

bunkers at Long Beach, which would require alterations to the pipe – adjusting, fusing and saddling it, all the while getting used to working with HDPE.

“Once you get it, you get it. It’s pretty simple,” says Sinnott. “The manufacturer of the HDPE came out and gave multiple lessons to our crews on how to correctly fuse the pipe and maintain quality control.”

HDPE’s flexibility expedited the installation, says Sinnott. “There were many mature trees on that course whose dripline we didn’t want to trench through or under. We were able to bend the pipe, especially on some of the mainlines, around some of the larger trees.”

Long Beach was the first course managed by ServiScape that received HDPE. Each course,

says Sinnott, is different. At a couple of their other facilities, he says there would be no reason not to thrust block with PVC. But in the case of Harborside International Golf Course on the South Side of Chicago, he wishes HDPE technology had been where it is today when that course’s system was built in the early 1990s.

“That course was built on top of a sludge landfill, and PVC was installed because HDPE technology just hadn’t been there,” says Sinnott. “Today, there would be no question we would go 100 percent HDPE, with as much soil movement and fracturing of pipe there is every year.”

The successful installation of HDPE at Long Beach was the result of many separate parties working together fluidly, including the designer, Jim Held of

“The reason HDPE is so popular is because they cheapen it up to make it cost competitive. And the only way you can do that is by raising the velocities and lowering the pressure rating.”

— Brian Vinchesi

Automatic Irrigation Supply Co. (a Rainbird distributor), and the installer, Landscapes Unlimited.

“Everyone worked really well together,” Sinnott says. “We had that system done in 11 weeks, everything from the Z pipe at the pump house all the way out. A lot of our staff took part in restoring the trenches after Landscapes Unlimited came through. And the designer was there once a week to make sure everything was GPS’d and staked out.”

Sinnott claims Landscape Unlimited is doing an increas-

ing number of HDPE installations. He definitely recommends HDPE to other courses that are concerned about thrust blocking.

“With PVC, you have to thrust block it on every elbow. Then, when you have some water hammer and that pipe doesn’t move or push away from you, the glue joints will fail,” he says. “With HDPE, when you put in a joint, it will not fail. The fusion itself is actually 150 times stronger than the pipe itself if you do it properly, so there is no concern with thrust blocking.” GCI

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WATER COSTS

At the end of September USA Today published a "Nation's water costs rushing higher" (To read the article, enter usat.ly/QtNya6 into your web browser)

The article discussed the results of a survey undertaken with 100 municipalities regarding their water costs. The survey showed water costs had doubled or more in 29 locations and tripled in three locations over the last 12 years. The study looked at a city in at least every state and the District of Columbia. Where do you think the three U.S. cities are where water costs increased the most? I'll reveal those locations a little later in this column.

If you own, operate, manage or maintain a golf course facility that utilizes utility-provided water including treated effluent, rising costs are certainly a concern. However, you should also be concerned if you are using any other type of water as an irrigation source. Why? Because rising water rates will put pressure on large users of utility-provided water to look for alternative sources of water. This, in turn will place pressure on other large users of water regardless of the type water they use. The pressure will be both from a water source avail-

... track your water use so you can document what you need to maintain the golf course as opposed to someone telling you what you need and therefore what you can use. **Be diligent and stay informed."**

ability standpoint as well as a public perception standpoint.

Even locations that are considered flush with water had large increases in rates. What are causing these increases in pricing?

According to the article there are a number of factors, including:

- Paying off bond debt for improvements and upgrades to infrastructure
- Increases in the cost of electricity, fuel and chemicals
- Regulatory compliance
- Rising pension and health-care costs for employees
- Post 9/11 security improvements

All of these factors also apply to effluent-water pricing, so you see that rising, as well.

Keep in mind that you don't pay for water. Instead, you pay for the costs to deliver the water and maintain the treatment and delivery infrastructure.

In maintaining infrastructure, water agency debt per customer has risen from \$1,012 in 2006 to \$1,611 in 2011.

The U.S. water infrastructure needs so much work, don't expect to see much of a change to increasing costs according to the article. Rates will continue to rise at greater than inflationary costs. Increases will be vary from 5 percent to 15 percent per year. Research my firm has conducted shows a 7 percent a year increase on average for urban areas in the eastern United States.

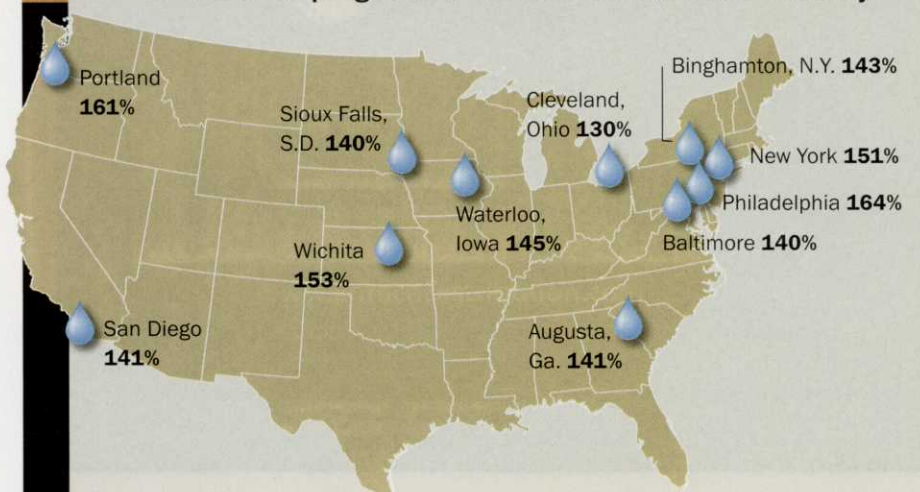
Something else that is happening, as counter intuitive as it may seem, is that the price of water is increasing as its use decreases. Residential water use in 2008 was 13.2 percent less than water use in 1978. Thus, you would think less use, less cost. But since the water is essentially free and all you're paying for is infrastructure and delivery costs, then there really is no change in those costs even with reduced use. The same infrastructure needs to be maintained and even though it is flowing less water, its size and maintenance requirements do not decrease.

Water conservation or reduced water use has, however, put off resizing of some delivery and treatment systems and it has allowed the population to grow in some cities without having to add more or larger infrastructure.

For some reason, while people accept rising energy prices and fuel prices they look differently at rising water rates. But the price of water is rising and that will put even more

(continued on page 49)

Here is a sampling of water rate increases across the country:





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Comb over

Brushing greens prior to mowing provides multiple benefits without the surface disruption. by Rob Thomas



LEFT AND BOTTOM: JOHN DEERE
BELOW: CHRIS TRITABAUGH

Brushing to stand up the turfgrass has many benefits, from helping work in amendments.

IN THE NEVER-ENDING quest for smoother, faster putting greens, superintendents who choose not to brush may be leaving some valuable ammo in the chamber. According to Bob Vavrek, USGA Senior Agronomist for the North-Central Region, brushing encourages more upright growth of creeping bentgrass and provides a smoother putting surface.

“Less lateral growth means the greens will be less likely to scuff and spike up from aggressive non-metal spikes, when golfers drag their feet across the putting surface,” Vavrek says.

Like most golfers, members at Fieldstone Golf

Club in Greenville, Del., want fast greens. Superintendent Damon Di Giorgio obliges through brushing.

“At Fieldstone, we use it to increase green speed,” Di Giorgio says. “While our mowing heights are very low, the creeping bentgrass on our greens has a tendency to lay down from constant rolling and other maintenance practices. With the thought that brushing stands up the turfgrass plant – versus having it lay down – we believe the ball contacts less leaf tissue when rolling and therefore provides a smoother and faster roll on the putting surface.”

Chris Tritabaugh, superintendent at Northland



“My experience with brushing is on seashore paspalum, Bermudagrass and creeping bentgrass greens. When done during times of optimal turfgrass growth, I have not seen any negatives.”

—Damon Di Giorgio, Fieldstone Golf



Brushes have been around since the late 60s or early 70s and the popularity between aggressive and non-aggressive has shifted back and forth.

Country Club in Deluth, Minn., fights to manage and promote bentgrass over *Poa annua*. He’s been at the club for six years and has been brushing the last three seasons.

“I have worked to limit surface disruption,” he says. “In my opinion, brushing prior to mowing provides many of the benefits desired from vertical mowing, without the surface disruption.”

Tritabaugh warns, however, that brushing, like mowing, is a practice which places physical damage on the leaf tissue. Additional abrasion and wear to the turf is more likely to occur on a severely undulating putting surface. “During time of high heat and/or other climate stresses, the bruising involved from the process may damage the plants,” he says.

Di Giorgio adds: “My experience with brushing is on seashore paspalum, Bermudagrass and creeping bentgrass greens. When done during times of optimal turfgrass growth, I have not seen any negatives.”

Typically, cool-season grasses are more susceptible to injury from overly aggressive cultural practices, especially in stressful summer months. However, warm-season grasses can suffer a similar fate in cooler weather, less conducive to recovery.

Poa annua has an upright growth habit and a predominantly *Poa* green would not benefit as much as a bentgrass green, Vavrek says.

For *Poa*, Tritabaugh would recommend another method. “I believe if you are maintaining *Poa* surfaces, then vertical mowing is the ticket,” he says. “I also believe that the newer, more vertical growing varieties of bentgrasses are unlikely to need regular brushing. Their growth habit is already upright and thus there is little need to stand the leaf tissue before cutting.”

Brushing to stand up the turfgrass has many benefits, from helping work in amendments, such as sand, to aid in combating the development and persistence of grain, especially on warm-season turf, says Kevin Stinnett, territory sales manager at Jacobsen. He’s in a unique position, having been a superintendent and now working directly with others on the equipment side.

“In addition to working in amendments such as sand, it also keeps the turf canopy open (up-right) to accept amendments and granular fertilizer, and also keeps air space in the canopy and prevents the turf from laying/stacking on itself, creating stagnant conditions that can lead to disease, increased thatch development and overall reduced turf health,” Stinnett says.

Considering the benefits, Tritabaugh and Vavrek aren’t sure why brushing hasn’t significantly gained in popularity over the years, aside from the fact that verticutting and grooming can produce similar effects. While Vavrek says he sees more courses occasionally brushing greens now versus five years ago, it’s still a minority of superintendents who brush.

Stinnett sees that trend growing in certain regions of the country, however.

“With the aggressive growing nature and the tenden-

TURF MAINTENANCE

cy for thatch and grain development, especially with the new ultra-dwarf Bermudagrasses, [brushing] has actually gained popularity with warm season turf," he says.

Di Giorgio points to a common reason many superintendents don't utilize various agronomic practices - money.

"With reduced maintenance budgets, costs need to be cut," he says. "If the brushes are not connected to a mower and an extra piece of equipment is needed, or additional labor, then this practice may be reduced due to costs.

"When doing greens, we use hand brooms and brush in a perpendicular direction to what we are mowing," Di Giorgio adds. "In the Dominican Republic, on seashore paspalum greens, we had brushes connected to our walk-behind greens mowers that sat in front of the reel."

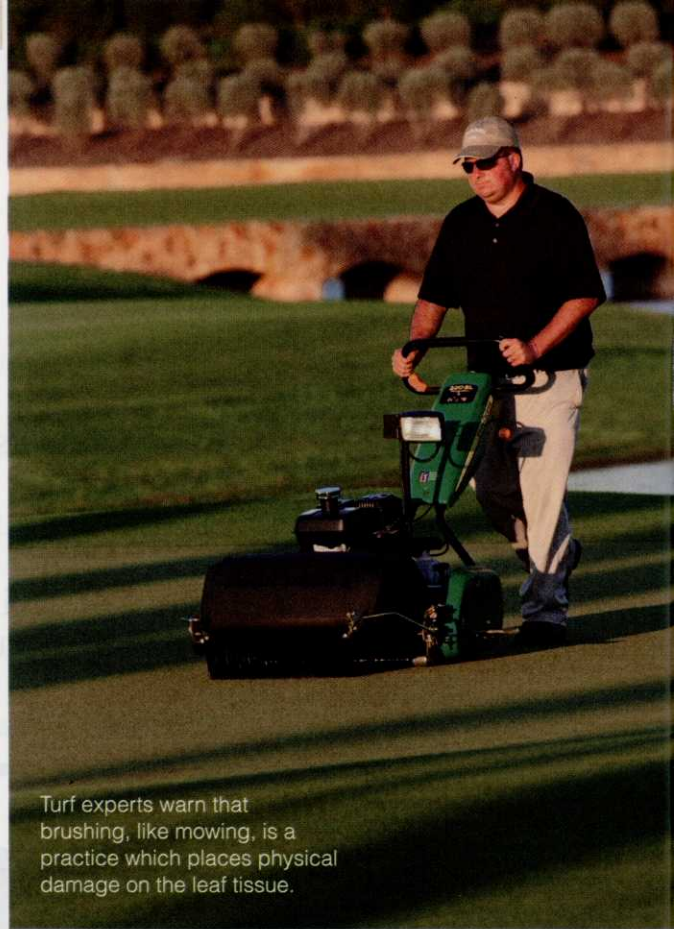
In-front brushes generally cost in

the neighborhood of \$500-600, while the rotary-style brushes are upwards of \$2,000-2,500. "Push brooms at a local hardware store are cheap," Di Giorgio pointed out, adding that hand brushing takes a staff of five about two hours to do three acres of greens at Fieldstone.

Tritabaugh says many courses, with good equipment managers, are fabricating their own brush units for the front of their mowers, but any kind of broom will do.

"Pull behind brushes used for the incorporation of topdressing work well, but they also produce more damage," he warned. "Brushes used out front of a mower are our option of choice at Northland. I like these brushes because they can be used or not used on any schedule and they are less damaging than the pull-behind brushing units."

Tracy Lanier, product manager for John Deere Golf, says superintendents generally look to their products when



Turf experts warn that brushing, like mowing, is a practice which places physical damage on the leaf tissue.

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wanting to lift turf to reduce grain and increase playability, making greens more consistent. He says potential negatives really depend on the condition of the turf, but even healthy turf may take a step back, in the beginning.

"The first time brushing, you may see initial negatives— thinning, marking and discoloration," Lanier says. "Eventually, the playability comes back."

Deere offers both out-front and rotary-style brushes, with rotary being the more aggressive of the two. Brushes have been around since the late 60s or early 70s and the popularity between aggressive and non-aggressive has shifted back and forth.

In addition, there's the Greens Tender Conditioner (GTC). Like the rotary brush, the GTC rotates in the opposite direction of the reel to stand grass up prior to cutting for a consistent quality of cut. Both control runners and reduce grain by lifting horizontal grass blades, while the GTC also slices stolons to promote new growth.

Jacobsen is developing a rotary brush. According to Stinnett, lot of thought and time with their customers goes into the process. "When developing new products, we work very closely with customers in all regions of the United States and world to understand their needs," he says. "We spend time at different courses to be aware of how the product will work in various grass types and conditions. We regularly test product in the U.S., Europe and Asia/Pacific.

Like any agronomic practice, the frequency in which a superintendent brushes greens is a matter of choice.

"We will brush greens every day at certain times of the year, but generally it revolves around our topdressing schedule," Tritabaugh says. "We will topdress on a Monday, then not brush for the following week. Then, beginning the next week we will run the brushes down for a week. So for us: one week on, one week off.

"Leading up to a tournament we will brush for a numbers of days, and then keep the brushes up for the tournament," he adds.

Turfgrass health is the overriding determinant at Fieldstone - never when the plant is diseased, thin or otherwise stressed, but the tournament schedule also plays a factor.

"During optimal growing conditions, we try one-to-two times per week," Di Giorgio says. "More during tournaments or when greater speeds are needed."

Frequency should depend largely on turf type and time of year, Stinnett says.

"During the peak growing season and under optimum temperatures, turf health, etc., for warm-season turf you could lightly brush in a different direction every day," he says. "Today, most practices – cultural, chemical, fertilization – have gone to 'light and frequent.'"

Tritabaugh is a strong proponent of brushing, but not at the expense of healthy turf.

"Care needs to be taken any time the plants are under stress," he says about when not to brush. "Out-front brushes are pretty gentle, but when used on many consecutive days the stress can add up. During a stress period and when it doubt, I would say 'brushes up.'" GCI

Rob Thomas is a Cleveland-based freelance writer and frequent GCI contributor.

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Henry DeLozier is a principal in the Global Golf Advisors consultancy. DeLozier joined Global Golf Advisors in 2008 after nine years as the vice president of golf for Pulte Homes. He is a past president of the National Golf Course Owners Association's board of directors and serves on the PGA of America's Employers Advisory Council.

GOLF AND THE NEXT GENERATION

The next upswing in the housing cycle is underway, which means a new generation of golf courses and communities will soon emerge. There's no doubt that post-recession courses and communities must be more efficient and more sustainable than those that sprung up in golf's boom days. But the question developers and builders must ask is how to integrate these new demands while continuing to attract homebuyers who are drawn to the property and aspirational value provided by golf.

What will be different in the upcoming cycle? We should look for three important changes in the priorities of next-generation homebuyers: women will influence purchase decisions more than men; buyers will seek financial stability and transparency; and environmental sustainability will be a priority.

WOMEN ARE LEADING THE WAY. According to Martha Barletta, the visionary author of *Marketing to Women*, women make 91 percent of home-purchase decisions. Their vote determines location and lifestyle elements of the communities where their families live.

Foremost, women seek a place that complements their interests in



(fountains and waterfalls) and socialization characteristics.

Accordingly, in the most recent housing boom, developers and homebuilders began to make community planning attractive to women.

FINANCIAL STABILITY IS CRITICAL. "May I see your balance sheet?" This is one of the entry-level questions asked of club managers and membership directors by new-member prospects. Bruised by the recent recessionary cycle, prospective members are more cautious and alert to the financial condition of any club they might join. Women are deliberate shoppers, and their search for a club membership now involves an evaluation of the finances of prospective clubs.

Club leaders would be wise to prepare concise and easy-to-understand descriptions of the topic once thought

water consumption and conscientious use of fertilizers, pesticides and other inputs, golf offers the safe and sustainable haven sought by many of today's homeowners. Undoubtedly, pressure will continue to be directed at golf courses by politicians, environmentalists and other activists over their environmental practices.

Golf's defense should be a strong offense aimed at education of all stakeholders, starting with club members. Golf has the opportunity to demonstrate highly sustainable business practices. But club leaders and executives need to do a better job of articulating its case as a responsible environmental steward.

Prospective members should know how chemicals are handled and stored and how the staff monitors their use. The superintendent should publish a roster of inputs used so club members develop trust and confidence in the club's environmental practices. Clubs might even post important aspects of its fertility program on its website and ask the superintendent to provide a description and explanation. Demonstrating a commitment to a reduction in water and chemical use not only helps educate and inform their members, but also encourages their support as ambassadors.

Golf communities have an opportunity to create market differentiation through effective environmental programs. But before breaking ground, developers should know the answers to four questions: What entity owns and controls water supply? How long is the secured-supply life cycle? What is the backup supply source? And how do you shop for water sources? In the previous development cycle, builders and lending institutions weren't diligent enough in seeking answers to these questions. My bet is that we've learned our lessons. **GCI**

Golf's defense should be a strong offense aimed at education of all stakeholders, starting with club members.

socialization. When buying property, women are alert to four Fs: friends, family, fun and fitness. When it comes to choosing real estate options, the most attractive elements for women are golf courses, long-view characteristics of the property, orientation to water edges (shores) and features

to be confidential and which only arose from indiscreet questions. New members want to join a club that is both financially secure and transparent.

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ENEMIES AT THE GATES

The hodgepodge of weather extremes makes it difficult to predict pest pressures in 2013. GCI's experts offer their best predictions.

BY JOHN TORSIELLO



Like a sleuth in an episode of the crime show “CSI”, David Phipps, a member of the Golf Course Superintendents Association of America Field Staff, is keeping his sharp eyes and ears to the ground as he helps superintendents in their ongoing battle with turf pests.

His research during 2012, a time in which the country was hit by all sorts of weather calamities, from drought to hurricanes, shows that 2013 may be a difficult year to predict in terms of what pests will be the biggest problems and where. But early indications are that it might not be pretty.

“In the early days I could almost predict to the week when I was going to see an outbreak, whether it was bill bug or crane fly. Either way, they were predictable. Now it seems we are in the midst of changing weather conditions and year to year we never know what to expect. It has almost become a wait and see approach but we have to be proactive. I believe it will be more of the same but in greater populations.”

Phipps says, somewhat alarmingly for superintendents, that “pests are on the move” and it will be “imperative” that they be tracked. “Regions may start seeing increasing populations of seldom seen pests and superintendents will need to be vigilant at monitoring their surrounds.”

He says IPM and local scouting are the “tried and true method,” but adds a warning caveat, “We need to take it a step further and utilize and/or develop regional programs to provide a wide data base to track pests so we can be prepared.”

Superintendents around the country are also on the alert and ready to meet their enemy at the gates.

“Here in Atlanta, we had almost no winter

last year which was good for rounds of golf but made for some interesting adjustments agronomically,” says Anthony Williams, director of grounds at Stone Mountain Golf Club by Marriott in Stone Mountain, Ga. He reported his area is 10 inches behind normal rainfall and it appears that many pests he does not generally see as issues are building populations way beyond IPM thresholds.

“I was at the putting green the day before Thanksgiving and a mole cricket crossed the sidewalk as I was evaluating the green. We seldom see mole crickets this far north. I utilized an effective biological control for this one mole cricket but it is a sign of the times. He adds, “Now more than ever the successful superintendent must be vigilant through active scouting and monitoring critical benchmarks as Mother Nature changes the scheduling and execution of our core programs.”

On Long Island, N.Y., an area hit hard by Superstorm Sandy in mid-autumn, Brian Benedict, superintendent at The Seawane Club in Hewlett Harbor, N.Y., is concerned with the annual bluegrass weevil. “Although it’s an older pest it seems like we are losing ground to resistance to selective insecticides. We had a huge infestation in 2012 and I attribute that to a mild 2011-12 winter. I am actually hoping for a big freeze this winter desiring to kill off the insects.”

Paul Brandenburg, superintendent at Furman University Golf Course in Greenville, S.C., reports several pest concerns as 2012 ended.

“We ultra dwarf guys, some of us dealt with pink snow mold last year and that was new and definitely weather related. Mini ring (a strain of rhizoctonia) is always a concern. Sod webworm is always a concern. Most of us spray preventively for spring dead spot and fairy ring.” In bent grass, dollar spot, brown patch and pythium remain the big concerns and pythium volutum seems to be on everyone’s radar, he adds, perhaps due to more prolonged heat and humidity in the area.

Dr. John Inguagiato, assistant professor of turfgrass pathology at the University of Connecticut in Storrs, takes a pragmatic approach to the issue.

“Predicting next year’s turf disease challenges can sometimes be about as accurate as

a reading from a carnival psychic. As we all know, disease outbreaks, particularly foliar ones, are largely dependent on the weather conditions before and during infection. Therefore, it is difficult to accurately forecast what diseases are going to be problematic next year.”

Dr. Jim Kerns, turfgrass pathologist at the University of Wisconsin in Madison, concurs. “It is very difficult to predict what diseases or insects will be problematic next year,” Kerns says. “Diseases in particular are governed by the environment and we have no idea what next year will hold for us. Ultimately we continue to see issues with dollar spot, anthracnose and pythium root diseases. However, next year may hold a different set of problems.”

Says Dr. Gwen K. Stahnke, extension turfgrass specialist at Washington State University in Pullayup, believes that because it was so dry this past season in many areas of the country, if areas of a course were not watered, superintendents may have more problems with weeds in those areas where open areas were created. “It is an ideal place for annual bluegrass or moss to invade during the winter.” She reports that several areas of the country have entered microdochium patch weather,” and that disease will be popping up from now until the rain stops in July, most likely.

“I have seen a lot of adult crane flies on our research farm, so people should be monitoring areas where they have had problems in the past, or watch areas where they were watering in August through September and it remained wet. That is where the eggs were laid. Also monitor the feeding of birds. They actually cause more damage than the crane fly larvae themselves. The crane fly larvae will feed over the winter, so monitor and treat in February if there is a severe problem.

She adds that during late October, the state of Washington had its first outbreak of a disease called rapid blight that was first found in California in 1995 and identified at the University of Arizona in 2002. The causal agent was found to be an aquatic organism called *labyrinthula terrestris*. The organism is associated with saline irrigation water and an accumulation of salt in the soil. It is not temperature dependent and the symptoms look very much like microdochium patch.

Dr. Stahnke says, “As we use more re-