

Hot turf, stressed turf

Mid-summer is here. Be aware of the effects of heat stress on yourself and your crews, but also on your turfgrass.

That's why it's probably a good idea to keep a soil thermometer handy. And to use it, particularly when temperatures start getting uncomfortable.

Excessive heat can weaken or, if soil temperatures become hot enough, kill turf. But heat alone may not be the only reason why turf may begin to decline in mid-summer. This is the season when traffic is heaviest on the turf. Conditions are favorable for some summer diseases. Also, drought stress, particularly if the turf is not irrigated, can be a factor.

"Environmental stresses are a real challenge in our maintenance of turf," said Dr. Karl Danneberger to about 100 superintendents at a USGA regional seminar in



Dr. Karl Danneberger, of The Ohio State University, says that when turfgrass is under severe stress, it stands a better chance of survival and recovery if you don't disturb it too much.

RELATIVE HEAT HARDINESS OF 19 TURFGRASSES

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

—From "Turfgrass Science and Culture," Prentice-Hall, Inc., by James B. Beard

Cleveland this past spring.

The Ohio State University turfgrass expert said the optimum soil temperatures (measured at 1-2" depth) for growing creeping bentgrass are very narrow--50° to 64° F for optimum root growth; for optimum shoot growth 50-75° F.

He said that when the soil temperature exceeds 75° F the root system of the creeping bentgrass decreases by 50 percent.

"When temperatures reach that, your turf can look fine. It will be nice and green, and maybe you may have too much growth going on. But underneath, that plant is losing its root system and that can cause problems," said Danneberger.

There is a reduction in amount of energy the plant is able to store for growth, and loss of carbohydrates. This usually becomes evident in a secondary fashion. For instance, the turfgrass becomes less tolerant to traffic.

Less commonly, excessive heat (when the soil temperature rises above 104° F), can kill turfgrass.

While superintendents can't control Mother Nature's heat, they can lessen the effects of heat stress, said Danneberger.

For instance, mowing greens at 1/8 inch

or less provides precious little canopy over the soil surface, and, of course, is a stress of its own. Consider temporarily raising the cut during summer's heat.

Studies have also found that shaded turf is more susceptible to heat stress. Increase air movement by pruning (or removing) trees or shrubs adjacent to greens or tees with stressed turfgrass.

Clippings? While it doesn't hurt to leave them on in the spring or fall when the turf is actively growing, collect them when it's hot.

Also, be careful with topdressing when the turf is heat stressed, said Danneberger. Putting down another layer of material, particularly at noon or mid-afternoon, can cause a rapid temperature buildup in the soil.

Syringing greens during the heat of the day can drop soil temperatures several degrees rather rapidly.

After the turfgrass survives heat and all the other stresses of summer, and the temperature begins to drop again, that's when it begins building root mass again. "Late-season fertilization is a critical time in a plant's recovery from stress," said Danneberger. **LM**