has used that water will encourage a deep and extensive root system. When the surface soil dries out, deep roots are able to reach water deep in the soil, and the grass stays healthy. Shallow, frequent irrigation encourages shallow root

---

<sup>1</sup> Agronomist, and University Extension Educator respectively, Cooperative Extension Service, University of Wyoming, College of Agriculture, Laramie, WY. 82071.



Deep watering

Shallow watering

Fig. 1. Deep watering favors deep root development. When surface soil dries, deep roots reach water deep in the soil. Shallow watering results in shallow rooting. Shallow-rooted plants cannot reach water deep in the soil and die in hot, dry weather.

development and undesirable soil conditions. Shallow roots are not able to reach water deep in the soil, and the grass dies or scorches in hot, dry weather.

## AERATION

A yearly plug aeration will help you prevent the build up of moisture and nutrient-robbing thatch. Thatch often results from shallow, frequent watering. Plug aeration will allow air and water to move more readily into the soil, encouraging deeper root development and providing a more favorable environment for decomposition of dead roots and clippings. Plug aeration can also help reduce compaction and further improve the root environment.

## MOWING HEIGHT

Soil temperatures during the heat of the summer can easily exceed the optimum temperature for cool-season turf grasses. Maintaining turf at 2 1/2 to 3 inches will reduce soil temperatures and reduce water loss to evaporation. Cutting turf too short increases the stress on the grass and can combine with heat and drought to reduce the attractiveness of your lawn.

## LIMIT NITROGEN FERTILIZER

Too much nitrogen (N) fertilizer will result in excess leaf development, which in turn increases your turf's demand for water. Nitrogen also increases the succulence of the grass

and makes it more susceptible to heat damage. Also avoid N application during or just before hot, dry periods. No more than 4 pounds of actual nitrogen per 1000 square feet per year is recommended. In areas prone to drought, on soils with low water-holding capacity, or where water is expensive, three pounds N/1000 per square feet per year or less is acceptable.

## LEAVE THOSE CLIPPINGS

Organic matter can greatly increase your soil's ability to hold available water for your lawn. Grass clippings are an excellent source of organic matter and nutrients. Clippings also provide a temporary mulch to help the soil retain moisture and reduce soil temperatures. Research has shown that lawns where clippings are not removed are healthier and more attractive than where clippings are removed. To avoid buildup and ensure rapid decomposition of grass clippings, mow often, limit nitrogen, and water deeply. New mulching-type lawn mowers have also proven beneficial.

## VARIETY SELECTION

There are many types of turf grasses that can be used in Wyoming. Turf grass selection will depend on the purpose of the turf and environment in which the turf is to be used. There are several types of turf that are quite drought resistant and will survive and even remain attractive with much less water than some of the traditional favorites. Kentucky bluegrass is an attractive turf species that has been widely used for many years, but in situations of short water supply it will be less hardy than some other species. Improved turf types of crested wheatgrass, fine fescues, tall fescue, buffalo grass, and blue gramma can be very attractive with much less water than bluegrass. Consult your university extension educator for more information on the suitability of these grasses for your situation or specific variety information.

Growing a beautiful lawn is a science as well as an art.

If you don't know how - don't guess.

Your university extension educator can help answer your lawn management questions.

*Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jim DeBree, Director, Cooperative Extension Service, University of Wyoming, Laramie 82071.*

*Persons seeking admission, employment, or access to programs of the University of Wyoming shall be considered without regard to race, color, national origin, sex, age, religion, political belief, disability, veteran status and marital or familial status. Persons with disabilities who require alternative means for communication or program information (braille, large print, audiotape, etc.) should contact their local UW Extension Office. To file a complaint, write the UW Employment Practices/Affirmative Action Office, University of Wyoming, P.O. Box 3354, Laramie Wyoming 82071-3354*