TECH CENTER

Drought tolerance of turfgrass

■ Landscapers, lawn care operators and golf course superintendents must often maintain acceptable turf with limited amounts of water. This is especially true in arid and semi-arid regions. Various approaches are used to conserve water, including the use of grasses that need only naturally available water and those that can be managed with reduced irrigation.

Many grasses can be grown in dry areas of the western United States without supplemental water. However, most of these are not well suited for finely-manicured areas because they grow too tall or produce a bunchy and open turf.

In cool areas with good soils and at least 15 inches precipitation per year, drought-tolerant Kentucky bluegrass cultivars, once established, will usually persist, and produce acceptable turf in the spring and fall. Under dry conditions, bunch-type turfgrasses, including perennial ryegrass and hard fescue, often show exceptional short-term drought tolerance. However, with extended drought, these species tend to thin and do not provide acceptable turf quality.

Species selection is the key to healthy, low-water-use, attractive lawns and landscapes.

Among the drought-tolerant grasses that can do well on golf course fairways and roughs are buffalograss and bermudagrass, both low-growing, sod-forming, warm-season species. For roughs and out-of-play areas, several additional grasses—including blue grama and inland saltgrass (warm-season species), and western and fairway wheatgrass, smooth bromegrass and Russian wild ryegrass (cool-season species)—are fairly well adapted to limited supplies of water. Continued research may provide the refinements which will allow these grasses to become more widely used.

Another management approach is to use limited irrigation. Watering in the summer to supply about 70 to 80 percent of potential evapotranspiration (ET) will normally provide acceptable turf from cool-season grasses.

The frequency of irrigaiton is also important. For example, irrigating Merion Kentucky bluegrass at two- and four-day intervals produces better turf than the same amount of water (50 to 75 percent of potential ET) applied at 14-day intervals.

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Pre-conditioning lawns

■ A lawn that is deprived of moisture for 45 days will typically suffer a 20 percent loss, and it will most likely turn a dormant straw color, but it probably isn't dead. After several days of moderate temperature and moisture, re-growth will begin, with visible results about two weeks after the dormancy is broken. It may take three to four weeks for severely drought-stricken lawns to fully recover, but they usually will, in time.

Here is how landscapers, golf course superintendents, lawn care operators and even homeowners can pre-condition their lawns for drought:

- Apply recommended amounts of turf fertilizer in the spring..
- Mow with sharp blades. Dull blades create more stress on the plant and cause it to require more moisture.
- Raise mowing height and reduce mowing frequency. Greater leaf surfaces allow the plant to store more water, and the leaves shade the rootzone from drying heat and evaporation.
- Water infrequently but deeply in the mornings or evenings to establish deeper rooting systems. To determine when to water, probe the soil to four to six inches deep; when the soil is dry or the probe is difficult to insert, it's time to water.
- Avoid excess traffic, which causes more stress.

—American Sod Producers Association

Watering instructions

■ Make sure your clients know how to save water while keeping their lawns looking their best. Here are some suggestions, whether in a hot, dry spell or not:

- Water early in the morning to reduce evaporation.
- Water the lawn separately from trees, shrubs and groundcovers, if possible.
- Have thatch removed in spring if it's more than one-half inch thick. Thatch should not be removed in the heat of the summer.
- Control weeds. They compete for water, light and nutrients.
- Fertilize moderately, applying at the low end of recommended rates.
- Keep your lawn at the right mowing height, a minimum of 1.5 inches for tall fescue, perennial rye and Kentucky bluegrass, a minimum of 0.5 inch for bermudagrass, zoysiagrass and St. Augustinegrass.
- Have the lawn aerated as necessary to prevent compaction and to allow water to move more freely into the soil. Clay soils in particular need regular aeration.

—University of California

Drought-tolerant varieties

■ Select grasses according to the nature of the area to be covered, water availability and effect desired. For any of the lawn grasses to produce an aesthetically pleasing turf, supplemental water must be applied. Generally, grasses should be considered high water requirement plants, but drought tolerant turfgrasses are becoming increasingly available.

Here are National Turfgrass Evaluation Program (NTEP) ratings of various commercially-available varieties, grouped by cultivars. These are the highest ratings in each group of trials, with no statistical differences evident. Please note that most ratings are based on limited site evaluations. All are from NTEP 1992 progress reports.

BUFFALOGRASS
(wilting)

315	9.0
609	9.0
Bison	9.0
Buffalawn	9.0
NE 84-378	9.0
Sharps Improved	9.0

BUFFALOGRASS
(dormancy)

609	8.2
Texoka	7.8
315	7.2
Plains	7.2
Bison	7.0
Sharps Improved	7.0

PERENNIAL RYE
(dormancy)

Nighthawk	8.7
Patriot II	8.7
Pebble Beach	8.7
Sherwood	8.7
Affinity	8.3
Envy	8.3
Stallion Select	8.3
Accolade	8.0
Achiever	8.0
Advent	8.0
Barrage	8.0
Caliente	8.0
Brightstar	8.0
Competitor	8.0
Cutter	8.0
Gator	8.0
Goalie	8.0
Morning Star	8.0
Navaho	8.0
Quickstart	8.0
Target	8.0
Topeka	8.0
Prizm	8.0

KENTUCKY BLUEGRASS MEDIUM-HIGH MAINT.
(wilting)

Eagleton	8.7
Barmax	8.3
Monopoly	8.3
Silvia	8.3
A-34	8.0
Indigo	8.0
Blacksburg	7.7
Challenger	7.7
Classic	7.7
Freedom	7.7
Nustar	7.7
Preakness	7.7
Suffolk	7.7

KENTUCKY BLUEGRASS LOW MAINTENANCE
(dormancy)

Fortuna	5.0
Voyager	5.0
Merion	4.7
Unique	4.7
Banjo	4.3
Amazon	4.0
Barzan	4.0
Bronco	4.0
Chelsea	4.0
Destiny	4.0
Merit	4.0
Opal	4.0
Ram-1	4.0

KENTUCKY BLUEGRASS MEDIUM-HIGH MAINT.
(dormancy)

Barzan	5.0
Glade	5.0
Ronde	5.0
Indigo	4.7
Marquis	4.7
Merit	4.7
Viva	4.7

KENTUCKY BLUEGRASS LOW MAINTENANCE
(recovery)

Monopoly	6.3
Banjo	5.0
Alene	4.7
S. Dakota Cert.	4.7
Barzan	4.7
Kenblue	4.3
Nustar	4.3

TALL FESCUE
(recovery)

Hubbard 87	6.3
Phoenix	6.0
Adventure	5.7
Chieftain	5.7
Guardian	5.7
Jaguar II	5.7
Monarch	5.7
Sundance	5.7
Willamette	5.7
Winchester	5.7

Athletic field soil is a key to avoiding injuries

by Henry Indyk, Ph.D.

Modified topsoil root zone mix. A 10-inch layer is spread over the subgrade showing one of the drainage lines.

■ Consider athletic field soil conditions from two major perspectives: the best possible growth situation for the turf, and the basis for player safety.

For optimum turf growth, soil conditions must be suitable from both chemical and physical standpoints.

Chemical conditions include pH, nutrient status, level of salt concentration and contaminants.

Physical conditions include soil texture, infiltration and percolation, drainage, and susceptibility to compaction. From the standpoint of safety, add field grade and contour, evenness or levelness, existence of depressions, and undesirable debris.

Assessing conditions—Know what's wrong before you take any action. Soil conditions must be assessed to analyze existing situations properly. This must be done by someone with knowledge and background in soils, someone who knows what to look for and how to judge conditions accurately.

A great deal can be determined by visual observation during a site visit: physical conditions including soil texture, drainage, levelness, contour, grade, depressions, percentage of debris and existing turf condi-

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