

By Mark Leslie



As summer heats up, superintendents check turf often for signs of stress and look for new ways to combat it. Photo © Montana Pritchard

(plant health)

Skip the stress

Summer can be a tough time for turfgrass, but increasingly, superintendents are finding more tools to deal with the season's challenges.

“We can blow 60-degree air on a 100-degree day and manipulate the soil profile.”
— Matt Weitz

The war of summer turfgrass stress may be a 60-day fight in the Northeast, or a 90- or 100-day slugfest in the mid-Atlantic, Midwest and Texas, but whatever the duration, golf course superintendents need all the weapons they can fire to win an armistice.

Colleagues across the high-heat-and-humidity swath of the country can relate to Paul B. Latshaw's war story from the “brutal” summer of 1995, when Merion Golf Club in Ardmore, Pa., experienced 45 days above 90 degrees, including 20 over 95. And they can commiserate with GCSAA Class A superintendent Matt Weitz in his recollection of hosting a Web.com event at Victoria National Golf Club in Newburgh, Ind., when it averaged 109 degrees over four days, with an evapotranspiration rate of 0.5 inch in “conditions we'd never seen before.”

But superintendents can also take solace that their colleagues, as well as industry and university researchers over the years, have used their creativity and ingenuity to help overcome summer stress.

Many of their weapons are conventional, but as in military warfare where advanced weaponry and technology are being invented continually, superintendents report astonishing success with some new developments as well.

Historically, irrigation and mowing programs were improved with venting machinery, foliar fertilizers and topdressing.

Then along came superior mowers and bedknives and rollers, fans, moisture sensors and meters and even the invention of SubAir, an aeration and moisture removal system. Recently en-

tering the fight are Precision Air, a system that allows superintendents to actually air-condition a green's subsurface through the drainage system, and Turf Screen, a sort of sunscreen for turf that Latshaw, a certified golf course superintendent and 26-year GCSAA member, describes as "the most revolutionary thing I've seen in the last 10 years."

Add the human element — a good mechanic and a superintendent and staff who can act intuitively — and a golf course has an excellent chance to survive even the worst blitz of summer heat and humidity, and even the shade from an overload of corporate tents at a major tournament.

For colleagues in this annual struggle, superintendents with bentgrass greens from Massachusetts to Ohio and Texas have shared tips ranging from cultural to mechanical.

Water management

"The biggest thing at all times is water management," says Latshaw, director of grounds operations at Muirfield Village in Dublin, Ohio, for the past 11 years, a period which follows seven years at Merion and five at Oak Hill Country Club in Rochester, N.Y.

Muirfield Village's greens are predominantly Penn A-1/Penn A-4 and the shade-tolerant Penn G-6 bentgrass, while its fairways are bentgrass and *Poa annua*.

"The only time we auto-water greens is to water in a product or flush them. All other times it's hand watering just because every area is different," Latshaw says. "We do a lot of syringing throughout the day just to cool the ground off."

Moisture sensors are good, and Muirfield Village has them on three holes, but Latshaw says handheld meters are his preference. Every scout handling the hand watering is armed with a moisture meter.

"If a green reads below 10, they take it to 12. If it's a high-ET (evapotranspiration) day, they take it to 13 or 14. If it's hazy, hot and humid, they take it to 11."

Latshaw says his goal is to keep the greens as dry as possible but not let them wilt at noon.

"The critical thing is making sure they get the right amount of moisture," he says. "We try to keep them as firm and fast as possible, and make sure we don't miss anything."

Jason Harrison, in his third year as superintendent at Worcester (Mass.) Country Club, a Donald Ross-designed course celebrating its 100th anniversary this year, deals with a *Poa annua*/bentgrass course with a lot of *Poa*.

While he irrigates the entire course except putting surfaces every other day, the greens are

"almost strictly hand-watered," the amount determined by moisture meters, says Harrison, a nine-year GCSAA member.

Harrison starts the irrigation cycle at 2:30 to 3 a.m., "so that it's still watering when we come in to work, and the turf is not sitting overnight in a saturated state."

Weitz, who is now director of agronomy at Vaquero Club in Westlake, Texas, which has bentgrass greens and zoysiagrass fairways, says he deep-waters Sunday nights in conjunction with the SubAir pulling moisture down into the root zone.

"You want to keep it as dry as you can and push it longer and get longer life out of deep watering," he says.

Blowin' in the wind

Latshaw, Harrison and Weitz all ascribe to greenside fans.

The need for them is thrust upon Latshaw merely because as a "stadium" course, Muirfield Village was intentionally designed by Jack Nicklaus and Desmond Muirhead with playing surfaces lower than the surrounds and with water on all the holes. Therefore, there is limited air movement on most of its greens.

"We have fans on 15 holes, and some have two fans," Latshaw says.

With a season managed around the PGA Tour's late-May/early-June Memorial Tournament and played in the Ohio Valley — famous for very high temperatures and often oppressive humidity — Latshaw's goal is to have the fans up and functional immediately after the event.

"We see dramatic improvements when we get the fans up," he says. "Without them, we would have some issues."

Weitz, a nine-year GCSAA member, has dealt with the heat, humidity and microclimates of Victoria National and Hillcrest CC in Indianapolis, and now faces the polar opposite: more heat, less humidity and frequent wind. But in both situations, he highly recommends fans for "cooling off the surface, helping air flow, allowing the plant to transpire as it should, and manipulating Mother Nature as much as we can."

Mowing and rolling

Latshaw's mowing crew does all its work at night, and if it's a week of 90-degree-plus temperatures, they mow one day and roll the next.

That rotation helps out, "especially with stress on greens," he says, adding, "We make sure turf growth regulation is geared so that we can miss a mowing."

Harrison, who also mows at 0.1 inch, goes

into the summer using grooved rollers on the hand mowers as much as possible. But in July he switches to smooth rollers and maintains the same height of cut.

"Even though the height of cut is the same, the effect is actually a little higher, so we get a longer leaf blade," he explains. "I'll use smooth rollers as long as I have to, but anticipate that by early August I'm back at grooved rollers and being as aggressive as I'm allowed to."

During summer stress, Harrison still normally rolls six days a week, though if he has to back off he will.

"Certain days we'll only roll and still achieve the green speed we want, but not cutting and injuring the plant," he says.

His decision on whether to roll or not is made by sight and feel, the temperature and its duration, and what the greens look like by eye.

Regardless of the strategy, though, Latshaw places his mechanics third on his list of summer-stress accolades.

"We're fortunate to have a great mechanic," he says. "The worst thing you do to a green is mow it. We always have a mechanic out in the field, adjusting mowers, making sure the bedknife is okay, etc. We cut at 0.085 during a tournament, and if we have one mower knocked off by a thousandth of an inch, it's life or death."

"It's like a surgeon using a dull scalpel versus a sharp one."

The new wunderkinds

Along with the conventional summer-stress treatments have come two recent phenomena in the golf world: Precision Air and Turf Screen.

Weitz had a SubAir system at Victoria National in Newburgh, Ind., and describes it as "a great invention but still you're dealing with ambient air."

Along comes Precision Air, which propels air conditioning into the greens profile to the point that "we can blow 60-degree air on a 100-degree day and manipulate the soil profile," Weitz says.

"In Indiana we had 20 in-ground SubAir units that helped suck the moisture out, nothing more," he says. "That's when I started playing with cooling the air down, blowing cold air into the green."

Following the lead of TPC Sawgrass in Ponte Vedra Beach, Fla., and The Alotian Club in Roland, Ark., Weitz had Precision Air units installed on five holes at the Vaquero Club, which also has four SubAir units — two permanent and two portable.

At the expense of \$50,000 per green,

“We’re going to be putting Precision Air in all the greens,” he said, adding that the club’s membership “wants to do what it takes to be the best.”

Meanwhile, the pièce de résistance in this annual bout with summer stress may be Turf Screen, an invention of former Manufacturers’ Golf & Country Club superintendent Scott May, a veteran of his own climatic battles in suburban Philadelphia. Taking the concept of sunscreen for humans to the world of turfgrass management, May experimented with a suspension concentrate comprised of sunscreen ingredients titanium dioxide and zinc oxide.

And voilà!

“The biggest game-changer,” says Weitz, “is Turf Screen, one of the most important tools I use.”

“Turf Screen is a staple with our program,” says Latshaw, who experimented with it for four years and reported astonishing results.

“I’ve seen a significant reduction in canopy temperature — on average six to eight degrees,” says Harrison.

When temperatures were topping 100 degrees, Weitz started experimenting with Turf Screen two and a half weeks before a Web.com tournament at Victoria National.

“You could draw a line between where the application was laid and where it wasn’t,” he said. “We pulled the trigger then and sprayed wall-to-wall because the bentgrass was stressing out.”

Harrison, who applies Turf Screen every two weeks starting in April, says it helps turfgrass density — “with almost a fertilizer response but not with the growth” — and reduces the need for water.

“Because of Turf Screen, we’re not wilting as quickly,” he says.

Latshaw harkens back to 2012.

“It was really dry,” he says. “On one fairway we could see where we stopped applying Turf Screen. Outside that area, it was wilting like there was no tomorrow. Inside it, there was no wilt at all.”

So today, from May to October, Muirfield Village crews spray a foliar application every week on greens, two weeks on fairways, and two to three weeks along with fertilizer and fungicide on bunker faces.

Weitz says Turf Screen “could get costly if you’re spraying 50 acres, but if you’re just treating the greens, it would only cost \$300 to \$400 per application.”

Plant protectants and topdressing

As for other applications a superintendent



The greens at this course show noticeable improvement since the introduction of TurfScreen into the summer program, as this treated/untreated photo illustrates. Photo courtesy of TurfScreen

can explore as a means to relieving summer stress, Latshaw says, “You need to make sure your rotational fungicide applications are tight and if you get in a situation above 90 degrees for two weeks, you might not get 14 days on chemistry, you might get 10. That’s a ‘feel’ thing.”

“All summer,” Harrison says, “we topdress biweekly with hand-rotary spreaders. Even if it’s 90 degrees, we don’t back off. It keeps the greens firm and protects the [plants’] crowns.”

Harrison also recommends “laying off granular fertilizer during the summer stress period. We almost always use foliar so it’s going out in a sprayer. We’re soil testing once a month so we know that we have an efficient amount of, or are low in, certain elements. We keep them fairly lean and use 100 percent foliar products.”

Determining his applications by sight, he says he normally foliar sprays every two weeks.

“But,” he says, “in the heat and humidity of mid-June to mid-August, we only soil spray if Mother Nature is going to water it in. I try not to put down any additional water.”

Venting

Keeping in mind that oxygen is a crucial element to plant health, venting is universally recommended, but with different types in dissimilar situations.

At Weitz’s high-end Texas track, his choice is 4-inch, 9-millimeter needle tines once or twice a month “to open up the soil a bit, get air into the root system and release some of the gases.”

At Harrison’s *Poa annua*/bent high-end club in Massachusetts, his choice is solid deep-tine aerification, going 8 to 10 inches deep

without pulling plugs, once in July and again in August.

The Lollapalooza

Even with all these tools, when all is said and done, a superintendent can’t prevent, but can only deal with, turfgrass’s worst attack: a thunderstorm followed by sun and 95 degrees.

“You get half an inch of rain and it’s humid and you cook your roots and then you’re done, left managing a compromised root system,” Latshaw says.

How to best deal with that situation?

“You depend on foliar feeding programs, light and frequent applications because the root system is compromised. You do a lot of syringing. You’ve got to know where your roots are,” Latshaw says.

“In early-May to June you can run drier numbers because the root system is deeper,” he adds. “Later, the roots aren’t as deep and so you go with light and frequent applications — especially if the scenario is that pathology is working on the root system ... your soil temperature always follows soil moisture. It’s an inverse relationship.”

If they haven’t already, then that is when superintendents truly earn their keep, agrees Harrison, saying, “You’re a victim of your own success (in terms of golfers’ expectations).”

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