

Fertigation Finds Favor Among More Superintendents

By Peter Blais

Fertigation is getting more popular because it's getting less intricate, golf course superintendents say.

Superintendent Dan Pierson, who has used fertigation for several years, says his peers have a better understanding of the technology's efficiency as well as its environmental friendliness than they did just a few years ago. Pierson has used fertigation at his course, the Wilmington (Del.) Country Club, since 1997. That's when the club installed a DGT-Volmatic fertigation system. DGT-Volmatic is a Denmark company specializing in nursery and greenhouse fertigation.

"The system has been a fantastic tool to assist us with nutrient application," said Pierson, who installed the system back then for about \$25,000.

As more superintendents understand the technology and trust it, they are looking at fertigation as a way to deliver nutrients to their golf course's turf.

Fertigation systems generally have three to five tanks of fertilizers and nutrients, according to an article by John Plantholt on the New Mexico State University Web site (weather.nmsu.edu/Teaching_Material/SOIL456/Fertigation/fert.htm). The largest tanks contain some combination of nitrogen, phosphorus and potassium. Smaller tanks often hold liquid iron and/or other minor-element nutrients. Occasionally, pesticide tanks are part of the system, although superintendents are frequently hesitant to fertigate pesticides because of environmental concerns.

Installing fertigation into existing irrigation systems is fairly easy and inexpensive. Liquid fertilizer tanks are tied into the main irrigation lines. An injection pump is wired to the control panel to monitor water flow along with fertilizer application rates. Control valves allow multiple tanks on the same system. Fertilizers can be applied separately or combined for a specific blend.

According to the Plantholt article, fertigation offers several benefits, including: Applications can be targeted to specific areas; less equipment is used; and fertilizer is applied into the soil, where it will be most effective. This means superintendents can apply fertilizers at lower rates, which can be cost-effective and specific to the turf's needs.

Irrigation layouts are generally divided into greens, tees and portions of fairways, allowing superintendents to fertigate various areas differently. If a certain zone needs a

boost of a particular nutrient, the superintendent can target that area and ignore others. Computer controls regulate the injection of fertilizer and water flow so precisely that application rates are lowered. Properly timed applications can also keep liquid in the top few inches of soil and lessen the chance of nutrients leaching into groundwater or waterways.

"With micro-feeding through fertigation, tests have proven that nutrient in an aqueous solution measured in parts per million and introduced more frequently in smaller amounts can be utilized at efficiency rates upwards of 90 percent," Pierson says.

Fertigation virtually eliminates the need to use vehicles to apply nutrients, mitigating compaction caused by equipment travel, lowering equipment-operating expenses and reducing labor. Superintendents can even apply chemicals following a heavy rain without worrying about turf damage caused by vehicle traffic.

Fertigated nutrients penetrate directly into the soil and roots, meaning lower rates can still be effective in yielding turf density, quality and heartiness. And with today's directional sprinklers, less overcast ends up in surrounding lakes, woods, fields or roadways than might occur using mechanical spreading equipment with human operators.

"Other benefits are very clear," Pierson says. "Application at night eliminates interruption of other activity, whether it be play or work. There is no added disruption from supplemental water necessary either to wash product from the plant leaves or to initiate dilution for plant availability.

"Grow-ins, either at original construction or at the time of renovation, can be helped immensely by eliminating much of the equipment needed for nutrient application," Pierson adds. "And the safety factor is absolute. It is virtually impossible to burn with fertigation. Even if a sprinkler were to stick on all night, as we have all seen at one time or another, the worst effect is a darker green and not a deadly brown."

Potential downsides

Fertigation does not completely eliminate spreader applications, sources say. For the greatest benefit, courses should be in an area where irrigation is necessary at least once a week. On golf course greens, there are also times when an application of a special blend or

Continued on page 70

PHOTO 1



Fertigation zones near lakes, streams and ponds must be implemented with great care to avoid contamination.



QUICK TIP

Managing water is by far the most influential practice we employ in turfgrass management because it affects every growth process that occurs. While irrigation science is primarily focused on advances in water efficiency through delivery systems, this does not change the fundamental needs of the turf — to have optimal water, air, light and nutrition at all times without waste. More importantly, water management greatly affects the ability of the foliage and the soil to provide optimal nutrition to the turf. Learn more about water management with optimal and uncompromised soil and foliar nutritional products at www.floratine.com.

Continued from page 68

supplement is needed. In this case, a fertigation tank of this mix may not be practical.

Irrigation systems must be carefully aimed not to throw nutrients into environmentally sensitive areas, such as streams, ponds or naturalized fescue areas, says Mike Stachowicz, superintendent of Dedham Country and Polo Club in Westwood, Mass. Older fertigation systems might not be sophisticated enough for today's ecological concerns. Throwback irrigation heads must be directed away from lakes, and an adequate buffer zone between the irrigation edges and nearby waterways must be present.

Stachowicz had fertigation when he was superintendent at The Ranch in Southwick, Mass., prior to relocating to Dedham several years ago. Back then there were myriad fertigation companies and a staggering number of computer-control options. Like Pierson, he feels the technology has become simpler.

"There seem to be fewer of the high-tech systems out there now," Stachowicz says. "Superintendents want to be able to go to the pump house and monitor tank levels themselves. The trend seems to be toward the less-technical systems."

Fertigation is more prevalent on Southern courses where the turf needs nutrients year-round and the soil is generally sandy, sources say. About 90 percent of Southern golf courses fertigate in some form.

Users offer useful tips

When he was superintendent at The Ranch, Stachowicz learned he could save money by making his own fertilizer blends from raw materials.

"I prefer to buy agricultural-grade materials, mix them with my own water and then put them out through the fertigation system, or even with spray tanks like I do here at Dedham," he says. "It's more work, and you might end up with clogged nozzles on occasion."

Stachowicz says he recently purchased a filtration system to pre-filter all fertilizers before putting them in spray tanks.

"That takes time, but I want to make my fertilizer go as far as it can," he says. "I've managed to cut the fertilizer budget in half here [Dedham]. It was \$40,000 a few years ago. Now it's down closer to \$20,000."

Pierson says his DGT-Volmatic system includes a pH sensor making it "acid ready." That means the system has no element that is either sensitive to acid corrosion or heat and can inject acidic products of almost any form that may be desired to correct water-quality problems. He says other superintendents are impressed with the feature.

Like Pierson and Stachowicz, Tom Grimac, superintendent of Tavistock Country Club in Haddonfield, N.J., is sold on fertigation. He likes that fertigation offers the opportunity to apply very low rates of fertilizer on a regular basis, a formula that is great for the health of both turf plants and the environment. It also allows superintendents to inject micronutrients and wetting agents, which increase the efficiency of irrigation water.

"You can supposedly reduce water use 30 percent with the proper use of wetting agents," he says.

Grimac also notes the labor and material savings fertigation provides with light and frequent fertilizer applications. "It is a very efficient use of fertilizer," he adds.

Pierson believes most superintendents are at least seriously considering fertigation as an option when they install a new irrigation system.

"I was very happy with the fertigation system 11 years ago when we first installed it," he says. "I'm an avid proponent of the technology and our system to this day. It is a very effective and safe way to feed a golf course."

Peter Blais is a freelance writer from Monmouth, Maine.