The Importance of Infrastructure

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The turfgrass program at the University of Illinois has initiated a long-range planning process to chart the direction of our program over the next five years. One of the most important parts of our plan is to develop the infrastructure needed to produce an outstanding applied research program.

As I have worked at our research center for almost one year, several current deficiencies are obstacles to an outstanding field research program. First, our irrigation system is totally inadequate for research purposes. While I doubt that many turf managers have much sympathy for us since many of you, undoubtedly, feel that you are getting by with an inadequate irrigation system, our current system permits us to keep the grass green and not much else. For instance, if one of us wants a research study where irrigation is applied only when the grass begins to wilt, then an additional .8 acres of our research area will be affected by this watering strategy. Considering that we only have seven acres of research area (for all grass types and mowing heights), we waste a lot of land or impact other research because of our lack of irrigation control.

Secondly, we have no modified soil areas. Most every golf course built in recent time uses USGA specifications or some modification for the greens soil mix. The days of push-up greens, particularly with the loam and clay loam soils of Illinois, are, for the most part, history. The greens area at the U. of I. research plots are constructed from a Drummer silty clay loam soil which is great for growing corn and soybeans but does not handle traffic very well. It also does not simulate the growing conditions of most golf course greens in Illinois. The sports turf area has been growing rapidly over the past several years with more attention being placed on the construction and maintenance of athletic fields. Again, we do not have any area on our research farm that has the modified soils preferred for athletic field research.

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While other deficiencies exist in our infrastructure, correcting the above problems will go a long way towards providing the facilities needed to conduct the applied research that will be useful to the industry in Illinois. Therefore, I want to ask for your support as we begin the planning and acquisition of the supplies, materials, labor, equipment, and money needed to install a new irrigation system and modified soils for greens and athletic field research. What that support may entail is not clear at the present time; but as our plans develop, industry support will be crucial to getting what we need at the research center. This will be a major facelift for the research center on the University of Illinois campus.

Plant growth regulator use continuing to grow

It is ironic that ten years after the commercial introduction of a new generation of plant growth regulators for turf use, the intended marketplace, i.e., the home lawn, has seen essentially no use of PGRs, while high-maintenance turf is rapidly incorporating the use of PGRs into their maintenance programs. Many marketing specialists at agricultural chemical companies were figuring out how many millions of acres of lawns there are in the United States and assuming that a very high percentage of them would sign up to be relieved of the tedium of mowing the lawn. But as science usually goes, and for a variety of reasons, the use of PGRs on home lawns has never taken off. However, with the addition of Primo, a new PGR from Ciba-Geigy, and the continued use of some of the other gibberellic acid-inhibiting PGRs, PGR use on the golf course is expanding rapidly.

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While mowing reduction is beneficial on golf course turf, PGRs also offer other benefits, including a reduction in water use rates, increased wear tolerance, increased rooting, reduction in disease pressure, increased visual turf quality, and an increased rate of recovery from injury.

While this list is impressive, each of the above responses will depend upon a number of other factors and may not always be observed. For instance, a study was conducted by the author at Michigan State University that examined the effects of PGRs on turfgrass wear tolerance. Using Primo at a rate of .25 oz/M, significant effects on turf wear tolerance were observed. At an annual nitrogen fertilization rate of 2.5 lbs N/M/Yr, treatment with Primo significantly improved creeping bentgrass wear tolerance. At a higher rate of N fertilization, 5 lbs N/M/Yr, the improvement in wear tolerance was noticeable but not nearly as pronounced as at the lower level of N fertilization. Thus, other cultural practices will impact the performance and results obtained with PGRs.

The same study at Michigan State University also examined the effect of PGRs on divot recovery. Simulated divots were made in PGR-treated turf and the rate of divot closure monitored until the divots had completed recovered. We had assumed that PGRs would slow the rate of divot recovery because of the reduction in growth observed with PGRs. However, this did not happen to any extent with the PGRs tested. The most important factor, as one might have guessed, was the rate of N fertilization. Divots healed about ten to eleven days faster when fertilized at the high N rate (5 lbs N/M/Yr) than when fertilized at the low N rate (2.5 lbs N/M/Yr). PGRs had a much less dramatic impact than N fertilization on the rate of divot closure.

In 1994 none of the PGRs tested (Primo, Cutless, Scott's Turf Enhancer) had a significant impact on divot closure rates, i.e., they were no different than untreated turf. In 1995, Primo treated turf recovered at the same rate as untreated turf. However, higher rates of Cutless and Scott's Turf Enhancer resulted in slower divot closure rates than turf receiving no PGR.

Much remains to be learned about the responses of high-maintenance turf to PGRs. However, it seems clear that these products will continue to be used by golf turf managers to manage growth and improve turf quality and performance. ■