

Finally, the summer of 2011 is over. If you thought it was a particularly hot one, you'd be right.

In fact, according to the National Oceanic and Atmospheric Administration, the summer of 2011 was the second warmest summer on record. (The warmest summer on record for the United States occurred in 1936 — giving those of you 75 and older another thing to brag about.) Excessive heat in 2011 resulted in the warmest August for six states, including Arizona, Colorado, New Mexico, Texas, Oklahoma and Louisiana. Dallas set a record for the number of days (70) above 100 degrees F and recorded the second most consecutive days (40) above 100 degrees F for 2011.

In conjunction with the high temperatures were the extremes in moisture. Dry conditions occurred throughout the Midwest, West and the South, while above normal precipitation occurred in the Northeast. Record rainfall was set in a number of states in the Northeast.

Unfortunately, the summer of 2011 was preceded by the fourth warmest summer on record — the summer of 2010 — and eight of the warmest years recorded since 1880 have occurred since 2001 (*Golfdom*, May 2011, page 18). I think the accumulative effect of one record warm summer after another may help explain why the summer of 2011 was so tough on turf.

As background, one of the basic ecological axioms in managing turf is that practices accumulate. In other words, the benefits from good management practices increase over time. For example, multiple studies report that crabgrass population decreases over time with moisture, higher (proper) mowing heights and adequate fertilization. From a competitive standpoint, a dense, healthy turf reduces the penetration of light to germinating crabgrass, resulting in a less competitive weed. Over time, less and less crabgrass germinates under these conditions.

Conversely, poor management practices also accumulate over time, leading to a worsening problem. Reversing the cultural practices mentioned above can shift the turf to a less competitive advantage, increasing the

Accumulating Stress Periods

BY KARL DANNEBERGER



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severity of crabgrass over time.

The consecutive hot summers have clearly stressed turf. For example, managing creeping bentgrass has become more difficult under stressful conditions. One sign is the appearance of bacterial disease of creeping bentgrass. Over the last few years we have seen a dramatic increase in verified reports from the western United States through the Mid-Atlantic region. Most of the cases occurred where creeping bentgrass was under extreme stress.

Another sign of stressed turf is the increase in “wet wilt.” Out East, where high temperatures met precipitation from frequent thunderstorms, anaerobic soil conditions resulted in rapid turf decline. Although most often associated with *Poa annua* under putting green conditions, this year creeping bentgrass greens suffered injury caused by anaerobic soil conditions.

Dealing with the cumulative effect of summer stress conditions is challenging. In areas like Atlanta and eastern Texas, where creeping bentgrass is grown on the border of warm-season turfgrass adaptation, golf courses are replacing creeping bentgrass with ultradwarf bermudagrass. How the ultradwarfs perform over time remains to be seen, but initial reports are promising.

In areas where the turfgrass is adapted, the use of heat-tolerant cultivars will be encouraged. From a management perspective, good management practices will not only have to be implemented during the predicted stress period, they'll have to be expanded for the entire growing season. Because “normal” summer conditions appear to be gone for now.

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