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Chasing Biotech Instead of Chemicals

Will Landscape
Be Left in the
Lurch?

Pat Jones
comments on
Merger Mania

The Root Zone

From a Microbe's
Perspective

**Owen Tree
Service**
Plant Health Pays Off

Table of Contents



THIS WEEK'S FEATURE:

Owen Tree Service

Plant Health Pays Off

By Felicia Gillham

INTRODUCTION TO US

- About PlantHealthCare.com Online Magazine
- Meet Your Editors

OTHER JANUARY ARTICLES:

- Chasing Biotech Instead of Chemicals: Will Landscape Be Left in the Lurch?
- The Trickle-Out Economics of Consolidation: Say Goodbye to Free Golf Balls and Open Bars
- The Root Zone—From a Microbe's Perspective

Chasing Biotech Instead of Chemicals

Will Landscape Be Left in the Lurch?

By Bruce F. Shank, Editor,
PlantHealthCare.com Online Magazine

AN INTERVIEW WITH DR. JERRY CAULDER, PH.D.

Like a spacecraft leaving the earth's atmosphere, the progress of plant technology is accelerating exponentially. Our approach to producing food and fiber, designing and maintaining landscapes, and producing recreational environments will soon follow. Take it from a person who has been in the middle of plant technology since 1969, Jerry Caulder, Ph.D.

As a plant physiologist and agronomist working for the first two decades of his career in agrichemical research, Dr. Caulder realized that petrochemicals had



reached the peak of their technological curve. Having participated in the record-breaking introduction of Lasso and Roundup at Monsanto, he could have easily built a comfortable retirement with petrochemicals. Instead, he helped lead the plant technology

industry into a new paradigm—biotechnology. Furthermore, companies like Monsanto and DuPont have backed him all the way.

“Petrochemistry is very close to the end of the technology curve,” Caulder says. “We used to screen an average of 5,000 compounds before we got a winner.

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‘Landscape products have always been secondary markets for materials developed with agriculture in mind.’

Caulder **CONTINUED**

Today, chemical companies may look at 60,000 compounds for every viable commercial product. The efficiency of developing new compounds for weed, disease and pest control has dropped drastically. That makes product development very expensive. One reason companies are merging is to defray development costs with advantages of scale.”

Caulder is realistic about landscape, turf and ornamental products. “Landscape products have always been secondary markets for materials developed with agriculture in mind,” he says. “Without agriculture as a primary market, you wouldn’t have many of the landscape chemicals on the market today.” Consequently, you can deduce that the recent consolidation in the agrichemical industry will have a major impact on the T&O market.

“Consolidation in the chemical industry represents an opportunity for smaller companies to fill the vacuum left in the wake of mergers,” Caulder says. “Venture capital companies are very aware of this. No single corporation has been able to corner the technology market. If you have the intellectual properties, size isn’t as important as it used to be. You can license with other companies to deliver it.”

For this reason, the potential for new biotech products in the landscape industry stands to be greater than with chemicals. As long as the industry’s delivery system can adapt, there are amazing products in the pipeline, Caulder predicts.

For example, imagine being able to isolate the gene that provides salt tolerance for plants and include it in many of our important agricultural and landscape crops. Saline water could then be used to produce crops, resulting in a reduced dependence on fresh water. What if we discovered the biological signals that instruct plants to resist certain pests? Plants have their own type of immune system to fight back. “Ask yourself, why are diseases unique to certain plants?” Caulder says. “It’s because of co-evolution between the plant and the disease-causing organism. That’s because there are factors that influence the interaction between host and pest.”

What are the signals that regulate the speed of cell division and the size of new cells? What are fertilizers? Are they just gene regulators? What controls flowering? What

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‘Opponents call biotech products genetically manipulated organisms (GMOs). I call them genetically improved food technology and science (GIFTS).’

Caulder CONTINUED

causes genes in plants to turn on and off? “Maybe we can turn them back on?” he says. “There are implications in every aspect of plant physiology for improvement.”

Overcoming Biotech Resistance

Recent boycotts of genetically altered foodstuffs in Europe have raised many eyebrows and brought the price of stock in biotech companies down. “Not only are such protests unwarranted, they are immoral!” Caulder states. “Most people don’t understand the scientific method. They confuse what’s possible with what’s probable.” Biotech scientists follow precise recipes in their research, ones that are repeatable and predictable. According to Caulder, they aren’t characters in a science fiction movie or mad engineers at the controls of a nuclear reactor.

The press is responsible to a great extent, because the reporters allow themselves to be manipulated. Caulder says, “The controversy in Europe has more to do with tariffs and trade barriers than with food safety. Some nations are afraid of biotechnological imperialism. Opponents call biotech products genetically manipulated organisms (GMOs). I call them genetically improved food technology and science (GIFTS).”

Agriculture will remain an important industry simply because there is no choice. “This past October the population of the world topped six billion,” he says. “It is anticipated that it will double in the next 35 years. To feed all these people, farmers will need to produce as many calories in 35 years as they have produced cumulatively since man started farming 10,000 years ago!”

New technology will be necessary to prevent starvation and malnutrition. “We need to face the fact that we have hit the ceiling with chemicals and plant feeding,” Caulder says. “It’s been more than 20 years since a new agricultural chemical took us to a new level. Most of the news has been on the pharmaceutical side.”

Biotech has developed faster than Caulder imagined. “I didn’t expect to see the first big biotech introductions until the turn of the century. We beat that by nearly a decade.”

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Caulder CONTINUED

It all basically started in 1973 with the invention of gene splicing technology by scientists at Stanford University and the University of California - San Francisco. The Boyer-Cohen Invention has raised the ceiling of technology in agriculture and human health care to the same degree that the invention of the transistor raised the ceiling of data processing.

Gene splicing is simply a shortcut to the hybridization process found in nature. Plant selection and breeding have been pursued for centuries. Peanuts, corn, soybeans, wheat, grapes, roses, trees, and turfgrasses have all produced significantly higher quality and yield through crossbreeding. Whether by natural or manmade means, it is a transfer of DNA to create a plant adapted best to growing conditions. The result is not supernatural, it is as natural as any plant evolving over hundreds of thousands of years through natural means.

People resisted the automobile, electricity, portable phones, and immunizations at first. Necessity brought them to accept these new technologies. Now, it's hard to imagine life without any of these. "We as a society were in a quandary about pesticides, even though we knew that we couldn't produce the quality and amount of products we demanded without them," Caulder says. "Chemical companies responded with tradeoffs to keep dosages extremely small to avoid problems with people who have high sensitivity to chemicals. Rachel Carson, in her book "Silent Spring," asked the question, 'How do we use nature to defend crops without pesticides?' That's what biotechnology has done and some people are now in a quandary about it. Leading people to think that we can meet our food needs without some type of assistance to nature is simply not realistic."

Caulder's company Mycogen produced the first corn hybrid containing *Bacillus thuringiensis* (Bt), a common soil bacteria that kills Lepidoptera (caterpillar) larvae. Mycogen also led the way in increasing the carbohydrate and protein content of crops, such as sunflowers. Mycogen was sold to Dow Chemical in 1998 to increase the giant chemical company's ability to create new technology.

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Caulder CONTINUED

Caulder's current project is called Akkadix, a company that serves as an incubator for breakthroughs in biotechnology. "We have no pride in authorship," Caulder says about Akkadix. "We want to develop or acquire intellectual properties that improve all kinds of industries."

Although venture capital companies provide most of the funding, it's interesting to note that trade associations are also investing in Akkadix to encourage technological development in their fields. They don't have to wait for their markets to receive technology that spills over from agricultural or pharmaceutical applications.

Agent for Star Researchers

As a youngster growing up on a cotton farm on the upper Delta of the Mississippi River in the Missouri Bootheel, Jerry Caulder had no plans to pursue a career in agriculture. Like millions of teenagers from rural areas, his primary role models were the local physician and his teachers. Caulder thought being an doctor was better than being a teacher, so he majored in biology. One course shy of his degree, Caulder's wife, Carol, had her teaching degree and was evaluating her employment options. The school district in Columbia, MO had an opening.

Before his move to Columbia, the June weather in the Missouri Bootheel was hot and muggy. Air conditioned classrooms weren't the norm in the sixties. Caulder found a class that was taught in one of the few air conditioned buildings on campus and registered. That class was in agriculture, and it was the course that launched Caulder's impressive career in ag research.

Caulder didn't expect to walk into the Green Revolution, an international effort by advanced nations to help underdeveloped countries feed themselves through the transfer of technology. His "Kennedy-esque" motivation kicked in. Caulder became hooked on the importance of science in agriculture and stayed to complete his masters and Ph.D. in agronomy and plant physiology. It didn't take him long to discover that the employment of existing technology depended on the capacity of farmers and manufacturers to accept it. In other words, science needed help to get into the pipeline and be applied.

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Caulder **CONTINUED**

He focused on the mode of action of herbicides. That specialty brought him to the attention of Monsanto, based in St. Louis. His options were to teach and do research at Mizzou or enter the commercial world to apply his knowledge. He chose the commercial world. He served on a team assembled by Dr Will Carpenter at Monsanto Ag Research. That team experienced phenomenal success with the development of the first billion-dollar ag products, Lasso (alachlor preemergence herbicide) and Roundup (glyphosate nonselective postemergence herbicide). Lasso had the ability to control both broadleaf weeds and many grassy weeds in corn, itself a member of the grass family. Roundup killed all vegetation without any soil residue. Application rates were low compared to traditional herbicides, but the price was higher. Farmers voted to pay the higher price for the advantages of the new products.

After a few short, but productive years at Monsanto, Caulder was placed in charge of the company's South American agricultural operations. In 1979, John Hanley, president and CEO of Monsanto, appointed Howard Schneiderman chief of technology. Schneiderman had earned his reputation in molecular biology at the University of California - Irvine. One of his first acts as technology chief was to create a biotech team, which included Caulder. His role was to create a business plan and to explain the intellectual property in a way that investors understood. These skills became, and remain today, two of Caulder's strengths. Because he can guide scientists toward practical applications of their research and show investors the ramifications of specific scientific technology, research receives the funding it needs and investors see an attractive return.

As Lasso and Roundup were taking off, Andrew Barnes, a Stanford MBA located in San Diego, got together seed money for a biotech "think tank" by the name of Mycogen. He asked Caulder to join him as president and CEO. About the same time, Les Coleman, CEO of Lubrizol, saw the potential in seed biotechnology and bought Agrigenetics. He was anticipating competition from vegetable oils to his petroleum oil and additive business. He thought he was get an upper hand on his future competition.

"Agrigenetics was a stealth industry," Caulder says. "You couldn't see it coming. It was hard for Lubrizol's board of directors to appreciate the fit or the future of the

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Caulder **CONTINUED**

division.” In a stroke of business brilliance, Coleman and Caulder sold Lubrizol’s board the idea of letting tiny Mycogen take over Agrigenetics. “It was a case of the mouse swallowing the cat.”

Impressed by the biotech company’s growth, Pioneer Seed, a dominant force in early biotech efforts, decided to let Mycogen do some of its intellectual property development and invested millions. Ciba Geigy jumped on board too. Mycogen started making the pages of The Wall Street Journal.

In 1998, after 15 years of considerable success with Bt and protein and carbohydrate boosting with transgenic technology, Caulder sold Mycogen to Dow Chemical. Before the ink was dry on that deal, Caulder was lining up investors and researchers for his next brainstorm, Akkadix. His enthusiasm toward breaking the secret code of halophytes, using genetic signals to cause pest resistance in plants, changing the lignin content of plants, and identifying triggers for flowering and cell growth, is overflowing.

His faith in biotechnology is stronger than ever. He is not concerned about consolidation in the chemical industry, and he notes that there already has been consolidation in the biotech industry. “Size is not the primary determinant of authorship of new technology,” he claims. “You can’t corner the market on intellectual power. As long as the delivery market is there, small companies working with the most inventive researchers can produce new ideas efficiently. We are at the beginning of the technology curve. The fun has just started.”

The Trickle-Out Economics of Consolidation: Say Goodbye to Free Golf Balls and Open Bars

By Pat Jones, Guest Columnist and
Editor/Publisher of Golfdom Magazine



“Mega-mergers and funny new corporate names created by focus groups seem to be hitting the headlines daily.”

Remember Reaganomics?

At the heart of the Gipper’s economic platform was the notion that if the rich got richer, that new wealth would “trickle down” to the poor and everybody would be better off. Some would argue that the only thing that trickled were millions of people into homeless shelters, but you definitely have to give the “Great One” points for creative rationalization.

Equally creative are the people now driving the wave of consolidation that is sweeping the Green Industry. Mega-mergers and funny new corporate names created by focus groups seem to be hitting the headlines daily. In our little industry alone, the newly consummated marriage of AgrEvo and Rhone-Poulenc now gives us Aventis. And, as just announced, Novartis and Zeneca will soon walk down the aisle to become Syngenta. Textron is now the umbrella for what had been as many as five major turf industry lines (Jacobsen, Ransomes, *(continued)*)



“Get ready for the brave new world of trickle-out economics in the Green Industry.”

Pat Jones **CONTINUED**

Cushman, Ryan and OMC/Lincoln). Agri-biotech controls many of the great old names in the seed business.

As with Reaganomics, the party line of the multinational power brokers who arrange these corporate marriages is that the efficiencies and synergies of the mergers will trickle down to consumers (and shareholders) through lower costs, better “competitiveness” and enhanced corporate capabilities. Uh, okay. Sure. Whatever. At first glance, it’s hard to see how consolidation has any impact on our daily professional lives. It all seems so remote. Big companies get bigger. Products are still available. For the average contractor or golf superintendent, the whole thing appears to be an exercise designed to inflate stock value and guarantee huge bonuses for CEOs. From a purely selfish standpoint, most of us are probably thinking, “There’s no impact on my little world, right?”

Wrong. Get ready for the brave new world of trickle-out economics in the Green Industry. Specifically, be prepared for fewer companies to be investing fewer dollars to get you as a customer. Those bucks that used to flow into our business are now trickling out to pay for merger costs and keep stockholders happy.

For example: Remember the last conference you went to? The two nice parties with the open bars sponsored by Big Company X and Big Company Y? Well, there’s only going to be one party next year, because they’ve now merged to become Huge Company XY. So, get ready to actually reach into your own pocket for a few more of those drinks at the next conference.

And, since X & Y are no longer competitors who used to both sponsor a hole at the local association tournament, you can kiss a few thousand dollars goodbye for that too. Oops, no free golf balls next year.

Another efficiency: X & Y no longer have to buy two big booth spaces at trade shows. Fewer booths sold means fewer dollars for the association to invest in education and programs. Surprise! Dues are up next year!

X & Y used to buy a total of \$200,000 in advertising in those free industry magazines you depend on for news and technical advice. Huge Company XY can get by with

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“Think these trickle-out consequences are relatively minor? . . . think again.”

Pat Jones **CONTINUED**

\$100,000 in ad space to sell its combined inventory. Too bad, you just got your last issue of a couple of those magazines.

Finally, Huge Company XY has “redundancy” in its newly merged sales force and decides to “rightsize.” Your brother-in-law Joe Bob, who had been a sales rep for Company X, is now living in your basement (or applying for your job).

Think these trickle-out consequences are relatively minor? You won’t miss a few free drinks or golf balls. Well, multiple those “minor” consequences by the seven or eight recent or upcoming Green Industry mergers and then think again. The people running your local and national associations (and publishers like me) are certainly already thinking about it.

Yes, new leaders (like the good folks at Plant Health Care, Inc.) will rise up to fill some of the gap, but the traditional financial support systems for our industry are changing forever. Like it or not, the trickle of corporate marketing bucks out of our business is turning into a river and someday things may get pretty dry around here.

EDITORS NOTE: The viewpoint voiced by the guest columnist reflects solely the viewpoint of the writer. It may or may not be representative of the beliefs of Plant Health Care, Inc., its employees, investors or others related to the company. The guest column is included in the PlantHealthCare.com Online Magazine to prompt discussion. Responses, which may be posted, are encouraged. See response options below.



The
Root Zone
From a Microbe's
Perspective

By Bruce F. Shank

The universe of beneficial microorganisms in many ways is as hard to visualize as outer space. Our understanding of the universe and microbes is equally hampered by a differential of scale. Whereas a telescope is needed to explore space, a microscope is necessary to explore the world of microbes.

Dr. Owen R. Lunt has spent decades studying soil-plant relations in the “inner space” of the microbe world. As a former director of the Laboratory of Structural Biology and Molecular Medicine at the University of California, Los Angeles, he was in close touch with a number of projects dealing with soil-plant relations. He notes that a tablespoon of good garden soil will contain several billion organisms—some desirable, others detrimental.

“The benefits of soil organisms have been recognized for quite some time,” the soil scientist says. “We have witnessed their impact on forest trees, legumes and specialty plants, such as orchids. Natural selection and competition take place in the minute pores among soil particles just as they do with animals on the face of the earth. Evolution has worked its magic to

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Microbe's View **CONTINUED**

enrich some soils with healthy populations of microbes, while others seem sterile. Knowing what makes the difference is valuable to the landscape manager.”

In fact, poor soil is most receptive to positive growth effects resulting from applications of soil organisms, such as mycorrhizal fungi and rhizobium bacteria, Lunt says. Competition from existing microbial populations can lessen the beneficial impact of applications of beneficial microbes. Consequently, the best time to successfully establish populations of beneficial microbes might be when an area is first planted and organic content is relatively low.

The incorporation of large amounts of organic material into a soil might improve physical conditions, such as increasing the volume of macropores and water transmission rates. It will also increase microbial activity. Generally speaking, plants are more vulnerable to pathogens when aeration is poor. Thus, improving aeration is often very advantageous. Following sound, basic root zone construction and maintenance practices remains the best preventive approach to plant health.

Two common beneficial microbes are rhizobium bacteria and mycorrhizal fungi. The bacteria infect the roots of certain plants and fix nitrogen, which is then available for consumption by the plant. Alfalfa, with the help of bacteria, can fix more than 100 pounds of nitrogen per acre per year. Farmers rotate other crops with alfalfa to enrich their soils.

Mycorrhizal fungi benefit plants by colonizing the soil around plant roots. A symbiotic relationship occurs in which the plant supplies carbohydrates it produced by photosynthesis and vitamin B to the fungi. In turn, the fungi deliver needed nutrients, including phosphorus, nitrogen, zinc and sulfur, to the plant. Endomycorrhizal fungi colonize the roots to function within the plant cell membranes. Ectomycorrhizal fungi colonize the root surfaces to function in the soil adjacent to the roots. The massive network of filaments of the ectomycorrhizal fungi can more than double the volume of soil mined by the plant for nutrients and moisture.

“Microbes can withstand fairly high soil temperatures,” Lunt says. “They metabolize at up to 130 degrees F, which is higher than most plants tolerate.” This, combined

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Microbe's View CONTINUED

with their success in soils that are low in nutrients, enables them to provide important support for their plant partners during the summer. Provided adequate moisture is available, mycorrhizae will keep generating additional nitrogen, phosphorous, and zinc for plants during periods of summer stress.

He noted, soils that are too wet promote the establishment of other, less beneficial microbes. Good soil drainage is important for beneficial organisms, just as it is for plants.

Conditions that harm plants also harm beneficial microbes, Lunt says. Compaction, poor soil structure with minimal pore space for water and gas exchange, high or low pH, and periods of drought can diminish the beneficial contributions of soil microbes. High clay content can reduce their effectiveness. Excessive shade can reduce the photosynthate produced by the plant and subsequently reduce the amount of carbohydrate available to the fungi. Steep slopes can reduce water infiltration and cause the soil environment to be too dry for the fungi

From a chemical standpoint, high concentrations of ammonium in the soil from ammonium sulfate or urea fertilizers can hurt microbial performance. Saline soils caused by high water tables (within 3 feet of the surface) can cause problems. Overuse of pesticides can reduce beneficial soil microbe populations.

“If you look at where these organisms are most effective, you get an idea of their preferred habitat,” Lunt says. “That includes mountain forests where rainfall is high, drainage is good, and the nutritional level of the soil is low. Mountain forest soils, while often covered with plant debris, might not contain high amounts of organic matter in the root zone. These are perfect conditions for the mycorrhizal fungi.”

Conversely, native grasslands are high in organic matter and in nutrients. “They don’t need the help of beneficial microbes for the most part. But new plantings in areas of low organic content and low nutrients could benefit from microbes. Eventually, the plants contribute to the organic content of the soil and the dependence on symbiotic microbes is reduced over time,” Lunt says.

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Microbe's View **CONTINUED**

Optimally, a healthy soil environment is naturally balanced. Not only are physical properties important, Lunt says, but the biological health of the soil needs to be maintained. Good physical properties lead to good biological balance.

“With a microscope you can see microbes at work,” he says. To overlook their existence and role in nature would be foolish. Preventive plant care depends upon recognizing the role of beneficial organisms and managing the plant and the soil to promote them.



Owen Tree Service Plant Health Pays Off

By Felicia Gillham, Managing Editor

It was 1989 and Randy Owen was disillusioned. It was his 15th year as a utility arborist and he no longer liked his work. In an effort to limit costs, his utility was cutting back on customer service. One day Owen questioned power company officials' instructions to make procedure changes that would shock homeowners. "What do we tell the customers?" Owen and his crew asked. The supervisor's response mirrored the utility's philosophy at the time: "I don't care what you tell them. Tell 'em whatever you have to to get the job done." A few months later, Owen was gone.

He put up his own shingle. Using his savings, Owen purchased some basic equipment and founded Owen Tree Service in the northern suburbs of Detroit, MI. In ten short years, he's grown the company to 60 employees, a full fleet of trucks and \$2.5 million in sales.

There are a number of reasons why he's been successful, Owen believes. There are the usual reasons: Owen has worked
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Randy J. Owen, Owner
Owen Tree Service



Owen Tree Service CONTINUED

hard, he charges a fair price and from the first day he has offered a money-back guarantee. “I didn’t want to take advantage of people,” Owen says. The company has also prospered by what Owen calls his “mind-thought” or philosophy that solidified in his mind the last year of his utility experience. Owen insists that his business be operated with integrity. He wants only employees who care about what they do, and he requires that customers are kept educated and informed about the company’s work.

Owen admits there’s an almost spiritual tone about how he directs and operates Owen Tree Service. Essentially, he believes that by “doing the right thing,” customers and a fair profit will follow. But at the foundation of the business, what has sustained it through the years, is the science of tree health. Owen is often heard telling his customers, “I’m working for the trees, and you’re the one that has to pay me.”

As a utility arborist, Owen was stimulated by the questions of how trees grow, what prompts their death, and how they can become stressed by pests and disease. He wanted knowledge, so he began taking correspondence courses. This interest in the nitty-gritty of arboriculture continues today. Owen Tree Service invests thousands of dollars each year in seminars, workshops and conferences for the majority of its employees.

Interest in tree science coupled with the drive to “do the right thing,” created a strong need in Owen to concentrate on tree health and soil productivity. Tree removals and pruning were the bread-and-butter of the business at first, but the repeat business which provides steady cash flow, instead lies with tree maintenance. For many of Owen’s competitors, maintenance consists of annual pesticide sprays and fertilization dictated by the companies’ schedules and their need for income rather than a specific tree’s needs.

Owen believes differently. He puts the tree and environmental needs first. He was one of the industry’s first believers in Integrated Pest Management (IPM), an agricultural concept that requires the monitoring of plants for pests and the use of non-invasive pesticides, whenever possible, only when or if pest populations reach economically

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Kay Sicheneder, Manager,
Plant Health Care Division
Owen Tree Service



Owen Tree Service **CONTINUED**

damaging levels. But IPM, Owen found, is difficult to implement in urban settings, such as back yards.

In the early 1990s, the International Society of Arboriculture (ISA) and National Arborist Association (NAA) developed a management practice that perfectly fit Owen's philosophy, and especially he believes, the needs of trees. Called the Plant Health Care Management System, it is a systematic approach that protects and enhances plant health. That's the formal wording. In practice, it's a preventative approach based on the idea that healthy trees and plants have a natural ability to fend off most of the stresses and damage that pests and the environment can throw at them. When a tree is unhealthy or stressed, it needs intervention in the form of chemical treatments and added water and soil fertility. Intervention drives up costs, requires labor, equipment and supplies, and in the end would be largely unnecessary if the health of the tree had been accounted for before the plant got into trouble.

Owen embraced the Plant Health Care Management System and put its precepts to work. In January 1996, Owen hired Kay Sicheneder to manage his newly created Plant Health Care Division. Sicheneder, with a masters degree from the University of Michigan with a focus on IPM, had previously worked under John Holmes at American Tree Care in Long Island, NY—the first company to implement IPM in the landscape.

When Owen and Sicheneder first met, they sat down and talked. "I thought, oh boy, this guy knows what he's doing," she says. "Randy was doing his own version of Plant Health Care, which I thought was a really good step towards what I was doing in New York. Don't forget, New York is ahead of us in everything. When I got here, Randy had all the concepts and the implementation was on its way. It just needed to be tweaked."

At the core of the Plant Health Care Division business are the "fertilizations," which bring in repeat business and have become the most profitable of their tree jobs. Both Owen and Sicheneder believe that productive, microorganism-rich soils that nurture

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Paul Swenson, Plant Health Care Technician,
and soil injection equipment



Owen Tree Service CONTINUED

healthy root growth are the first and most enduring key to tree health. Sadly, Sicheneder says, northern Detroit soils are “horrific.” “My soils are very heavy clays,” she says. “Oftentimes the soils are stripped down to the sub-soil. You need a pickaxe to plant a gallon-pot perennial in these soils.” On the plus side, the soils are mineral rich.

Still, Sicheneder surprises her peers at conferences when she admits that her fertilizations are not made of common N-P-K balanced fertilizer. “I don’t need it,” she says, “and with my soils, they would be a waste of time. I’ve got more nutrients than I know what to do with. I just have to get the soils to release them so roots can absorb them.”

To improve the soils of their clients, Owen Tree Service features six different regimes or “goos” devised by Sicheneder of primarily naturally based products. Her basic “goo” is YuccahTM, a product based on the extract of the *Yucca schidigera* plant. Yuccah is a natural soil conditioner and wetting agent. Her “goo” also includes BioPakTM, a product that contains biostimulants and rhizosphere (the area surrounding the roots of plants) bacteria. BioPak is used to stimulate root growth and to reestablish microbial activity in the soil, which gets the biological processes going to release nutrients for plant use. [Both Yuccah and BioPak are products from Plant Health Care, Inc., the publisher of this magazine.] The final ingredient in Sicheneder’s brew is both slow- and quick-release nitrogen.

Sicheneder varies her mixtures according to the job. She adds root stimulants and humic acids to the basic goo for new plantings. For very compacted soils or soils with poor drainage, she increases the amount of Yuccah in the mix. She adds MycorTreeTM mycorrhizal fungal inoculants [also from Plant Health Care, Inc.] for plants that are stressed by construction damage. “In these cases, we feel mycorrhizae have been stripped off the roots when the soil was forced off the top. We want to put them back, because they are critical for root function.”

Sicheneder’s soil mixtures and other plant health needs are called into action after a contract is sold by Owen Tree Service area representatives. These are highly

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Kay Sicheneder



Owen Tree Service CONTINUED

intelligent, extremely knowledgeable sales people, Sicheneder says. They meet with prospective customers, educate them about tree health, assess and monitor the trees and plants on the site, and develop then sell the work contracts.

Dependent upon the work required, Sicheneder then deploys the employees, the equipment and the supplies needed from her fleet of 10 Plant Health Care trucks. She has two large 1,600 gallon fertilizer trucks and four smaller spray trucks with mini-tanks (for the tailor-made soil mixtures) and fertilizer rigs, so liquid fertilizations can be kept separate from pesticide treatments to alleviate the potential for tank contamination. Sicheneder also has four small spray rigs that carry anywhere from one to three tanks. “The important part of these spray rigs are the multiple tanks, so I can mix what I need. I don’t have to make a big soup to dump on everything. That’s important from a legal standpoint, but most important to me is to not put on anything that I don’t need. That just disrupts the system unnecessarily.”

Each truck in the fleet is outfitted with a chemical box that contains sulfur, BioPak™ and the other materials “so they can take the kitchen with them,” Sicheneder says. Hand-held equipment, such as Kioritz® soil injectors, Wedgle® and Mauget® injectors, mist-blower and regular backpacks, are put on the trucks “in case we get that one odd thing you’ve got to do,” she says.

The fertilizations represent the largest growing sector of the Owen Tree Service business. This is true even though Sicheneder’s fertilizer mixtures cost the company 30-plus cents a gallon. Most other tree care companies in their area produce fertilizer mixtures that cost 2 to 4 cents per gallon.

The reason the Owen Tree Service fertilizations are profitable, Sicheneder says, is three-fold. First, the overhead is not as high as other tasks, such as pruning. Although the input costs (the products) run higher than those of the competitors, fertilizations only require one man and one truck. The labor for fertilization is cheaper than the crew needed for pruning. Second, properly maintained soils result in improved root
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◀ Craig Fowler,
Plant Health Care Operations Manager
Owen Tree Service



Owen Tree Service CONTINUED

growth and function for the plants under Sicheneder's care. That means healthier plants that require less repeat maintenance. Thirdly, of course, is the repeat business brought in by happy, satisfied customers.

"Repeat business is real important for generating revenue," Sicheneder says. "We've got to keep our good customers happy, and sometimes all they need is some education."

In the past, customer satisfaction in tree care was easy. You cut down a tree and haul it away. The customer sees that the job is done, and done well, and they are happy. But making customers pleased with fertilizations, soil conditioning, or plant monitoring takes extra effort in the education department. Sicheneder and Owen both strongly feel that customers cannot see value in the work the company does if they don't understand and believe in its efforts.

"A lot of education is explaining what is possible, what is practical and when to let it go," Sicheneder says. Like their area representatives, she walks the properties with the customers and teaches them about the biology of their trees. She works to turn around any of the misconceptions her customers may have. Sicheneder tells clients that to treat a tree is not to "blow chemical on it. That's my big message. To treat a tree is to know what it is doing, watch it, monitor it, and treat it if necessary, when necessary." To supplement what she says and to add credibility to her message, Sicheneder, as well as sales representatives, hands out brochures produced by the ISA, the NAA and her own company.

In educating their customers about what they do, Sicheneder and Owen are following a major component of the Plant Health Care Management System. They are pleased with the results they are generating. The plants under their care are healthier, and the business is growing with customers who return for the high quality product and service.

There is a major problem, however, in implementing the management system. Owen Tree Service, like other horticulture-based companies, has trouble finding good people. Sicheneder says their demand for qualified personnel is even higher than other

(continued)



Owen Tree Service CONTINUED

companies, because they must have employees that can understand, appreciate and follow their less-common approach. Applicators are particularly difficult to find. Because Owen Tree Service extensively trains and educates its personnel, once their applicators gain knowledge about tree health, they would prefer to move into sales positions. “It takes a long time to find that special person that wants to be an applicator,” Sicheneder says. “We’ve kept those we found, but we just haven’t found enough. I know I’m limiting our salesmen somewhat with my personnel problems, but we’re working on it.”

Owen says, “We’ve worked really hard to find good people and I believe they in turn radiate good people. Yes, we still go through a lot of employees, but every once in awhile you get one that meets that standard of saying ‘jeeze, I want to be really proud of what I do.’ The people who care—who want to make the environment better—end up staying.

“I want all the staff to feel that way,” Owen says. “A lot of people talk a good schtick, but what separates them out after awhile is whether or not they can act it out. A lot of our guys, they’ll tell you that they’re making an impact on the environment that’s good. They believe in what they are doing. If they ever have any questions or don’t believe something is right, they can stop right what they’re doing. By my rules, they don’t have to do it until they are convinced and believe in it.”

“Doing things the right way” prompted Owen to leave his local utility job. It allowed him to build a successful business that provides products and services for which he and his employees are proud. Doing things the right way, he says, has produced healthier trees and an improved environment, all under his care. “It is a moral issue,” Owen says, “but it should be the heart of our industry.”

Editor’s Note: In this article, we mention products manufactured by Plant Health Care, Inc., the publisher of this magazine. From time to time, the company’s products will be featured in our articles. We will strive to never gratuitously mention products, but we do plan to include information about them if it serves the overall educational nature of our publication. If we slip up, just let me know.

—Bruce Shank, Editor

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About Planthealthcare.com Online Magazine

PlantHealthCare.com Online Magazine is posted at www.planthealthcare.com for professionals who produce, design and maintain plant material in the arbor, landscape architecture/design, landscape maintenance, nursery/greenhouse, and parks and recreation industries. Published as an educational service by Plant Health Care, Inc., the PlantHealthCare.com Online Magazine is designed to engage, educate and inform professionals about new technologies that promote the health of plants, specifically those that create “sustainable” landscapes that cost less, provide more value and last longer. The magazine also seeks to open discussion about issues that impact the many businesses that serve the plant health industry.

Online

Meet Your Editors

Bruce F. Shank Editor

Bruce Shank is owner of BioCOM, a horticultural communications company based in Palmdale, CA. He is the editor of *Irrigation Business & Technology*, managing editor of *TurfGrass Trends*, and former editor of *Landscape & Irrigation*, *Landscape Management* and *sportsTURF* magazines. He was graduated by the University of Missouri—Columbia with a degree in agricultural journalism in 1973. He is a past president of the American Society of Business Press Editors and a member of the Turf & Ornamental Communicators Association.

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Felicia Gillham is owner of Gillham & Associates Marketing Communications, a San Diego, CA firm she established in 1989 to service the needs of turf and ornamental, agricultural and biotechnology companies. Articles written by Gillham on behalf of her clients have appeared in more than 100 Green Industry and farm trade publications. She is a 1980 graduate of the University of Missouri—Columbia with a degree in agricultural journalism. Gillham is a member of the Turf & Ornamental Communicators Association, American Agricultural Editor's Association and the National Association of Farm Broadcasters.

Editors

Editors CONTINUED

Guest Editor:
Pat Jones

Pat Jones is editor and publisher of *Golfdom* Magazine. Jones launched *Golfdom* in 1999 as a fresh new source of professional and technical information for superintendents, owners, managers and others in the golf course business. Like Pat, *Golfdom* is known for having a bit of attitude, a sense of humor and some strong opinions.

Pat's career in the golf industry began in 1987 when he joined the Lawrence, Kansas, headquarters staff of the Golf Course Superintendents Association of America (GCSAA). Over his nine years with GCSAA, he served as director of communications, director of development and director of public affairs. Pat oversaw association programs including public and media relations, government and environmental affairs, Par for the Course, *Golf Course Management* magazine and the GCSAA Foundation.

He left GCSAA in 1996 to become a public relations agency executive. His agency clients included U.S. Robotics, Gateway 2000, Ski-Doo Snowmobiles, Sargento Foods, the Scotts Company and the American Society of Golf Course Architects..

Pat holds degrees in journalism and liberal arts from the University of Kansas. He and his wife Rhonda and their two sons live in Rocky River, OH.