### **AIR & SOIL TEMPERATURES**

### Cool-season grasses

AIR TEMPERATURE

Heat kill likely 131°

Shoot growth ceases 90°

Optimum temperature 60-75°

for shoot growth\*

Shoot growth ceases

SOIL TEMPERATURE

90° Shoot growth ceases

77° Root growth ceases

70° Maximum temperature for root growth of any consequence

70° Time to plant grasses in late summer

60-75° Optimum temperature for shoot growth

50-65° Optimum temperature for root growth

40° Shoot growth ceases

33° Root growth ceases

20° Low temperature kill possible if temperature subsequently drops rapidly below 20° F

40°

#### Warm-season grasses

	AIR TEMPERATURE
140°	Heat kill likely
120°	Shoot growth ceases
80-95°	Optimum temperature for shoot growth
50°	Chilling injury resulting in discoloration is possible
50°	Initiation of dormancy occurs resulting in

#### SOIL TEMPERATURE

120° Shoot growth ceases

110° root growth ceases

80-95° Optimum temperature for shoot growth

**75-85°** Optimum root growth

74° Optimum time to overseed bermudagrass with ryegrass in the fall.

Time to plant grasses in the spring.

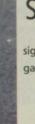
**64°** Expected sprin root decline is triggered and roots turn brown and die within 1 or 2 days.

50° Root growth begins to slow below this temperature.

50° Chilling injury resulting in discoloration is possible.

50° Initiation of dormancy occurs resulting in discoloration.

25° Low temperature kill possible.



### Symptoms of soil problems

If your turfgrass behaves in the following ways, it's a sign that there's trouble down below, and time to investigate for compaction or nutrient deficiencies:

- shallow but extensive root system
- little or no roots below four inches.
- little or no top growth
- off-color, very chlorotic tissue
- easily wilted

discoloration

- low density with weeds
- poor response to fertilization and soil applied pesticides

- prolonged wet soil that limits recreational uses
- water easily runs off the turf surface.

Some sites may have all of the above symptoms, while others may have just a few. Some symptoms may take a long time to show (root growth), while others are quickly visible (top growth).

Many other factors can cause the symptoms described above, making a definitive diagnosis nearly impossible. Thus, soil management is often considered an art more than a science.

<sup>\*</sup>Optimum turf performance may not coincide with optimum root and/or shoot performance

## ► Turf & Ornamentals / LM's Quick Reference Technical Guide

TURFGRASS - I	DEAL CUT &	FREQUENCY
TURFGRASS SPECIES	HEIGHT OF CUT (INCHES)	FREQUENCY OF CUT (DAYS)
Bahiagrass	3-4	10-14
bentgrass		
greens	<0.25	daily
fairways	0.25-0.75	daily-7
Bermudagrass		
greens	<0.25	daily
fairways	0.5-1.5	2-3
athletic fields	0.75-1.5	3-7
home lawns	0.75-1.5	3-7
centipedegrass	2-3	10-14
fine fescues	1.5-2.5	7-14
Kentucky bluegrass	1.5-3.0	7-14
perennial ryegrass	1.5-2.5	7-10
St. Augustinegrass	3-4	7-14
tall fescue	2-3	10-14
zoysiagrass	1-2	10-14

Very tolerant/ tolerant	Somewhat tolerant	Intolerant
bald cypress	American elm	bitternut hickory
black willow	American holly	black cherry
boxelder	black gum	blackjack oak
eastern cottonwood	burr oak	black oak
green ash	downey hawthorn	black walnut
hackberry	honeylocust	flowering dogwood
nutall oak	red elm	Kentucky coffeetree
overcup oak	river birch	linden
pin oak	southern red oak	loblolly pine .
red maple	swamp white oak	mockernut hickory
shingle oak	water oak	post oak
silver maple	willow oak	redbud
sugarberry	winged elm	red mulberry
sweetgum		red oak
sycamore		sassafras
water tupelo	STALL DESCRIPTION	shellbark hickory
		shagbark hickory
		shortleaf pine
		shumard oak
		white oak

PRIMARY SOURCE: WHITLOW, T., H. AND R.W. HARRIS, FLOOD TOLERANCE IN PLANTS: A STATE-OF-THE-ART REVIEW; NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPT. OF COMMERCE, AUGUST 1979: 1-161.

# RELATIVE HEAT HARDINESS OF 18 TURFGRASSES

HARDINESS RANKING	SPECIES	
Excellent	zoysiagrass Bermudagrass St. Augustinegrass	buffalograss carpetgrass
Good	tall fescue	meadow fescue
Medium	colonial bentgrass creeping bentgrass	Kentucky bluegrass
Fair	Canada bluegrass chewings fescue red fescue	annual bluegrass perennial ryegrass redtop
Poor	Italian ryegrass	rough bluegrass

### MADE FOR THE SHADE

popular cultivars.

rees		
cientific name	Zones	Common name
Acer circinatum	1-6	vine maple
Acer palmatum	5-8	Japanese maple
Acer pennsylvanicum	3-8	striped maple
Vinus sp.	2-7	alders
ercis canadensis	4-9	eastern redbud
Cornus sp.	1-9	dogwoods
Torylus sp.	4-9	hazels
llex sp.	3-8	hollies
odocarpus macrophylla	4-9	yew pine
huja occidentallis	5-9	arborvitae
suga sp.	3-8	hemlocks

Shrubs		
Scientific name	Zones	Common name
Berberis sp.	5-8	barberry
Euonymous japonicus	7-9	evergreen euonymou
Fatsia japonica	8-10	fatsia
Illex sp.	3-8	hollies
Ligustrum sp.	3-7	privets
Lonicera sp.	5-7	honeysuckles
Nandina domestica	6-9	heavenly bamboo