

Program Spotlight

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Irrigation Multi-Tasking

Modern irrigation systems are technological marvels, combining design with function and durability. Systems designed to deliver precise amounts of water with uniform distribution affords the turfgrass manager significant management flexibility regarding soil types, topography and turf species.

With all this sophistication and flexibility, irrigation systems should not be confined to delivering water. The ability to uniformly distribute fertilizers, pesticides and biological organisms could provide significant benefits. Applying materials without tying up an employee or engaging the use of spray equipment provides labor and equipment savings. If the system is flexible enough to provide site-specific watering it should be capable of other site-specific applications.

Your Daily N

It is common practice to “spoon-feed” putting greens with light amounts of nitrogen fertilizer on a weekly basis. Turfgrass managers can maximize performance and minimize growth surges that result in slow greens. In many ways it provides control over growth in an effort to maximize green speed.

Fairway, tee and even rough fertilization are typically achieved by applying granular fertilizer that is some form of slow release nitrogen.

Turfgrass managers don't feel they need as much control over growth in these areas and rely on the release technology for even growth.

Irrigating with nutrient enhanced water (fertigating) and light amounts of nitrogen every few days in association with irrigation needs provides the same result. In fact, I could argue that it is more efficient in that the fertilizer is applied in enough water to penetrate the soil and avoid atmospheric loss. It is also applied uniformly and at known rates from proper head design. Best of all, there is limited labor and additional energy expended to achieve the same results as what is currently being conducted.

There are clear health effects associated with daily nitrogen use, as well. Professor Dan Bowman at North Carolina State University investigated the difference between intermittent applications of nitrogen, similar to slow release technology and daily applications of soluble nitrogen.

Bowman showed how daily nitrogen applications, similar to fertigation, resulted in stable leaf growth and nitrogen levels in the tissue. In contrast, intermittent nitrogen applications showed wide fluctuations in leaf tissue and nitrogen levels that could lead to additional stresses.

Clearly, no turfgrass manager is going to apply nutrients to the turf daily with conventional spray technology. Using the strengths of



the irrigation system to deliver the nutrients is technology already available at your fingertips.

Alternative World

Current trends in pest management with new chemical pesticides, less chemical pesticides or biological pesticides suggest that we will be spraying more frequently. Research with biologicals, such as the BioJect™ system indicates that frequent applications of the TX-1 organism are required to maximize disease control. Research with other reduced-risk pesticides indicates that when pest pressures are high more frequent application is required.

There is some history with using the irrigation system to deliver pest management products and it was not positive. The BioJect™ was plagued with system performance issues for more than a decade. There was not enough organism being generated, it was not being distributed in the system properly and the system required too much oversight.

Turf Science Labs has identified methods for enhancing performance through the irrigation system, making use of the BioJect™ easier than ever. However, many who tried early BioJect™ systems abandoned them and cast dispersion on the entire idea of injecting into the irrigation system. Turf Science Labs needs to get their story out there and we need to get over negative perceptions of the use of irrigation to deliver product.

We are currently working with a Green Side Injection (GSI) unit from BioSafe Systems, Glastonbury, CT, that allows us to inject Zerotel (it could be used to inject any soluble chemical) at a specific green. The chemical does not mix with other parts of the irrigation system, can be applied daily and, depending on your

green irrigation system, with good uniformity.

I often hear turfgrass managers lament having the sprayer out for more time than is absolutely necessary. This usually comes on the heels of a conversation about using higher spray volumes to enhance product performance. Injecting product into a high volume system (such as an irrigation system) solves this problem and can be site-specific with an innovation such as the GSI unit.

Another benefit of product injection into the irrigation system is evening application. Research at Cornell University has shown how certain disease organisms are more susceptible to fungicides applied in the evening. In fact, excellent control was achieved in one case with less than a quarter of the lowest use rate. Evening applications with your irrigation system would be ideal for this benefit.

Challenges to Consider

There are challenges in using an irrigation system to deliver products. The biggest is that it challenges you to consider your product needs and your water needs. Often these needs can conflict, i.e., if you want a drier surface or if there is significant rainfall and you have poor drainage. In these cases it may not be practical to deliver product with your system, but there are plenty of instances where it is perfect and will expand your options.

In the end, the best systems allow for flexibility to meet your changing needs. Perhaps, it's time to consider that in-ground investment for more than just delivering water.

Frank S. Rossi, Ph.D.

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