June’s Fire Needs Sharp Work

Weather

Although the state totals aren’t in, if Columbia is a true barometer for state temperatures it certainly was another one for the record books. June 2018 ranked as the fourth warmest on record in Columbia since record keeping began in 1889, and was the warmest since 1953. This followed on the heels of the warmest May on record, and plants have noticed. More than 52% of the state ranks short/very short of topsoil moisture, 14% of corn and 35% of pastures are rated in poor to very poor condition (NASS stats – July 2, 2018). As indicated in the last update, ET rates soared well above rainfall supplies in June turning many lawns and nonirrigated areas dormant. NOAA predicts above average temperatures to remain in Missouri and throughout much of the U.S. through mid-July, so the heat stress on cool season turfgrasses looks to keep on, keeping on.

Fortunately at the end of June, a solid precipitation event dumped a few inches of rain along a swath right through the middle of the state. Three to three and a half inches were dumped out of rain gauges in Columbia, whereas southeast MO perhaps saw a bit too much with ~ four inches occurring in that region. This event has greened up inadequately irrigated turfgrass considerably in the middle portion of the state. The moisture release from soil should moderate air temperatures somewhat, but expect humidity to remain high. As for rainfall prediction by NOAA, Missouri is in the middle of a predicted dry upper and west central U.S. and above average rainfall in the southeast, Kentucky and Tennessee Valley.
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Quick Hits

- **Lance Nematodes on Putting Greens** – Of the many big issues noted on bentgrass putting greens in the last three weeks of this extraordinary summer, one of the bigger has been lance nematode damage. Lance nematode (*Hoplolaimus galeatus*) is a big nematode, 1-2 mm in length, that feeds as both an ectoparasite and an endoparasite. Other than high densities of root knot, it has been a rare occasion that I observe plant parasitic nematodes while checking for other turfgrass diseases on roots. In recent samples, however, I have seen quite a few of these big nematodes with their hind dings sticking out of roots or their heads sticking out of the root cookie jar.

Until Recently, June was Dry

A. Vegetation Drought Index as of June 24, 2018. - UNL - www.vegdris.unl.edu
B. Despite recent rains, much of MO had well below average rainfall in June - Source: MU Climate Center

Lance Nematodes Detected in High #s

A. Symptoms of lance nematode feeding
B. Lance nematode with it’s head slightly out of the cookie jar.
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We would expect late June/early July to be the height of lance nematode populations, but some of the numbers from infested, and declining greens have been staggering. In the last three weeks, we’ve received samples from eight courses with ~ 600 to over 2,000 lance nematodes/100 cc of soil. This is well above the 200#/100 cc threshold we utilize from Arkansas, and soars even above the most conservative estimates of 400#/100 cc. Additionally, stunt nematodes in the range of 1,000 – over 2,000#/100 cc of soil are also being observed in these samples along with lance. Alone, smaller stunt nematodes normally don’t cause bentgrass decline, but with their big brother lance at their side, the two provide a dastardly one two punch of feeding activity.

In these cases, Divanem (abamectin) is most often suggested to knock populations back. Although providing control of many other nematode species, Indemnify does not control lance nematodes. Divanem is more of a “broad spectrum” nematicide but gets tied up in organic matter in the soil profile quickly. Therefore, Divanem should be tankmixed with a wetting agent (and perhaps also with a fungicide) and watered in immediately with 0.2-0.25” of post-application irrigation. Some have also reported success with Nimitz Pro G, but more testing needs to be conducted on putting greens. The active fluensulfone is systemic as well as a contact, and the product is in a granular formulation. At higher rates and temperatures, the granular formulation can cause bronzing and phytotoxicity, so watering this in immediately is also advised.

- **Pythium Root Rot** – In some cases with nematodes, but able to damage on its own just fine, Pythium root rot has been observed in several samples over the past few weeks. This continues the troubling trend of this disease remaining #1 in affecting bentgrass putting greens in the region. Curatively, a knockdown of Koban/Terrazole is recommended followed three days later with a Segway + QoI (Heritage, Insignia, Fame)
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tank-mix. Preventively, Segway alternated with Signature Xtra, Banol, Subdue, Stellar is recommended throughout the season on a 14 d interval. All of these applications should be watered in to the depth of the root zone. In late April and May, this would be 0.125-0.25 inches depending on infiltration rate. Now in many instances, 0.1 inch or slightly less post application irrigation may be better on limited root zones.

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Disease Taking Advantage of Stress
A. Summer patch and high ET rates are not a good combination for Kentucky bluegrass.
B. Pythium blight and brown patch taking advantage of spring sodded tall fescue.

May let the fuse and June blasted cool season turfgrass stress into the clouds this year, meaning fireworks on the ground as well as the sky this 4th of July. Tall fescue/Kentucky bluegrass lawns, Kentucky bluegrass sports fields, and especially creeping bentgrass putting greens have felt the brunt of this hot summer. Environmental stress limiting growth is normally a predisposing factor required for disease development, so paying attention to management inputs is crucial for keeping turfgrass alive in this difficult season. Everyone’s time is limited, so below a single word and concept is given for each turfgrass sector that may help to focus on during the summer strife.

Lawn Care: Patience - Human nature lends itself to the freak out emotion at the first sign of brown. As stated above, rainfall and presumably even supplemental irrigation was unable to keep up with the high ET rates in May and June. Many lawns went brown simply due to drought dormancy, a defense mechanism that tall fescue is extremely adept at provided it has an established root system. When drought occurs, examine for tell-tale lesions of brown patch, but without evidence don’t apply fungicide, and in no case try to grow out of it high fertilizer rates. If the lawn can’t be irrigated effectively by the homeowner don’t do it. Last but not least (and definitely not popular), don’t mow. Remember September is coming, and overseeding to rebuild density is a powerful tool.
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**Sports Fields: Moderation** - In reality, this applies to all sectors. Mowing heights, particularly on sports fields under the big lights, are often on or just below the limit of healthy turfgrass. This provides a much lower limit for error than lawns and commercial areas. Consider raising mowing heights just a tick or skipping an extra day or mow a week under high heat conditions. If possible at larger facilities, moderate traffic by spreading out play and monitoring wear and density on fields. Also fertilize in moderation. Be careful with high rate granular applications, and consider lower nitrogen containing and slower releasing organics, or spoonfeeding with sprayable formulations.

**Golf: Water** – If sports fields are on the limit, then bentgrass putting greens have many toes over the ledge. In many cases, nothing out of a sprayer will counsel it back onto firm ground. Raising mowing heights and alternating rolling/mowing is wise but maintaining soil moisture on the dry side is key to getting through the 90+ days. Bentgrass roots grow until 86 F, but at 88 F cease growth and start declining. As shown by [this post from PACE Turf](#), as soil volumetric water content increases so does soil temperature. At night, when air temperatures cool (not enough when still at 80 F), the water filling the sand pores retains heat much more than air would. Soil temperatures therefore don’t correspondingly cool at night, and there’s no time for root recovery. If the soil is wet during the heat of the day, boiled root soup occurs. Fans lower soil temperatures, increase root length density, and presumably allow for increased plant transpiration by moving water and humidity off the leaf surface ([Guertal, van Santen, and Han, 2005](#)). Greens need to be vented on a regular basis to allow air in to replace other gasses and dry out stubbornly wet organic matter. Last, consider using a TDR tool to measure soil volumetric water content, and get to your number first thing in the morning. This morning water may last the day and help limit syringing in the hot afternoon.