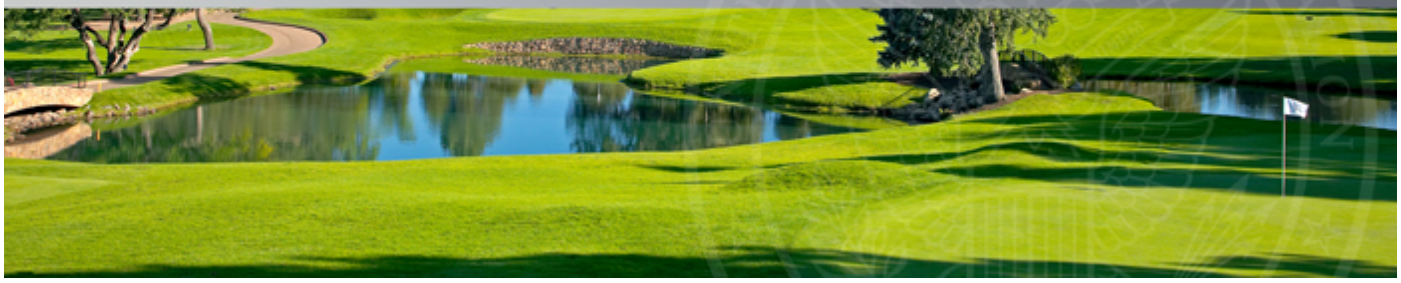
USGA GREEN SECTION RECORD



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Research You Can Use

Searching For The Right Stuff: Tolerating Hot And Dry

Rutgers University scientists examine genetic clues to improve heat and drought tolerance of creeping bentgrass cultivars.

by Dr. Jeff Nus, USGA Green Section

Dr. Bingru Huang at Rutgers University discusses a field trial evaluating the heat and drought performance of creeping bentgrass breeding materials.

Rutgers University has established itself as one of the nation's premier universities for turfgrass research. The essential connection between plant physiology and plant breeding is well developed within the community of turfgrass scientists at this northern New Jersey university. One project that benefits from an interdisciplinary approach is working to improve the heat and drought tolerance of creeping bentgrass. Dr. Bingru Huang, who leads the project, explains why this work is both relevant and vital.

"Heat and drought are the two most detrimental and most widespread abiotic stresses limiting the growth of turfgrasses, particularly for cool-season species," Dr. Huang explains. "It is costly to manage stressed turf, as more water, fertilizer, and fungicide may be required to control the decline in turf quality due to heat or drought. Improving

heat and drought tolerance can result in significant savings in management costs and reduced environmental impacts."

As Dr. Huang and her colleagues continue their research, one is left with the overwhelming impression that this work is very important for the future of golf courses. Its importance lies not only in the basic information it is revealing and the transferring of that knowledge to other turfgrass species, but also in the demonstrated synergy of combining breeding and physiology.

Read on to learn more about this important work.

Hot Tips For This Summer

by the Green Section staff

This summer continues to challenge golf courses and maintenance staffs across the country. Depending on where you live, it is likely your course is suffering from weather extremes this year. The following collection of issues and solutions from the Green Section agronomists will help minimize stress on your course and put this summer behind you with as little damage as possible.

Note: although the information is presented by Green Section region, most of the topics apply nationwide so be sure to read them all.

Southwest Region

Issue:
Some golf courses in the Southwest must comply with a mandatory 20% reduction in water use or face severe penalties.

Solution:
Eliminate irrigation in out-of-play sections of the rough or completely remove turf in out-of-play areas and re-landscape with more drought tolerant plants.

Links:
Water Issues Facing The Turfgrass Industry
Why Can't Our Irrigation System Keep Up?

A significant amount of water can be saved by eliminating irrigation in out-of-play areas of the rough, such as around tees.

Issue:
Poor transition in fairways from perennial ryegrass to bermudagrass in early summer.

Solution:
To encourage bermudagrass recovery, follow a protocol of aggressive core aeration in several directions, water generously, deep tine, and sand topdress at a rate of 10-50 tons of sand per acre.

Links:
Breaking The Winter Green Addiction
I Want It Perfect - NOW!

Completely removing turf in out-of-play areas and installing drought tolerant plants is an effective method of reducing water use.

Northwest Region

Issue:
Heat stress can be a problem on *Poa annua* greens.

Solution:
Manage the greens for recovery. Cooling (not watering) of the turf through syringing is most important during the heat of the day.

Links:
Hand Watering Greens
The Art Of Hand Watering

Issue:
Overgrown trees causing poor turf growth and severely constricted fairway lines can result in less play and course revenue.

Solultion:
Cut down trees causing shade and play issues with the goal of improving turf quality, enhancing the golf experience, and generating more rounds of golf.

Links:
A Guide For Selecting And Planting Golf Course Trees

To encourage bermudagrass recovery, follow a protocol of aggressive core aeration in several directions, water generously, deep tine, and sand topdress at a rate of 10-50 tons of sand per acre.

Cooling the putting greens during the heat of the day is helpful to mitigate heat stress on Poa annua putting greens.

Mid-Continent Region

Issue:
The on-going drought will affect golf course roughs and trees both in the short- and long- term.

Solution:
Water bags should be used to for key trees. Even with all of the first aid efforts, a tree could be die up to five years after a drought. Set sprinklers in key areas. Keep golf carts on paths or in the fairways to minimize damage.

Issue:
Rising soil temperatures and rapid root loss of bentgrass and *Poa annua*.

Solution:
Routinely performing minimally disruptive aeration every three weeks throughout the summer is effective in safeguarding turf health and minimizing root loss during periods of heat stress. Using small diameter solid tines of 5/16" diameter or less (i.e. needle tines), slicing or water injection create open channels that increase oxygen content in the root zone while also slightly reducing soil temperatures (since dry soils have a lower heating potential than wet soils).

Links:
Burning The Candle At Both Ends

North-Central Region

Issue:
Scalping or thinning along the perimeter of the putting surface occur during periods of summer stress.

Solution:
Replace grooved front rollers on the mower with solid rollers to reduce stress and leaf tissue bruising. Slightly increase the height of cut to reduce the potential for scalping.

Issue:

When keeping putting green soil moisture levels toward the dry end of the continuum, it can be a challenge to get multiple staff members on the same page with hand watering and syringing.

Solution:
Using hand-held soil moisture meters by all of the maintenance staff who check putting green moisture and apply water allows everyone to compare precise percentages and speak the same language.

It is common for superintendents to switch from using grooved front rollers on the mower and replace them with smooth rollers to reduce turf stress.

Hand-held moisture meters can help staff correlate "feel" to actual measurements.

Southeast Region

Issue:
High temperature and high humidity make creeping bentgrass survival difficult.

Solution:
Both researchers and superintendents have found that reducing mowing frequency to three or four times per week and substituting rolling up to three times per week improves summer survival.

Links:
Can Putting Greens Be Healthy And Fast?
Green Speed Takes A Backseat To Turfgrass Health

Although they are a nuisance to golfers, the Eastern Cicada Killer wasps are more interested in killing cicadas than stinging humans.

Mid-Atlantic Region

Issue: "Bees" infesting golf course bunkers and frightening golfers who are afraid they will be stung.

Solution:
Educate golfers that the wasps that inhabit bunkers are actually Eastern Cicada Killer wasps. Although their large size and swarming can be intimidating, they are non-aggressive. Unless these insects are directly handled, they try to avoid contact and will not sting people. Control of these wasps is very difficult and really unnecessary unless they are burrowing in areas such as putting greens or fairways where they can cause damage.

Florida Region

Issue:
How to manage aggressive thatch and organic matter accumulation on ultradwarf bermudagrass putting greens while reducing golfer complaints about downtime.

Solution:
Double punch the putting greens. Golf courses that normally core aerate greens three to four times each summer are double punching twice yearly.

Northeast Region

Issue:
Mechanical stress from mowers can diminish turf quality on collars, particularly in hot weather.

Solution:
Strategies to reduce mechanical stress on collars include mowing only as needed, mow when the turf is dry, use solid front rollers on the mower, use carpet, lattice boards or similar device to turn the mowers on, and reduce mowing height when temperatures allow to improve plant density.

Using carpets on which to turn the mowers can help reduce mechanical stress on collars.

Tighter spacing during core aeration is helping superintendents decrease total down time and disruption to golf.

Links:
July 28, 2011 Regional Update from Adam Moller
Summer Heat is Hitting Turf Hard

Issue:
Fried egg lies on bunker faces can be frustrating.

Solution:
Frequently monitor sand depths to ensure only two to three inches of sand are flashed on the face.

Keeping two to three inches of sand on flashed bunker faces will help reduce, but not eliminate fried egg lies.

Links:
It's About Time
The Miser's Makeover
Bunkers: Can Your Course Afford Them?
How Deep Should Sand Be Installed In A Bunker?
The Money Pit

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by the USGA Green Section Staff

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The USGA Green Section Portal

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