Weather Extremes Plague Turf Again in 1988

This article, penned by Dr. Randy Kane and published in the November 1988 issue of Bull Sheet, *reflects upon the1988 drought that plagued a large swath of the nation's midsection, from the northern Rockies and Plains southeast to the Ohio Valley. Here, Dr. Kane focuses on the drought's effects upon Chicago-area golf course, and the parallels between 1988 and 2005 in terms of weather conditions and impacts are startling, if not downright eerie. And—though more localized than the 1988 drought—the 2005 drought through mid-July as experienced by Chicagoland has actually been more severe. Moisture deficits had surpassed those logged during the 1988 drought, with no significant precipitation and continued heat in the forecast through month's end.*

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As in recent years, weather extremes again have had a serious impact on the quality and manageability of golf turf in the Midwest. An usually dry and cool spring was followed abruptly by a very hot and dry late spring to mid-summer period that we won't soon forget. Then late summer was even worse as humidity and rainfall combined with high temperatures to unleash the fungi and stress out *Poa annua*. Many serious turf problems other than disease resulted directly from the temperature and precipitation extremes. Following is a brief account of the meteorological highlights of the 1988 season, and a summary of the turf problems that occurred as a direct result of the weather.

Spring of '88 got off to a fairly warm and wet start, including a record high temperature of 85°F on April 5. Early heavy play was a factor to contend with. Then it turned off cool and dry in late April, with overnight temperatures near or below freezing. Most of the month of May was also cool and dry, with frosts and record cold temperatures occurring as late as the 25th.

This dry and cool weather pattern caused *Poa annua* and older bentgrass varieties to green up and grow very slowly. However, this did seem to force roots deeper into the soil profile, including *Poa annua*. Also, the *Poa* on many area courses seeded very heavily which, along with the slow growth and heavy traffic, resulted in poor putting green quality.

The late spring and summer season of 1988 saw record heat and drought that laid waste to nonirrigated crop lands, home lawns, parks and golf turf, and taxed water supplies and delivery systems to the utmost. Many communities were forced to restrict or ban lawn sprinkling and other nonessential water uses. Temperatures in the 90s were recorded in late May, and the mercury passed the 100-degree mark for the first time on June 20. Total precipitation for May, June and July was as low as 1-1.5″ inches in the metropolitan area, and an abysmal 0.5-1″ in parts of north central and central Illinois and central Indiana. (Normal rainfall for the three-month period is 11.2″ in Chicago.)

Fortunately, most Chicago-area courses have adequate sources of water from wells and/or holding ponds and streams. Greens, tees and fairways received adequate water for the most part, although restrictions limited fairway watering at some courses. The incessant demands placed on irrigation systems

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led to many problems as pumps, water lines and irrigation heads failed at several courses. Most nonirrigated turf areas (e.g., roughs) were dormant by mid-June. Dormant turfs subjected to excessive traffic (e.g., golf carts) were reduced to dust and will have to be reestablished this fall. Many downstate courses without adequate irrigation systems have been extensively damaged, and large acreages of turf will have to be replaced.

Very few disease problems were encountered through early July, because of the lack of rain and very low relative humidities. Localized dry spots were a widespread phenomenon on putting greens and fairways, as were unexplained ring and patch symptoms. However, once humidities increased in mid-July, a dramatic increase in Pythium blight, brown patch, summer patch (*Magnaporthe* sp.) and other diseases occurred.

Also, by late July and into August, the accumulative effects of heat and humidity began to take its toll on *Poa annua*. *Poa* is highly susceptible to heat stress and/or anaerobic conditions (wet wilt), especially where the root system is shallow or restricted. A number of factors appear to interact to cause shallow roots on *Poa*, including: compacted soils and layering; low fertility (especially N and P); low cutting heights; contours and drainage problems; nematodes (!) and root-rotting fungi. Combinations of two or more of these factors appear to be especially deadly.

Large areas of turf were lost on greens and tees where *Poa annua* was the primary grass species present. In most cases, turf was in good shape through the end of July, but two hot spells—August 1st through 4th and August 16th through 18th—brought the greatest trouble. Daily high temps near 100°F and overnight lows in the 80-85° range combined with high humidity. Soil temperatures were near or above 100°F max and stayed above 90°F for extended periods of time. Water management was critical during this period; syringing didn't seem to help the *Poa* at all. Deeper-rooted grasses such as bentgrass and ryegrass survived this heat much better.

After the summers of '83, '87 and '88, it is apparent that we need to work on new management strategies and pest controls to help our turfgrasses withstand summer heat and drought stress, especially if predictions of hotter and drier summers due to the "greenhouse effect" hold true. Different fertility practices and mowing and grooming patterns (including more use of walking greensmowers and "verti-groomers"), and more intensive aerification, should be considered in order to increase root mass and depth and to reduce the effects of high air and soil temperatures. More about NEMATODES at a later date.