

Fertigation system saves city \$10,000 a year

IN TODAY'S ECONOMY, anything that saves money is a welcomed addition to a turf manager's portfolio. When technology saves labor, water and fertilizer—and has the bonus of making the fields look uniformly good—it's sure to open eyes.

Shawn Brumbaugh, sports complex manager in Olathe, KS got his eyes opened when he added a fertigation system to his irrigation. It worked so well, he made the same purchase decision a second time, using the savings from his first fertigation system to invest in another.

"We saved close to \$5,000 the first year we installed our fertigation system," Brumbaugh says. "That includes the cost of the system itself."

Olathe, a southwest suburb of Kansas City, has two main sports centers: the Olathe College Boulevard Activity Center and the Olathe District Activities Center. They are virtually identical, each consisting of a football field, a pair of soccer fields, two baseball fields and two softball fields. The football and soccer fields are straight Kentucky bluegrass. The baseball and softball infields are bluegrass, too, but everything else is a durable turf-type fescue. The only difference between the various fields is some have a sand cap and others are on native soil.

All of the fields have a fairly sophisticated Rain Bird-Hunter combination irrigation system. The zones are highly refined and were optimized for efficient, effective watering.

"We have a top-of-the-line irrigation system and pump," Brumbaugh continues.

"The fields at College Boulevard Activity Center were opened in fall 2004," Brumbaugh says. For the first couple of seasons, they applied granular fertilizer with a spinner spreader on the back of a John Deere tractor. They had occasional problems with uneven application of the material but nothing devastating.

Meantime, the economy began to head south. Like everyone else in the nation, Olathe has not seen any crazy increases in its budgets. A few years ago, Brumbaugh did some serious pencil-pushing and pounding on his adding machine. He knew he had to save money. And, like many other managers, he knew one good place to save money was to find ways to reduce labor inputs.

"It was your typical 'save money now' deal," he says, adding that while saving labor dollars was the



» Left: **THE OVERALL VIEW** of the fertigation system, controller and connections.

» Middle: **THE MODEL L 1000 INJECTOR PUMP** in the pump room for the complex.

» Right: **THE 300-GALLON TANK** in shop area, with the hose connection through the wall to the injector. The shop area was selected since it has easy access for the fertilizer delivery.

Fertilizer program

The fertility program at both the College Boulevard Activity Center and the Olathe District Activities Center kicks off in late February or early March with a high-nitrogen application to get the fields a kick-start.

"Both the baseball and softball fields get an application of 24-5-11 with Dimension," Shawn Brumbaugh says. He wants to get a high N dose down early, especially on the sand capped fields. "Because of the temperatures, it takes a while to take hold," he explains.

The program continues with a 25-5-11 shot in April and then 28-3-12 in May. "In June and July the fields get a light dose of Milorganite," he continues. If anything is applied in the hot weeks of August, it is another dusting of Milorganite. "For the most part, we don't put a lot of fertility down to discourage growth," Brumbaugh says.

The football fields get a typical in-season feeding. Then, the entire complex gets a high P and K feeding in the fall to build roots for the next year.

focus of his efforts they were looking for ways to reduce water use at the same time.

It all came together in the irrigation program where a move to fertigation allowed him to accomplish three goals at once: control labor costs, get more accurate and effective placement of plant food, and be more efficient and conservative with water resources.

The system

In 2005, they chose a Fertile Water fertigation from Turf Feeding Systems (www.turffeeding.com), Houston, TX. The local dealer is Ewing Irrigation in Olathe. The system was installed late in 2005 and turned up for regular use in 2006.

Fertile Water is designed to deliver budget-friendly, environmentally sound solutions to playing fields year-round, says Michael Chaplinsky, president of TFS. He notes that sports turf presents a special set of challenges. Besides being visually attractive, turf needs to be dense and soft to protect players from injury, but resilient enough to recover quickly from the assault of cleats and heavy traffic.

"When Fertile Water fertigation is used, overstressed fields start to show immediate improvement with reduced water use," Chaplinsky claims. Brumbaugh saw that promised improvement the first season.

Installation was fairly simple and took only about four hours. Ewing put a 300-gallon poly tank near the irrigation head. They ran a hose with a 5-hp pump right to the water supply line that leads to the fields. They added a small silo over the system to protect it.

"The soccer fields and football fields had hot spots from Day One," Brumbaugh says. He points a finger at the sand layer in the rootzone mix not getting the water and fertilizer it required. The even, spoon-fed fertilizer application seemed to handle the problem nicely.

"The fertilizer goes on in a more even pattern and gets soaked in immediately," Brumbaugh finds.

He cheats a bit by putting more pressure to the individual heads, throwing water about 5 feet beyond the heads to assure full overlap. "That way, you don't get diamonds on the field," he notes.

There is an additional bonus. "If you get a leak, you sure can find it right away," he laughs. But it was the basics task of getting fertilizer and water to the right spot that most concerned him.

FieldScience

"Lo and behold, it worked," Brumbaugh says. "It saved us money." While he was surprised at the end of the first season, he was savvy enough to know when to double down. He figures he saved about \$10,000 in labor and materials the first year. Even with the investment of \$5,500 in the fertigation system, the District pocketed about \$5,000. On-going electricity costs for the system are minimal, so the system keeps churning out savings annually.

The first system at the Boulevard Activity Center worked so well, they purchased a second system for the Olathe District Activities Center this past season.

"Basically, it is the exact same system," Brumbaugh says.

If he were putting in yet another system, the only thing Brumbaugh would do differently is to be sure there is a drain or flush valve on the system for use at the end of the season to allow them to drain and rinse any remaining chemical in the tank.

"There is a shutoff on the pipe. It's okay as long as there is no chemical left. But be sure to design a way to flush the system with clean water at the end of the season," he advises.

While he was doubling-down on the fertigation system, he was dialing back on the amount of fertilizer and materials used on a regular basis.

In addition to saving on water, he has been able to increase his application interval for Heritage from 21 days to 30 or more days through the May-August season. "We cut out two applications," he says, happily. At \$2,000 per field per application, that saves him close to another \$10,000 per complex each season.

The fertigation system allows the complex manager to dial-in the application rate from nothing at all to 100 percent application of fertilizer. "We used to run normally at 25 percent," Brumbaugh says. "Now we keep it at 10 percent to save more money."

He is pleased with his soil test results...both the sand cap and the native soil fields are coming back the same.

"That shocked me," Brumbaugh says. "But it's a result of the fertilizer being applied so evenly across the field." He notes that, with granular materials, you get one shot to get the application right. Slight operator error or a gusty wind can cause streaking.

"With fertigation, you get it right. Every time you water, the wind direction is different, so a little of the material hits everywhere, each time," Brumbaugh says. If there is some drift to the south today, it evens out with some drift to the north tomorrow.

In the spring, they try to water the sports fields once every three days. In the summer, they water once a day, especially on the sand caps.

"With so many heads and zones—which we rewired to get micro-fine application—we are able to get what we need where we need it throughout the summer," Brumbaugh says.

The early morning watering typically are shut off before the crews even start work.

"I'm really happy with the system," Brumbaugh concludes. "It's one of the best investments we've made." ■

Chris Harrison is a veteran free lance writer who has written many articles on turf and turf maintenance.



Any program that reduces the need for equipment can save significant amounts of money.

Organics

might help with budget concerns

Editor's note: The following is an edited transcript of an interview with Gary Maurer, president of Green Pro Solutions, on using plant-based organic programs for athletic fields.

ST: Why do you think Molloy College (a private school on Long Island) is a good example of your program and the results that can be obtained using organic-based products?

Maurer: Well, there are a number of reasons. First, Molloy is in a densely populated urban/suburban area that is very expensive. Labor, utilities, equipment and equipment maintenance, land, water—everything is expensive. So a turf program that can produce great results with a minimal amount of water can save a lot of money.

ST: You mentioned labor. It is easy to understand why a program that can reduce labor costs would create value. But what about equipment maintenance?

Maurer: Any program that reduces the need for equipment can save significant amounts of money. If a piece of equipment is used less, there are reductions in maintenance costs. Unless all of the services are contracted out, almost every facility has a minimum amount of multi-use equipment,

like a tractor with a host of attachments. Minimizing the number of attachments saves on costs for acquisition, maintenance, and storage.

ST: So you are suggesting that a school or organization does not have to buy all kinds of equipment to maintain their fields if they use organic products and, consequently, they can save a lot of money.

Maurer: Let me give you a qualified 'Yes' on that. Molloy College is a good case in point. They have used organic products on their baseball field for the nearly 20 years. Currently, application of the products is managed by Warren Getch, branch manager of Nature's Pro of Long Island; he says year in and year out the only piece of equipment on the field is the mower. Of course, they do have equipment to maintain the clay surfaces, but nothing else goes on the turf.

ST: So, no aeration at all. That seems pretty remarkable.

Maurer: Many in the turf management field would think it impossible. Or, they

would imagine that the quality of the field would be unacceptable. A soil probe provides clues as to why the right kind of organics works. In the spring and late fall of the year, a soil probe will penetrate 15 inches into the soil. Approximately the top 3 inches is topsoil. From there down it is all clay. If I ball that clay up in my hand, it will become a rock in 48 hours as it dries out.

ST: How deep can you probe the rest of the year?

Maurer: If moisture levels are maintained, 15 inches. But the real story is the depth of the grass roots. In the spring, the turf roots can be protruding from the end of the probe, more than 15 inches. Now in cool season grasses we know that some of that stored energy will be consumed by the grass plant during the stressful hot days of summer. The roots may only be 6-8 inches deep then, until the cool weather of the fall. At that point the grass roots will again grow deeper as they begin to store carbohydrates for the next season.

We use liquid aeration. Unlike equipment, which actually causes a certain amount of compaction while it is doing its aeration, liquid aeration products actually cover 100% of the field, not just 5-10% of the surface area. Liquid aeration may not be quite as fast, but it does cover 100% of the surface area and can be done in a fraction of the time at a fraction of the cost. And it is cumulative; every application builds on the previous applications. Many, many dollars can be saved.

ST: How do organic products produce such deep rootzones in what is essentially clay?

Maurer: There are a number of things at work here. Initially we begin with a more advanced soil test that determines nutrient availability and it determines what is functioning. The difference between the two can be very significant. Based on these test results, our special computer program analyzes the data and generates specific instructions on how to make the soil healthier, which we call a "Prescription."

No plant can be healthier than the soil in which it grows. Poor quality turf, com-

AerWay®

AerWay® venting tines can be used all season long to reduce compaction and stimulate strong root development without taking the field out of play. The result is a resilient playing surface with excellent top growth.

AerWay® Leaves Sports Fields Safe and Playable



for more information call

1-800-457-8310

Advanced Aeration Systems

www.aerway.com email: aerway@aerway.com

paction, puddling and weeds are symptoms of sick soil. We address the causes, not the symptoms. When we produce healthy soil, the turf automatically responds.

ST: So if your soil is healthy enough, weeds won't grow, is that what you're saying?

Maurer: Turfgrass management is about creating and sustaining a monoculture. The natural order of things is toward greater diversity, so creating a single type or very narrow diversity of plant species is an uphill battle. Weeds have a different nutrient profile than turfgrass. By providing the nutrient components in the correct proportions to optimize turf production, weeds are discouraged from germinating and growing. We create an inhospitable environment for weed growth.

ST: The word "organic" gets thrown around a lot. What does it mean in terms of turf products?

Maurer: There are hundreds of 'organic'

products. To me, they fall into two distinct categories. There are products that are associated with animals and products that come from plants. Plants do not, with few exceptions, eat animals. Products made from animals and animal byproducts can be good for plants but they are made up of components that are too complex for plants to utilize. Enzymes and other biological components must be present in the soil to make these animal-based nutrients plant-available. If these biological elements are present in the soil, the animal-based products can produce results. If they are not present, the results can be disappointing. Typically, the presence or absence of these biological elements is unknown. There are also possible toxicity issues with animal by-products.

On the other hand, plant-based products are immediately bio-available to the plant. Plant-derived products are easily and more quickly broken down and available for use. If you think of a forest, it feeds



➤ Turfgrass management is about **creating and sustaining a monoculture.** The natural order of things is toward greater diversity, so creating a single type or very narrow diversity of plant species is an uphill battle.

itself what it needs and it is all plant-based material.

Humates is a term used to describe these natural carbon-based materials that contain humic, fulvic, ulmic and other organic acids necessary for plant health, much as amino acids make up some of the building blocks of the human body. Since Humates are derived from plants, they provide a rich storehouse of energy containing everything the plant and soil need to be healthy, including a full range of nutrients, enzymes, minerals, natural surfactants, bio-stimulants, amino acids, and essential components to stimulate microbes and mycorrhizae. Humates provide benefits that animal-based products do not have.

ST: So the products you use are only made of Humates?

Maurer: In part. As you know plants need many kinds of nutrients. We make products with humates and other essential nutrients, like calcium and iron. Depending on the Prescription Soil Test Results, we may apply calcium in one of its various forms, or a number of other ingredients. It depends on what the soil needs and the proper proportion in relation to the other nutrients already present in the soil or required by the soil to make it more balanced and productive. To the extent possible and based on the client's wishes, we try not to use man-made nutrient sources.

ST: So you do use N-P-K in your products?

Maurer: There are many formulations of N-P-K. Many of them are detrimental to the soil or to the soil biology. We are very selective in what we use and limit its use as much as possible. Humates chelate nutrients so much lower amounts are needed. Healthy soil has millions of microbes per teaspoonful which do an amazing job at nitrogen recycling. The healthier the soil, the less artificial ingredients are needed, if needed at all. That is our goal. And as the health of the soil improves, the 'symptoms' begin to disappear.

ST: I am still intrigued by the depth of the roots in your soil probe. How do plant-based organic products produce that kind of result?

Maurer: Energy is part of the process

but that is a topic for another time. For now, let me just address altering the physical characteristics of the soil. Humates have the amazing ability to make hard soils like clay more porous. Small cavities are opened through the soil that permits air, water and roots to go deeper. Roots cannot grow where there is no air.

Conversely, when added to sandy soils they become less porous. Humates chelate nutrients, holding them in the rootzone. There is less leaching of nutrients into the ground water and less volatility of nitrogen into the air.

In addition, humic material holds up to 20 times its weight in water, acting like a huge sponge. Therefore, between increased root depth and greater water-holding capacity, less water is needed to have quality turf. Again, significant amounts of money can be saved.

ST: Do you have some cost saving numbers?

Maurer: Molloy College applies about 7,000 gallons per watering at a local cost of approximately \$30 per application. It is not

unusual in the high quality soils that I am discussing to reduce water usage 30% or more. For Molloy that could mean \$30-\$50 per week, perhaps \$1,000 per year for one field. Now geographically Long Island gets a fair amount of rain and a baseball field is larger than a football or soccer field. But you can see how the savings really begin to pile up. The savings would be even more dramatic in drought prone or warmer climates, into many thousands of dollars per year just in water savings, particularly if organics are used campus wide, as they are at Molloy College.

ST: But don't organic products cost more?

Maurer: Historically that is true, but with increases in chemical, petroleum-derived products, the difference is rapidly disappearing. But that is true only if you compare the product costs and not the program costs. When a school, a business campus or any turfgrass manager compares the annualized cost of all of the components in the complete program, organics can often beat the cost of a chemical program. ■

The healthier the soil,
the less artificial
ingredients are needed,
if needed at all.

**EVERGREEN™ Turf Blankets...
...trusted around the world!**

**"Results Outstanding...,
Could Not Believe..."**

wrote **Dann Daly**, Park Maintenance Supervisor,
Parks & Recr. Dept., North Smithfield, RI

- Earlier spring green-up
- Faster seed germination
- Deeper root development
- Delays dormancy in fall
- Ideal winter blanket
- 3 & 7 yr. warranty covers
- Best for quick turf repairs
- Available in any size

**Want to know more?
CALL TOLL FREE
1-800-387-5808**

**COVERMASTER™
COVERMASTER
COVERMASTER**

MASTERS IN THE ART OF SPORTS SURFACE COVERS



Covers for football and soccer fields are also readily available.



Covered... Uncovered...



It works on the greenhouse principle, every time!

covermaster.com

E-MAIL: info@covermaster.com

COVERMASTER INC., 100 WESTMORE DR. 11-D, REXDALE, ON, M9V 5C3 TEL 416-745-1811 FAX 416-742-6837

