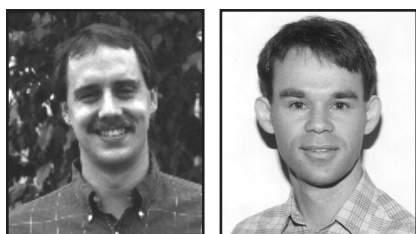


ofa Bulletin

an Association of Floriculture Professionals

Understanding Water Quality: Part 3—Water Sources



by William R. Argo and Paul R. Fisher

Editor's Note: Part 1 of this article appeared in the May/June 2003 *OFA Bulletin* and Part 2 appeared in the July/August *OFA Bulletin*.

There is no perfect irrigation water for crop production. Each water source comes with its own set of challenges. In general, most problems can be overcome, either through proper

management of alkalinity or by supplementing or balancing the nutrients contained in the water with those supplied by the water-soluble fertilizer.

There are some situations where water quality is so poor that it becomes very difficult to produce plants. The maximum acceptable levels for each impurity are somewhat arbitrary and are dependent on the type of crop being grown, its stage of development, as well as the environment in which it is growing. For example, a bedding plant grower may be able to produce quality plants with an irrigation water containing 125 ppm sodium, but a propagator may find the same water unusable.

Growers consider changing water sources when the challenges of the existing water source become greater than the cost of finding a new source. Some reasons for changing water sources include extremely high alkalinity (>350 ppm), high water EC (>1.5 mS/cm), high concentrations of “junk salts” like sodium, chloride, or boron, or sudden changes in water quality caused by salt intrusion into the aquifer. Finally, a water source that has a large amount of variability in EC or alkalinity may make nutrition management extremely difficult.

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Fund-Raisers Build Community and Profits



by Bill McCurry

At the OFA Short Course Idea Exchanges, we explore ideas that work. Each July, these sessions give owners and managers the opportunity to share experiences and build on the collective wisdom of all the experienced business owners gathered in the room. Industry gurus Gary Hudson and Bill McCurry moderate the sessions, start the conversations, and facilitate the feedback to provide the maximum payback to every attendee.

During one segment of the 2003 Marketing Idea Exchange, attendees wanted to discuss community fund-raisers. Because of the speed at which ideas were flowing, it's impossible to give proper credit to each contributor. To be fair to

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OFA Mission Statement

To support and promote floriculture professionals through lifelong learning, career enhancement, and public awareness.

OFA – an Association of Floriculture Professionals

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OFA Bulletin

November/December 2003
NUMBER 881

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Published Bimonthly

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Let's Blame the Weather



by Peter Konjoian

I'll bet anything that the following conversation is the most common exchange between growers at conferences. It takes place in the hallways between educational sessions, on the trade show floor, at restaurants, and even in airports and goes something like this. "Hey (fill in the name of the grower you just bumped into), how's it going? Glad to hear it ... oh, I'm fine. Thanks for asking. How was your spring?" To this, your long, lost friend that you see maybe twice a year replies, "Great, how was yours?"

Now for Take Number 2 of the same exchange. "Hey ____, how's it going? Glad to hear it...oh, I'm fine. Thanks for asking. How was your spring?" After a pause, your long-lost friend now replies "Pretty good. That darn weather. If it hadn't been for all those rainy weekends in May, we'd have probably had our best spring ever. How was yours?"

Anyone for Take Number 3? "Hey ____, how's it going? How was your spring?" Fast forward to the reply. "Not bad. Well, that darn weather got us again. The Big Boxes in our area (names of your mass market players) didn't disappoint us by setting the bar even lower on retail pricing. The economy hurt us quite a bit; can't wait for the recession to end. Had some issues with pH management, but on the whole, our crops were outstanding. We're doing really well with mixed containers and just about anything that's new and differ-

ent. But you know what we've noticed? There doesn't seem to be as much customer loyalty as there used to be. So, how was your season?"

My father has said for decades that when a customer brings a plant back to him, if he talks to the person long enough, he ALWAYS finds out EXACTLY what happened. In much the same way, I've learned that it's not till the third time the question "How was your spring?" is asked that the real answer emerges. It's as if the number of times one asks reflects the degree of trust between the two growers. Let's move on.

Shrinking Margin Equation

I enjoy polling my audiences wherever I'm speaking, regardless of the topic. If it's a Florel talk, the questions include "how many are using Florel, who's succeeding, failing, etc." If it's a production talk, I ask how many operations are larger than my 55,000-square-foot range, smaller, and so on. If it's management, I ask how many feel that they're working harder and making less. This one is a fun line of questioning and the wordings of the questions have everything to do with the willingness of the audience to respond.

Here are some general results of my polling. All of us feel that we're working harder and making less these days. Most of us agree that profit margins are shrinking. However, I'm finding that we disagree on the reasons. Time and again, most offer the weather as the number 1 factor affecting their spring season. Long, snowy winters ... rainy springs ... you name it, and it gets blamed.

I may lose your support now by offering a personal opinion, but here goes. It's not the weather. Blaming Mother Nature is so easy that we blame her constantly. If it's not the drought, then it's the wet summer. If it's not the heat, then it's the late frosts. If it's not too cloudy, then it's too sunny. Get used to it; the fact that we can't control the weather isn't going to change anytime soon.

I've gone overboard lately; when someone starts blaming the weather, I tune them out. "Really...the weather in your area was THAT bad, huh?" Seattle has moisture, the desert has heat, Florida has humidity, and New England has constant change. Get used to it, and stop blaming the weather.

A recent audience helped me create an equation of factors contributing to shrinking profit margins. The mathematical equation looks something like this: $X = A + B + C + D + \dots$ "X" represents the shrinking margin so many are experiencing; while A, B, C, D and so on represent the factors causing it. In no particular order, we listed weather, competition, the economy, gardening trends, business practices ... you get the point.

Next comes the fun part. Rank them! I've already said that too many put the weather first in line as the main factor affecting business. Where do you see the others? Better yet, let's add some detail to the equation and weigh the factors. Let's say that our shrinking profit margin, X, equals 100 percent. Remember that this is not a good number; it represents what we're losing in profit. It's the number behind our feeling that we're working harder and harder and making less and less.

For argument's sake, let's say the weather is responsible for 20 percent of our business problems. How about competition? 25 percent sound okay? Next, the economy. 25 percent? Changing gardening trends? 10 percent? Business practices? 15 percent?



The logo features the lowercase letters 'ofa' in a white, cursive font on a green background, followed by the word 'Forum' in a large, bold, green, sans-serif font on a white background.

We've now accounted for 95 percent of our woes. Any other factors come to mind to complete the equation? How about health? Labor?

Control, Control, Control

Time for the wakeup call – reality at its best. How many of us believe we can control the weather as a means of re-establishing healthy profit margins? I thought so. If that's the case, why keep complaining about? How much control do we have over our competition? The economy? Sure, we all work to elect politicians we believe will best manage the business of our country; but other than that, how much influence can we have over the economy?

I once heard a psychologist say that we shouldn't worry about things out of our control. Why bother if there's nothing you can do about it? Instead, he suggested we focus on factors we can affect. This brings the conversation back to business practices. Isn't it true that the best way for us to be more profitable is to hunker down and pay more attention to what goes on at home instead of worrying about others? This psychologist said it's pretty simple. Just ask yourself "Is it MY problem?" If the answer is yes...do something about it. If the answer's no, move on because all the worrying in the world isn't going to help.

USDA Statistic

The annual floriculture survey that the USDA conducts reported a statistic that caught me off guard this year. This year's report on the 2002 crop year shows the number of floriculture operations in the United States (doing more than \$10,000 of business) has dropped below 10,000 growers. For

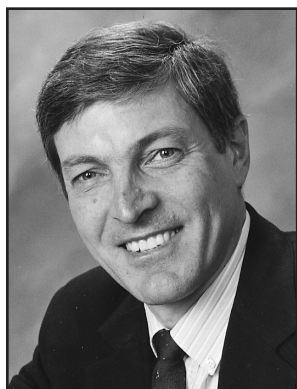
my entire career, the number of U.S. growers has been well over 10,000. Numbers in the low teens have been pretty consistent. Wow, what a reality check for us to dip below 10,000. There's nothing magical about the number; it just hit me that there's a shakeout occurring. The shakeout is bound to continue in the near future. I don't believe it's hit bottom yet, but we all need to keep an eye on it.

Concluding, if I've made my point effectively, you'll choose not to fret too much over the declining number of growers and concentrate on how you're managing your operation so you don't become part of the statistic. Lastly, I'm writing this the day after the New York Yankees beat the Boston Red Sox for the American League Pennant. Here in New England, we have a group known as the "fellowship of the miserable." I've decided that because I have no control over my team, why fret! I'm letting my membership in the "fellowship of the miserable" expire. Too many years of "been there, done that" for me.

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Tools to Manage Plant Height: Integrated Height Management (IHM)



by Claudio Pasian

For most floriculture growers, plant height control and plant growth regulators are almost the same thing. It is easy to forget that there are more methods to use than chemicals when it comes to keeping plants in proportion to their container. In this article, I will review some methods of plant height control that do not include chemicals. As with insecticides and fungicides, plant growth regulators will always be an important tool in a floriculture grower's toolbox. There are circumstances, however, where PGRs are not allowed or even if allowed, they can be more effective if some complimentary cultural practices are implemented. The bottom line is how to produce a quality crop and still make money on it.

Integrated Height Management (IHM)

As with integrated pest management (IPM), we can have a comprehensive set of cultural practices that will allow growers to either replace or reduce chemicals while still producing plants with balanced proportions.

What affects plant height?

Each plant form/appearance (phenotype) is the consequence of its

genotype (genes) and the environment where the plant is grown. For practical purposes, I will divide the environment into above-ground environment and root environment.

Genotype

Through breeding, it is possible to change the height growth potential of a cultivar. However, plants that tend to be smaller and look good during the growing phase, most likely will be small when planted in the landscape. Some customers may feel disappointed to see their plants not performing as they expected. Since customer satisfaction is paramount to have a vibrant industry, growers should be very cautious in their selection of cultivars. Growers should balance their production needs while fulfilling customers' expectations. Some day, through biotechnology, we may have cultivars that are short while young (greenhouse production phase) and then grow freely when in the landscape. We are not quite there yet.

Above-ground Environment

Light. It is well known by any good greenhouse grower that light intensity and quality has an effect on plant shape (height). In some parts of the country, spring crops to be sold in the South are started during late winter, a period of very low light levels. There is nothing that can be done regarding short days and overcast skies. However, growers can keep the roofs as clean as possible and resist the temptation of hanging too many baskets on top of other crops. The aerial space inside greenhouses is not totally free; it costs you light!

When light goes through plant canopies, not only its intensity is

reduced, but also its quality is changed: it gains green and loses red. Plants sense this change in light quality and react to it. Most of the time, the result is stretching. Research has been done in this area (by Dr. Peg McMahon at The Ohio State University and others), with the objective of modifying light quality to keep the plants short. Some companies have incorporated some pigments in polyethylene films that can achieve this goal. These films will not be used to cover greenhouses; they will serve as a movable "curtain" on top of the crops – extended when height control is needed and retracted when not. These plastics are not on the market yet.

Temperature. A lot of work has been done in this area (Drs. Royal Heins and John Erwin). Many growers are aware and use tools like DIF or DIP. Growers in Northern latitudes can grow plants with day temperatures lower than night temperatures (DIF). When DIF is difficult or expensive to achieve, growers reduce air temperature starting two hours before sun rise until two hours after sunrise (DIP). Using temperature along with graphical tracking has allowed many growers to reduce (if not eliminate) the use of PGRs on some crops.

In general, cool temperatures and high light intensities favor the production of compact plants. It is not unusual to find the best bedding plants among those that were moved out of the greenhouse for growth during spring. Direct sunlight, lower temperatures, and the effect of wind (read more later in this article) produce stockier, more compact plants. In this regard, greenhouses with roofs that open or retract may save growers time and money by reducing the need for PGR applications.

Root Environment

Water. Growers of vegetables, plugs, or packs know that by reducing the fertilization and irrigation, it is possible to control plant height. This method (I call it the starvation method) produces shorter but severely stressed and ugly looking plants. At The Ohio State University, we are studying the possibility of using irrigation as a height control tool. It will take some time before we have something ready and easy to use by growers.

Fertility. Few growers I know use fertility to control plant height. Traditionally, it has been said that fertilizers rich in ammonium-nitrogen will produce soft, luxurious growth and stretching. On the other hand, it was thought that fertilizing with high levels of nitrate-nitrogen would favor compactness. This is a very common misconception. It turns out that fertilizers rich in nitrate-N (13-2-13; 15-0-15; 14-0-14) are low in phosphorous (P), and fertilizers rich in ammonia-N (20-20-20; 20-10-20; 15-16-17) are high in P. Research conducted in Denmark (Dr. C.W. Hanson) and the United States (Dr. P. Nelson, North Carolina State University) clearly indicates that it is the level of P causing the stretching and not the form of N.

Usually, a P level of 19 to 20 ppm is more than enough to grow a good crop. With much lower levels, it is still possible to grow a good crop while restricting plant height. I have read that in Europe, a chemical company is promoting a product based on an activated aluminum oxide that releases very small amounts of P into the substrate. By doing so, growers have shorter crops. (I have not tested this product, so I cannot offer an opinion about it.) The bottom line is that it is very important to select the appropriate fertilizer. Before growers decide to make a change based on P levels, they should consider other factors, such as acidity or basicity. For example, high ammonium-N fertilizers are more acidic and help counteract the effect of high alkalinity water.



Methods of Plant Height Control

Greenhouse growers have several tools to keep plants in proportion to their containers: *chemical control* (PGRs), *environmental control* (light, temperature, nutrients, water), and *mechanical control* (brushing and shaking). Of all these methods, the least used by floriculture greenhouse growers is mechanical control. For growers who produce vegetables, this is a method they should seriously consider given the fact that PGRs are not allowed on vegetables.

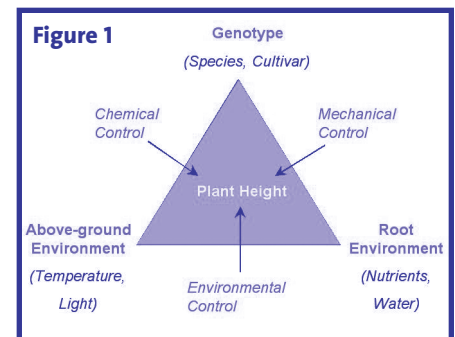
In the 1970s, Dr. Mitchell (Purdue University) and his collaborators published a work showing that plants that were shaken or bent by hand were shorter than the plants unshaken or untouched (controls). Since then, many researchers in Europe and the United States (including Dr. Joyce Latimer, Virginia Tech) have improved this methodology and have developed the “brushing method” to control plant height.

The most common way of applying this technique is by gently sliding a PVC pipe over the tops of plants in one direction and then repeat the movement in the opposite direction. The operation has to be repeated a minimum of a couple of times a day. Some growers use PVC pipes held in their hands while moving back and forth along the aisles between benches. Others have developed frames that allow the adjustment of the height of the pipe sliding over the plants. As the plants grow, the pipe can be moved higher. It is up to the growers’ imagination to develop systems that permit bending or shaking in a practical way.

Tomato plants respond very well to this method of height control; plants are short and green because

normal watering and fertilization can be continued. Some crops like peppers may show damage on young leaves. The potential of spreading plant diseases is also a possibility that has to be considered when deciding to use this method. Perhaps the most important reason this method is not widely used is because it has to be applied continuously – every day, a few times a day, plants have to be bent or shaken.

In conclusion, plant height control is much more than PGRs. Growers should start the process of plant height control by selecting the right cultivar and continue by managing the environment: increase light levels, use DIF or DIP, select fertilizers with lower levels of P. If these methods do not produce the desired effect, PGRs should be used (Figure 1).



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Understanding Water Quality: Part 3—Water Sources

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When the decision is finally made to change water sources, it is important to understand your options. This article will provide information on the alternative water sources.

Well Water

Well water or ground water comes from geological formations called aquifers that can store or transmit water. For more information on ground water, see <http://water.usgs.gov>.

In general, there are two types of aquifers: confined aquifers and unconfined aquifers. Confined aquifers are water-saturated rock that has an impermeable layer of material (like clay or rock) above and below it, and the water level within the confined aquifer remains relatively constant throughout the year. In comparison, an unconfined aquifer (for example, the water table) does not have an impermeable layer on the upper surface, and the water level can rise and fall rather dramatically depending on recent precipitation.

Another term is the water-bearing capacity, a measure of the aquifer's ability to supply water. Water-bearing capacity is dependent on the overall porosity, the size of the pores, and how interconnected or isolated the pores are in the water-bearing rock. Water-bearing capacity of an aquifer can range from a few gallons to more than 1,000 gallons per minute.

Finally, the chemical composition of the water-bearing rock affects the mineral content of the water. For example, limestone formations of central Ohio and central Michigan give rise to well water that contains high levels of bicarbonate alkalinity (250 to 400 ppm CaCO_3) with high levels of calcium and magnesium. The salt dome formations common in extreme

southeast Michigan and northwest Ohio result in well water with high levels of sodium and chloride. The sandstone formations of Long Island, New York and southern New Jersey give rise to very pure water with very low alkalinity (less than 10 ppm CaCO_3).

Beneath any greenhouse, there are probably several aquifers at varying depths. The exact depth of any one aquifer, or the distance between aquifers can change fairly dramatically depending on the geology of the land. It is not uncommon to have water from two wells in close proximity drilled to the same depth having different chemical compositions from two different aquifers.

In general, growers are advised not to use shallow wells (unconfined aquifers) because the water is too variable (both in quantity and composition) and is easily contaminated. However, even the water from deep wells (confined aquifers) can change rapidly under the "right" conditions. For example, during a drought, a grower in the Midwest had the water alkalinity decrease from 300 ppm to less than 100 ppm CaCO_3 within a single year. Another grower on the East Coast had the sodium and chloride level in the water increase to problem levels over several years because of salt water infiltration.

When you have problems with a specific well water, one option is to drill another well. The idea is to find another aquifer with a different mineral composition. Unfortunately, hitting a new water source has as much to do with luck as anything else. Often the well may have to be re-drilled several times (which can be expensive), and there is no guarantee that in the end the problem will be solved. In addition, drilling a new well may not be a good option. For example, the water-bearing capacity of aquifers in eastern Ohio is generally poor. It therefore may be difficult to change wells because there may be no place else to drill.

Surface Water

Surface water includes water from lakes, streams, and ponds. In general, the variability of surface water is greater than well water, because it is directly affected by recent precipitation. However, this does not mean that surface water is more or less pure than well water. Just like with well water, the chemical composition of the rock and soil directly in contact with the water will affect its composition.

Surface water has a number of challenges not found with well water. First, it is easily contaminated. For example, a grower using stream water has to worry that anything added to the water upstream (like herbicides) may find its way into the greenhouse. In another recent case, a quarry started discharging water into a stream used by several greenhouses. The salt concentration of the discharge water was very high. Because the quarry did not add the discharge water to the stream at a constant rate, the EC of the stream water would vary between 0.6 mS/cm and 3.5 mS/cm, sometimes on a minute-by-minute basis. Since the Environmental Protection Agency and the state Department of Natural Resources had agreed to the discharge, there was nothing the greenhouses could do but find another water source. Finally, surface water can be a significant source of algae and disease organisms.

For growers considering using surface water, it should not be pumped out of the source and used directly on the crop. Instead, it should be filtered and treated before use. The process for properly treating surface water should include filtering the water to remove as much particulate matter and algae as possible. Next, the water should be treated with a disinfecting agent like those listed in Table 1 (Page 8). Finally, the treated water should be held in storage for a long enough period that the disinfecting agent has a sufficient contact time to kill any organisms left in the water after filtering. It is commonly recommended that the contact

time should be a minimum of 20 minutes. Longer contact times are sometimes recommended for specific disease organisms. If herbicide or any other organic material is a concern, then an activated carbon filter can be placed after the particulate filter.

To calculate the storage volume needed for a 20-minute contact time, multiply the maximum flow rate used in the greenhouse by 20. For example, if the maximum flow rate is 500 gallons per minute, then you will need 10,000 gallons of storage capacity to get 20 minutes of contact time. To get an idea of the size of the tank needed, one cubic foot holds about 7.5 gallons of water. A storage tank that is 10 feet by 10 feet by 13 feet would be 1,300 cubic feet and would hold about 10,000 gallons of water.

Rainwater

Rainwater is a pure water source that contains almost no alkalinity or nutrients. The challenges associated with using rainwater as an irrigation water source result not from its composition, but rather from collection and storage.

Growers considering rainwater should first determine how much water is used in their greenhouse on a weekly, monthly, and yearly basis. This can easily be done by placing a flow meter on the pipe leading from the current water source. If you have multiple sources, for example, multiple wells, and you are considering using rainwater for the entire operation, then flow meters should be placed on each well.

Next, growers should look at the rainfall potential at their location. Most state universities keep precipitation records from various locations around the state, or weather information can be obtained from the National Oceanic and Atmospheric Administration (NOAA) at www.noaa.gov. When looking at precipitation information, don't just look at yearly averages, but also how pre-



cipitation occurs on a monthly basis throughout the year.

Also important is the collection potential of the greenhouse. A 1-inch rainfall collected from 1 acre of greenhouse will produce about 27,000 gallons of water. Most locations that collect rainwater collect water from more than just the greenhouse roofs. For example, if a pond is being used to store the rainwater, then the surface area of the pond should be included in the collection area. If the area around the greenhouse is tiled or the run-off is diverted into the storage pond, then it should also be included in the collection area (Table 2, Page 9).

Rainwater needs to be stored. The storage capacity needed not only depends on the volume of water used by the greenhouse, but also on amount and frequency of precipitation. When calculating the size of the pond needed, it is important to remember that the water used by the greenhouse is not the only source of water removal from the pond. Water is also removed from the pond by seepage out of the bottom (unless the pond is lined) and through evaporation from the surface. The exact amount of water lost due to surface evaporation will depend on the sunlight intensity, relative humidity, and wind speed.

Finally, once rainwater is collected and placed in a pond for storage, it also becomes a surface water source. That means that the water needs to be filtered and disinfected before it is used in the greenhouse. In addition, the chemical composition of the water will change as it comes into contact with the lining of the pond. Therefore, rainwater stored in a pond with a clay liner will not be as pure as rain-

water stored in a cistern with a rubber liner.

Municipal Water

The chemical composition of municipal water can vary, just like other previously mentioned water sources. This is because the source of municipal water can be from wells, surface water, or rainwater collection (reservoirs).

In general, one of the greatest benefits for using municipal water is that it is free of disease organisms, algae, and herbicides. Herbicide concentrations are very closely regulated by the Environmental Protection Agency (EPA). While plant diseases and algae are not specifically controlled by the EPA, human diseases are, and treatment for one kills the other.

The challenge of municipal water is that many of the nutrients considered important in plant nutrition are either not regulated or are only voluntarily regulated by the individual water source, not the EPA (see Table 3, Page 10). In addition, the concentration of those nutrients that are voluntarily regulated are much higher than that considered acceptable for plant growth. For example, a grower on the East Coast had the chloride concentration increase from 30 ppm to more than 150 ppm over a three-year period, which was causing problems with plug production. When the grower asked the city if anything could be done, the company was told "no." As far as the city was concerned, the 150 ppm of chloride was still well below voluntarily regulated excessive level, and nothing would be done until the concentration of chloride reached 250

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Understanding Water Quality: Part 3—Water Sources

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Table 1. Common irrigation water disinfection methods

Chemical	Active ingredient	Readily soluble	Injection method	How they work	Desired residual concentration	Problems	
Agribrom	1-Bromo-3-chloro-5,5-dimethyl-2,4-imadazolidine-dione	No	Tablets or granules are placed in a container with water. The supernatant solution is injected into the irrigation water.	<p>Oxidizing agents interact with reactive functional groups on organic matter, which results in a change to the structure of the organic matter.</p> <p>If the organic matter happens to be in a cell wall, this change usually results in the cell wall bursting, which kills the organism.</p>	5 to 35 ppm bromine	Because Agribrom is relatively insoluble, it is difficult to keep a constant concentration of bromine in the irrigation water throughout the day, especially if the flow rate of the irrigation water is not constant.	
Chlorine Gas	Cl ₂	Yes	Chlorine gas is bubbled through the water, where it combines with the water to form a hypochlorous acid (HOCl) and hydrochloric acid (HCl).		0.5 to 2 ppm free chlorine.	Hypochlorite is a weak acid and can be found in solution in two different forms, OCl ⁻ and HOCl.	Hazardous gas requires special equipment, ventilation, and handling.
Sodium hypochlorite	NaOCl	Yes	Liquid NaOCl solutions (5% to 15% chlorine) are injected directly into irrigation water.		Because the HOCl form is much more effective at disinfecting than the OCl ⁻ form, the water pH should be maintained at less than 7.0	Requires a special injector that is resistant to very corrosive chemicals and has a very high injection ratio. Has a limited shelf life. Warm temperatures and sunlight speed up breakdown. Never combine with fertilizers or other chemicals containing ammonium.	
Calcium hypochlorite	Ca(OCl) ₂	No	Tablets or granules are placed in a container with water. The supernatant solution is injected into the irrigation water.			Because calcium hypochlorite is relatively insoluble, it is difficult to keep a constant concentration of free chlorine in the irrigation water throughout the day. Never combine with fertilizers or other chemicals containing ammonium.	
Ozone	O ₃	No	An electrical arc is used to produce the ozone from atmospheric oxygen. The ozone is then bubbled through the water.			No residual effect	Difficult to control or monitor levels. Ozone has no residual activity. Often used with other disinfecting material to get some residual effect.
Hydrogen Peroxide ¹	H ₂ O ₂	Yes	Liquid H ₂ O ₂ solutions (27% to 50% H ₂ O ₂) are injected directly into irrigation water.			25 to 500 ppm H ₂ O ₂	Requires a special injector that is resistant to very corrosive chemicals and has a very high injection ratio, or the material must be diluted by hand before injection.
Ultraviolet (UV) radiation		NA	A thin film of water is passed underneath a mercury arc lamp that produces UV radiation.		UV radiation disrupts the genetic material in the cell, effectively killing it.	No residual effect	Units capable of high flow rates commonly found in greenhouses are available, but are very expensive. The effectiveness of the lamp decreases with age. Any particulate matter in the water will disperse the light, making the application of UV radiation less effective. Often used with other disinfecting material to get some residual effect.
Copper ionization	Cu ⁺⁺	Yes	An electrical charge is passed between copper bars, producing copper ions in solution.	Copper is known to control a wide variety of pathogens, including algae, fungi, and bacteria. If properly managed, it appears to work well (especially on algae) but more research is needed.	0.5 to 1 ppm Cu	Not effective if water pH is above 7.0 because the copper ions precipitate. Difficult to produce copper ions if the conductivity of the water is less than 0.3 mS/cm. Copper bars (that supply the copper ions) can become corroded, which will decrease their effectiveness. Over time, the distance between the copper bars increases, which also decreases the ability to produce copper ions.	

¹ZeroTol is a stabilized form of hydrogen peroxide with a concentration of 27% H₂O₂. A dilution of 1:2000 gives a concentration of 135 ppm H₂O₂. Commercial grades of hydrogen peroxide are 35% and 50% H₂O₂, and a 1:2000 dilution would give a concentration of 175 ppm and 250 ppm H₂O₂, respectively.

Notes: 1) All the methods mentioned above are non-specific and will react with any type of organic matter, whether it is a pathogen, algae, or a particle of peat. In all cases, the cleaner the water is before the application, the more effective the disinfection method is at removing pathogens. 2) Agribrom, chlorine gas, sodium hypochlorite, calcium hypochlorite, ozone, and hydrogen peroxide are strong oxidizing agents. Metal micronutrients (copper, iron, manganese, and zinc) are easily oxidized (particularly iron). It is probable that long-term exposure (greater than 20 minutes) of metal micronutrients to these oxidizing agents will decrease their solubility. Chelated micronutrients should be only slightly less affected than sulfates. 3) Ultraviolet radiation is a photo-oxidizing agent. There is a large amount of information coming from Cornell University on the effects of photo-oxidation on iron in fertilizer solutions, indicating that the greater the exposure, the less iron that will remain in solution. 4) Quaternary ammonium compounds like Green-Shield®, Physan 20, or Triathlon are listed for disinfection of walkways, benches, tools, flats, etc., but are not for use with irrigation water.

Table 2. Example of rainwater collection

Example: A greenhouse operation with a 10-acre gutter-connected greenhouse and 3 acres of stand-alone greenhouses. There is an additional 2 acres of land surrounding the stand-alone greenhouses that have been concreted and can be used to collect water.

Water use: Total water use is 9 million gallons of water per year, with an additional 1 million gallons of water lost from the pond because of seepage through the bottom of the pond and evaporation from the pond surface¹. The greenhouse has a maximum water use of 100,000 gallons per day at a maximum rate of 300 gallons per minute. Collection basin is a 1.5-acre pond with an average usable depth of 10 feet (total capacity of 4.8 million gallons).

Total collection area: Greenhouse has 13 acres of surface area plus 2 acres of concrete and 1.5 acres of pond surface area, for a total of 16.5 acres.

Collection potential: 1 acre inch of water is about 27,000 gallons. A 1-inch rain over the 16.5 acres of collection area will produce about 445,000 gallons of water.

Rainfall summary for the last 50 years from several locations in the U.S.²

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL (RANGE)
Greenville, South Carolina	4.2	4.3	5.3	3.9	4.0	4.0	4.6	4.0	4.0	3.7	3.5	3.9	49.4 (35 – 70)
Cleveland, Ohio	2.4	2.2	2.9	3.4	3.4	3.5	3.4	3.4	3.3	2.7	3.1	2.8	36.5 (18 – 53)
Colorado Springs, Colorado	0.3	0.3	0.9	1.4	2.3	2.3	2.9	2.8	1.3	0.9	0.5	0.3	16.2 (7 – 27)
Los Angeles, California	2.9	2.8	2.0	0.8	0.2	0.1	0.0	0.1	0.2	0.3	1.4	1.6	12.4 (4 – 29)

Total collection potential of a 16.5 acre greenhouse at each of 4 geographical locations.

	AVERAGE YEAR	MINIMUM YEAR	NUMBER OF YEARS WITH LESS THAN A COLLECTION POTENTIAL OF 10 MILLION GALLONS
Greenville, South Carolina	22.0 million gallons	15.6 million gallons	0 year
Cleveland, Ohio	16.3 million gallons	8.3 million gallons	1 year
Colorado Springs, Colorado	7.2 million gallons	3.2 million gallons	46 years
Los Angeles, California	5.5 million gallons	1.8 million gallons	46 years

¹The estimation of water lost by seepage and evaporation is a "best guess" number and is used for comparison purposes only. The actual value will depend on the pond's construction and environment (light intensity, humidity, and wind speed).
²Precipitation and temperature data can be found for 60 cities around the United States at <http://wlf.ncdc.noaa.gov/oa/climate/research/cag3/city.html>.

ppm. Just like any other water source, municipal water should be tested on a regular basis.

Another problem with municipal water sources is that they can be extremely variable, especially when there are multiple sources involved. For example, a grower on the West Coast was getting water from a city

that had two sources. The first source was well water that had a fairly high sodium and chloride level with a high EC. The second was a fairly pure source from a reservoir. The problem was that the city used both sources at the same time, but the ratio between sources was constantly changing, so the composition of the irrigation water was constantly changing.

Reverse Osmosis Purified Water

Reverse osmosis (RO) purification produces water that is very pure, almost like rainwater, with very low alkalinity and very low concentrations of nutrients. RO water is produced by forcing water through a membrane

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Understanding Water Quality: Part 3—Water Sources

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that allows water to pass, but not salts. With RO purification, only a fraction of water passes through the membrane. The remaining water along with the concentrated salts are pumped out of the unit as brine. The volume of pure water produced by a RO purification unit will not only depend on its size, but also on water temperature. The colder the water, the less pure water that can be produced by the RO unit. If you are considering RO purification, make sure you find the capacity of the unit based on a water temperature of 55°F, which is the temperature of water coming out of the ground.

The challenges of RO water are not in its use, because the end product is just another pure water source. Instead, the problems are associated with its production. The membranes of an RO unit are very delicate and can easily be damaged by chlorine or fluoride (removed with an activated carbon filter), clogged by particulate matter (removed with a particulate filter), or by calcium and magnesium (removed with a water softener). Another problem is what to do with the brine.

Finally, sizing the unit for your water requirements is also important. Using the greenhouse from Table 2 (Page 9) as an example, the grower could purchase a unit that produces 300 gallons per minute or one that produces 100,000 gallons per day (about 70 gallons per minute over 24 hours). The high-flow unit will be much more expensive, but will not require much storage capacity. The low-flow unit will be less expensive, but will require at least 65,000 gallons of storage capacity.

A third option would be to blend some of the untreated water with the

Table 3. Guidelines for greenhouse irrigation water and how it compares with primary and secondary drinking water standards produced by the Environmental Protection Agency (EPA). For more information see: www.epa.gov/safewater/mcl.html.

	Symbol	Manageable Range ¹	Primary Drinking Water Standards ²	Secondary Drinking Water Standards ³
pH		4.5 to 9.0	NA	6.5 to 8.5
Alkalinity	CCE	< 300 ppm CaCO ₃	NA	NA
EC		< 1.5 mS/cm	NA	0.7 mS/cm
Calcium	Ca	< 150 ppm	NA	NA
Magnesium	Mg	< 75 ppm	NA	NA
Sulfur	S	< 120 ppm	NA	85 ppm
Iron	Fe	< 2.0 ppm	NA	0.3 ppm
Manganese	Mn	< 0.5 ppm	NA	0.05 ppm
Zinc	Zn	< 0.5 ppm	NA	5.0 ppm
Copper	Cu	< 1.0 ppm	1.3 ppm	1.0 ppm
Boron	B	< 0.5 ppm	NA	NA
Sodium	Na	< 50 ppm	NA	NA
Chloride	Cl	< 70 ppm	NA	250 ppm
Total chlorine	Cl ₂	< 2.0 ppm	4.0 ppm	2.0 ppm
Fluoride	F	< 1.0 ppm	4.0 ppm	4.0 ppm

¹Manageable range given by Argo and Fisher, *Understanding water quality, part 2, September 2003 OFA Bulletin*.

²Regulated and enforced by the Environmental Protection Agency (EPA).

³Tested and regulated by each public water system on a voluntary basis.

RO purified water. For example, if the grower above blended one part untreated water with three parts RO purified water, then the RO unit would only be required to produce 75,000 gallons per day (52 gallons per minute over 24 hours) and the storage capacity would need to be about 50,000 gallons. An added advantage of blending waters is that the new water source would contain some alkalinity, which makes media pH management somewhat easier.

For growers that have high levels of boron in their current water source, RO purification is not particularly effective at removing it from the water. In general, RO purification will remove only about half of the boron from the water. If the boron concentrations are very high (more than 2 ppm B), then reverse osmosis purification may not be a good option.

Conclusion

Once a new water source is in place, it should be tested frequently

until you are confident that it is consistent. If the new source is very pure, then simply testing the EC and the alkalinity may be sufficient. However, if it has an EC greater than 0.2 mS/cm, additional laboratory testing may be required. If the new source is significantly different from the old source, then you should reevaluate your entire nutrition program (acidification, fertilizer, lime rate, media, etc) to see if it also needs to be changed.

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Fund-Raisers Build Community and Profits

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everyone, we have not attributed the following ideas to any specific attendee, but we thank each of them for their input.

Set Up a Coupon Book Program

One very effective way to participate in fund-raising projects that will promote your company in the community is to work out a coupon program.

One garden center reported they sold \$5 coupon books. The books were sold in the store, by local hospital volunteers, and by mail to the hospital's mailing list. Each book had 12 coupons designed to be redeemed one per month for discounts on selected hot products. The garden center donated the \$5 proceeds from the coupon book sales to a local hospital, with the understanding the money would be used to replant and care for the garden areas around the hospital grounds. Attractive garden signs were provided so admirers would know the source of the plant material. In this way, the garden center got the cash back in the form of purchases and advertising signage. This was in addition to the increased sales generated by customers redeeming the coupons.

This story prompted another garden center to explain how they gave discount coupons to a local hospital for distribution to patients, volunteers, and staff just before Mother's Day. The coupon holder received a discount, plus the garden center gave the hospital a rebate on every coupon redeemed. Some participants in the discussion questioned why it made sense to give a discount during a season as hectic as Mother's Day. The garden center's response was that it's the best time of year to attract new customers. "Mother's Day is when people are buying, and if we can get that new customer attracted to us because of both the discount and the

donation to the hospital, then we stand a better chance of those customers returning to buy from us again."

The minimal cost of creating the coupon books seems to provide a big pay-off in new and repeat business.

The Positive Power of Colors

One grower shared how they help local schools raise funds by offering plants in the school's colors. The plants are pre-sold by parents and students and then delivered in one shipment to the school where the purchasers pick them up. When you sell the plants in school colors, it makes a unique and fun sales project for both the students and their customers. It raised school spirit and generated interest in other plants provided by the grower.

The obvious spin-offs of the K-12 school color fundraiser could be a tie-in with breast cancer awareness groups by offering pink flowers to match their pink ribbons or talking to local universities where campus groups are looking for ways to raise funds for charity. Any organization that is associated with a distinctive color is a natural source for fund-raising opportunities.

Planning Fund-Raising Events

Several attendees told us that garden centers or growers who organize events can increase their customer base and help non-profits at the same time. Corn mazes, haunted greenhouses, hay rides . . . all these events are ideal for children.

Approach schools and youth groups with various options for fundraising or group events. One grower with a corn maze offered discount coupons, with a non-profit organization receiving a commission

for each one redeemed. During the Halloween season, a "haunted" garden center sold advance tickets at a discount to local youth groups who were able to resell the tickets as their fundraiser.

Another garden center had group nights where the fund-raising group got 10 percent of all sales that night. This latter idea works especially well if your event is a well-established annual happening. Let the groups know that whichever organization has the highest attendance this year will get first pick of what date they want next year. Thus, sales of the garden center tickets became a fun contest between various organizations around town. It's very common to see the same families back twice in the same week, once to support a daughter's soccer team and again to support a son's Boy Scout troop.

Refreshments can be a profit center at these events. Some garden centers prefer to not have the hassle of providing refreshments and allow non-profits to bring in and sell food and drinks. That way, the non-profits take care of all the details. "If you do this," cautioned one experienced garden center owner, "be sure you put up a sign clearly showing who is getting the money." Customers will be more understanding of delays and higher prices for snacks and drinks if they know volunteers are serving them and it's all for a good cause.

Make It Easy for the Fund-Raisers

Another grower/garden center operator told how you have to make it easy for volunteers to fund raise. He helps schools and churches raise money by selling poinsettias each December. He finds the higher margin and larger average delivery from group

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Fund-Raisers Build Community and Profits

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sales makes it worth the extra effort when compared to his normal customer base of florists, grocers, and drug chains.

Many fund-raiser “captains” have no experience selling or delivering products. You have to teach them and let them know you support them. This grower has preprinted order forms for the volunteers to use, and he includes his cell phone number on all the forms. He doesn’t get as many calls as you would think, but it demonstrates his availability and his support for the project. When the volunteers understand the grower is committed to making it easy for them, they don’t care about the price. It clearly sets him apart from other growers in the area.

Handling the Request for a Cash Donation

Any retail business owner is accustomed to being asked for a cash donation for one good cause or another. Here are a couple of ideas for maintaining good community relations while making the fund-raising request a win-win for both of you.

When approached for a donation, one grower says “yes” every time. Never turning down any worthwhile cause, he always says “We’d be happy to give you a gift certificate for ____.” Usually he gives certificates for geraniums, poinsettias or chrysanthemums, depending on the season. He does this because he wants to be known as a superior source for these plants in his community. He believes he creates goodwill by giving the fund-raiser something, and at the same time, he will get publicity from his donation while attracting new customers.

If the fund-raiser insists on cash, he tells them to write a detailed letter outlining what they want the money for and include proof of their tax-exempt status. He will forward the letter to the employee committee that evaluates

cash requests. That committee meets twice a year. Obviously, it’s very rare that anyone sends in a written request, but he has maintained their goodwill by not saying “no.”

Another garden center operator said the company only accepts donation solicitations from customers, so they ask fund-raisers to have a customer make the request. This slows down the requests from people outside their trading area, and it builds an even better relationship with customers who have favorite charities.

Learn from the Experiences of Others

The Idea Exchanges allow Short Course attendees to ask what went wrong as well as what went right. Many told of “learning pains” when dealing with non-profit organizations. You can benefit from the growth pains of others.

A very experienced community-oriented greenhouse operator cautioned that non-profits are not always well managed or organized. “Their leadership usually turns over every year. One year they are well managed, and the following year they don’t do anything right. We ask that the incoming president always be our contact, so we have knowledge carryover year-to-year. The volunteers are well-meaning, but they don’t understand what it takes to make a fund-raiser work. You have to be thinking ahead for them. Having experienced volunteers makes a huge difference.”

Plant sales can be good fund-raisers and provide additional sales volume for growers. One grower was about to abandon the annual library plant sale because the work and effort were too much. Also, he was burned out because the volunteers didn’t respect his crew’s time to deliver and pick up, plus many plants were returned broken or abused after the sale.

Rather than abandon the plant sale altogether, he met with the outgoing president and explained his frustrations. The grower had a small retail pick-up area and suggested that the library sell discount coupons. This

evolved into a program where two days each spring were designated as Library Days. A separate cash register was set up away from the normal checkout area. All sales through the special register generated a 20 percent commission for the library. In this way, the grower didn’t pay commission to the library off the retail shoppers who weren’t there to support the library. The grower found this method not only reduced his costs, but customers bought more. As an added benefit, the library promoted the event heavily in the community, which drove first-time customers to the grower’s retail location. Many of those customers have returned to make regular purchases.

The second year of the plant sale had a crew of almost all new volunteers. The grower “assumed” they would know the sales tax rules, how to make change, etc. They didn’t, and it wasn’t a pleasant experience. He’ll repeat the on-site library plant sale for the third year, but will use his own cashiers. Volunteers will only be used to direct traffic and carry products to customers’ cars.

One garden center operator cautioned the group that volunteers probably don’t understand the cost of doing business or the needs of the garden center. “They may be well-meaning people, but they’re more naïve and ignorant than your newest employee. You have to manage them, educate them, and supervise them.”

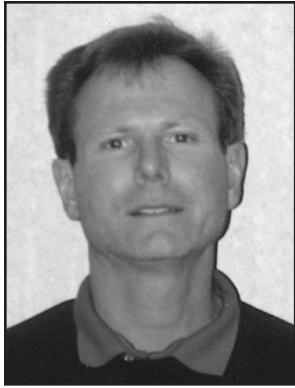
It’s Not too Early to Plan

Make your plans now to attend the OFA Short Course in Columbus, Ohio July 10-14, 2004. Don’t forget to participate in the Marketing Idea Exchange, the Management Idea Exchange, and the Garden Center Idea Exchange. You’ll hear dozens more of these intriguing ideas and be able to ask questions of the people who made them work. And remember to bring your stories of success and challenges to share with the group.

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What's New in the Tropical Foliage Industry?



by Dan Johnston

We are seeing a continuous slow down in “new installations” in the commercial interiorscape industry. We had hoped that the worst was over at the end of 2002 after the September 11, 2001 shock, but we are still seeing new installation budgets being reduced or being put on hold. Blooming rotation on commercial property seems to be taking the hardest cutbacks. With the end of the year coming shortly, most interiorscape companies are hoping for a more profitable new year.

On a brighter note, there seems to still be many new varieties or new improved varieties coming into the market every month. I'm going to list some new products that have been in production and installed on interiorscape jobs over the last several years that are “proven” winners. This is feedback from the nursery growers and our customers here in the Midwest.

Aglaonemas

In the aglaonema family, we have seen many new introductions. More aglaonemas are being used today because of the successful introduction of the Elite series back in the early '90s. The Elite aglaonema program is still being produced in large numbers

by many growers. Over the last year or two, several varieties have been discontinued, but there is still approximately 12 Elite varieties being grown.

‘Silver Bay’ aglaonema is probably the number one variety being grown today. It was introduced approximately 10 years ago. It has a wide, dark green leaf with heavy silver streaking through the center. It does not stretch in low-light situations.

The next level in aglaonema evolution has been created at the UP Mid-Atlantic Research Center in the heart of Florida. Aglaonema breeder, Dr. Jake Henny, has developed a new line of aglaonemas that outperforms his original creation, ‘Silver Bay.’ This new line in the Bay collection has such superior varieties that the University of Florida has patented them! You now have ‘Emerald,’ ‘Diamond,’ ‘Golden,’ and ‘Moonlight Bay’ currently available. Other Bay varieties will surely be introduced shortly.

In the last five years, the Stars of India collection by Kayesgees has been introduced. This new and unique selected group of aglaonemas has come to the United States from southern India. The Star of India collection differs from most hybrids on the market today which originated in Thailand. Star of India plants have the following characteristics:

- **Exceptional Suckering Habit** – This helps the grower and plantscaper with plants that remain and look full.
- **Minimal Flowering** – Flowering on aglaonemas just takes away energy which the plant can use other places.
- **Superior Cold Tolerance** – Less possibility of damage from cold during transport to jobs, installation, and in a wide range of places they can be used.

- **Disease Resistance** – Stronger plants with fewer problems on the growing side.

- **Compact Form** – Plants maintain their size and shape; they don't outgrow the space.

- **Low-Light Performance** – Light is always an issue especially indoors. Plants must hold up and maintain their qualities even in lower light levels.

- **Strong Root Characteristic** – Translates into a vigorous plant, the key to long-term success with plants.

- **Unique Look and Color Characteristic** – Plants must be distinctive, which gives you a “something different” look.

The Stars of India Series are as follows: ‘Emerald Star,’ ‘Jewel of India,’ ‘Silver Ribbons,’ ‘Silverado,’ and the newest, ‘Sterling.’ One characteristic we have seen is that ‘Emerald Star’ and ‘Jewel of India’ seem to have an extremely large root system, which causes the plant to dry out quicker than most aglaonemas. These two varieties also have extremely “full” foliage. Some customers have commented that the fullness makes spraying for insect/disease control difficult.

Anthuriums

Anthuriums are one of the crops in which a lot of changes have taken place in the last 10 years. Breeding has really changed the face of this crop. The sparsely flowered forms of years ago are long since replaced by earlier and heavier-flowering varieties. There have also been massive changes in the number of colors available, as well as the growth habits and sizes available. A lot of the breeding advances have

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been made by one of the University of Florida's own breeders, Dr. Jake Henny, at the Mid-Florida Research Center.

There are a number of misconceptions in the industry about what anthuriums need to perform at their best. They need bright, indirect light for continuous flowering. These plants should be kept on the dry side; they like to dry out between watering. They do not require a lot of fertilizer.

Some new improved varieties are 'Sarah,' 'Picante,' 'Orange Hot,' 'Red Hot,' 'Anouke,' 'Mrs. June,' 'Tropic Fire,' 'Miami Beauty,' 'Misty Rose,' 'Peppermint,' and 'Ruby Gem.'

Schefflera arboricola 'Dazzle' is a sport mutation developed by Miami Agra Starts, Inc. It is variegated with white and yellow leaves. This variety has multiple market potential. 'Dazzle' has a great landscape application because of its high color and rapid growth. It also has excellent potential in the interior market as a standard and pyramid. It requires moderate to high light to maintain its bright color contrast.

Bromeliads

Bromeliad growers continue to introduce new varieties into the market everyday, but unfortunately they discontinue varieties as well! It is very difficult to say what's "new" and what will be available two years from now. A few that need to be mentioned are *guzmania* 'Ostara' (bright intense orange) and *guzmania* 'Tutti Frutti' (pumpkin orange), and available in 2004 *guzmania* 'Voila' (vibrant dark lavender).

Cinnamomum kotoense (Canela) is believed to be native to China. It is a very durable indoor plant which can

take low to high light. It is also highly resistant to pests and requires little maintenance. It has sturdy, glossy, dark green leaves and comes in bush or standard form. In my opinion, it resembles a magnolia leaf. It is in limited availability now but that will change shortly.

Dracaenas

The availability of Hawaiian-grown dracaenas has changed dramatically in the last five years. Even though the cost of Hawaiian-grown dracaenas is still considerably higher than Florida-grown dracaenas, the availability and demand has increased. At first, the interiorscape market was not willing to pay more for these dracaenas even though they loved the look – tall, narrow, healthy, clean-looking foliage plants. But as interior-scapers tried them in their accounts and found out that they really do perform longer than South American- or Florida-grown dracaenas, they realized their extra value. Dracaena 'Lisa Cane' is by far the most popular. It does very well in low-light areas. Its long, dark green, natural glossy leaves make it very appealing.

In the late '90s, dracaena 'Costaricana Cane' was introduced to a select group of Florida growers. It was introduced into Costa Rica from Central America in the early '90s. It has the same characteristics of the Hawaiian dracaena 'Lisa Cane,' in that it has a very healthy root system, and long, narrow green foliage, and performs very well in low-light areas. It is considerably less expensive than Hawaiian dracaena 'Lisa Cane,' but more expensive than dracaena 'Massangeana/Fragrens Cane.' At certain times of the year, the color is not as dark green as Florida growers might like, but it greens up very quickly in darker conditions.

Ficus

Ficus of the future ('Amstel King,' 'Mini Amstel – New,' 'Indigo,' 'Midnight,' and 'Monique') demand

continues to replace other varieties of ficus available for interiorscape applications.

A new breeder introduced a ficus in 2003 called ficus 'Unique.' Its leaves are smaller than a *Ficus benjamina*. They are silvery blue-green with a rippled edge, giving the plant a lacey look. This plant does well in medium to low light.

Other Choices

Natal mahogany has been grown for more than five years now. It has a look similar to a tree-like form of *schefflera* 'Amate'™, except it has dark green, shiny foliage. On top of that, it is very versatile and performs fantastic in high- or low-light interior installations.

Areca catechu Betel nut palm is a dark green beautiful palm that is especially attractive because of its glossy leaves. Its care is similar to kentia palms.

Hawaiian-grown kentia palms have gained popularity in recent years. They have darker green foliage, larger caliper trunks, and less tipping on foliage than most California-grown kentias. They are priced very competitively with California-grown kentias. The biggest complaint from a lot of interior-scapers is the lava rock that they are grown in. Interior-scapers seem to have a hard time adjusting to its water needs.

South Seas Palm Company located in Hartford, Michigan is now supplying kentia palms. They grow kentias in a variety of sizes for interior landscapers. Their kentias are grown in an enclosed greenhouse environment. This way, they are able to frequently check the pH and EC of the plants to ensure that they have the proper growth development, and therefore South Seas can provide an excellent quality palm. The feedback from our customers is that they really like this kentia's performance better than those from other growers, even though the

size of the plant per container tends to be smaller. However, the 'Keeline Wilcox' kentia from California is still the number one volume sold kentia in the United States.

'King Maya' is a new indoor plant that provides an elegant look to any interior setting. It is a selected variety of *Chamadorea hooperiana*. 'King Maya' has been known to outlast kentia in side-by-side comparisons on interior jobs. It grows faster than kentia palms. This palm can be a problem on jobs where height or width restrictions are a concern. Maya is a tightly suckering palm with slender, ringed, ivory-green stems bearing five to six leathery dark-green frawns per cane. Each frawn is adorned with about 40 narrow, evenly-spaced pinnae, reaching an overall height up to 14 feet at maturity.

It is also noteworthy that Bernecker's Nursery (largest grower of seifrizii palms) has made significant improvements in the past few years in the quality and durability of their seifrizii bamboo palms.

Philodendron

The 'Autumn' (orange color) and 'Moonlight' (bright yellow) philodendron are becoming quite popular. They stay very short and bushy with high color impact. Do not overwater in low-light areas.



Philodendron 'Congo' and 'Congo Rojo' are two new varieties for low light. They are tolerant to drought and are not affected by bacteria. 'Congo Green' is a newer, darker version of the original 'Congo.' 'Congo Rojo' is really dark green with maroon-colored stems that make for a gorgeous plant.

Pothos that are pyramid-shaped perform better than a traditional pole shape. This allows air and light to pass through vines producing healthier, fuller plants. Other types of foliage (algerian ivy, philodendron 'Silver Streak,' and 'Swiss Cheese,' ficus 'Amstel King,' podocarpus, *Schefflera arboricola* 'Dazzle' and other varieties) are being grown as pyramids as well.

Pothos 'Neon' has very bright fluorescent yellow foliage. It grows very slow compared to golden pothos. For this reason, the plant is more expensive than other varieties. It holds up very well in low-light areas. It is strongly rooted and uses minimal fertilizer.

The schefflera 'Renegade' is tall and columnar with compact growth

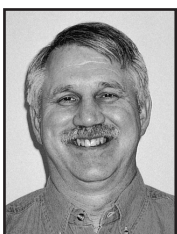
habits. It is full top to bottom with glossy leaves, and it is mite resistant. Now you can have the durability of a achefflera 'Amate' in a taller, more upright, and columnar shape.

Saved the best for last! *Zamioculcas zamiifolia* is an east African aroid that has large potato-like tubers in the soil for water storage, as well as thick stems and waxy thick leaves. It is as drought-tolerant as a plant can get and the Zz plant is here to stay. Zz can literally go four months without any water and not show any signs of stress. This plant will hold up in any light condition from full sun to 25 footcandles. In low-light conditions, under 100 footcandles, new growth will be stretched but can be cut out without hurting the look of the plant. The more water you give this plant, the more it will grow.

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A High-Tech Florist Business



by John Herb

When you think of a "call center," you might envision a telemarketing firm, a clothing supplier, or even an insurance company. But, one Cincinnati florist has developed a state-of-the art call center that is enabling his family-owned business to hold its own during a tough economy.

Jack Herb Florist is a fourth-generation business in Cincinnati, which started by serving walk-in customers at the company's greenhouses. The company, now owned and operated by John Herb, was founded in 1878 as Peter Herb and Sons by John's great-grandfather. John joined the business full-time in 1977, after graduating from Xavier University in marketing, auditing floriculture classes at The

Background

Ohio State University, and studying design at the Hixson School of Floral Design in Cleveland. John's father sold him the business 10 years ago, and he's been investing in upgrades ever since. "My dad was progressive in his day; I've taken it another notch," says Herb.

Change is Progress

It takes someone who is open to change to make the Jack Herb Florist

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A High-Tech Florist Business

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operation work. After 37 years in one spot, the main office of the company moved to its current location about three years ago – and all three of the company's locations moved in a three-year period. The main location has 7,500 square feet housing the main office, a silk flower area, flower processing area, large cooler, design tables for about six designers, garden planter area, control room (for handling orders), and inventory. Two other locations are for retail sales only.

Looking for new technology to streamline efforts and increase productivity and profits is a constant task for Herb – which is where the call center enters the picture. Several years ago, Herb needed to make the company's phone system Y2K compliant. The expense for a basic upgrade of the old system was staggering, so Herb opted for a brand-new type of computer-based phone system utilizing voice-over IP technology from 3COM. Now, all of his order takers are connected by computer and phone to the main location and to each other via cable. The cable connection is provided by Roadrunner through Time Warner Cable. Jack Herb Florist was the first business class customer to use the system in the Cincinnati area.

Employees log on and off via their own computer, whether it sits on their desk at the office or at home. Herb can also sign on and see who is on the system and when. On any given day, two to three people in the main office take calls, two other employees answer from their homes, and the retail store employees take calls. They answer in call groups – the first person to answer the phone takes the order. Orders are entered into one main database, tracked through the design process, and then scheduled for delivery.

The call center covers most orders that Jack Herb Florist receives; 20 percent of sales are to walk-in customers at the retail locations.



After hours, calls are forwarded to an FTD call center.

Benefits to the Business and Employees

Internally, the new computer system works well for Herb. He can track individual productivity, analyze all calls for a variety of factors, and offer some employees the opportunity to work from home. Rather than intimidating employees, Herb says the improved accountability and order processing has been a good change. His employee turnover has reduced in the last three years.

Benefit to the Business Community

Herb also believes in sharing what he's learned. He has recorded a local television spot as a testimonial for Time-Warner (his high-speed Internet provider) highlighting his success with this centralized order system supported by the new computer and cable technology. The spot runs several times a day in the Cincinnati area – reaching other businesses that could use the technology and Herb's potential customers.

Business is Booming

Herb has three to five of his own delivery drivers and uses a local delivery pool when necessary to fill 75 to 120 orders per day and 700 to 900 per day around the holidays. Herb says about 30 percent of his orders are sympathy arrangements, 30 percent are holiday, and a small number are weddings. "We don't go after that market," says Herb. "We do more corporate work, and we have a lot of individual customers." Jack Herb Florist also specializes in gift baskets, which are marketed through a number of the company's web sites.

Business Philosophy

Herb's customer service principle is simple – regardless of what's wrong with an order, make it right. Herb believes that service and quality are of utmost importance, but "it's no longer just about service and quality; price is a huge factor in people's decisions," says Herb. "Many of us can get the same products from the same suppliers, and we all can guarantee delivery throughout the day. Florists are the masters of same-day service. We have a great network to get something delivered anywhere in the country."

In his continual search for innovative ways to control costs, and therefore his prices for customers, Herb has successfully implemented the call center and once again, changed his business to fit the times.

Editor's note: *John Herb is a board and committee member of OFA, which supports and promotes lifelong learning, career enhancement, and public awareness for floriculture professionals. A similar article has been published on the Ohio Department of Agriculture site: www.OhioAgInfo.com in the Ag Advancements Profiles–Archives section.*

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Developing and Implementing a Greenhouse IPM Plan

by Scott Ludwig

Greenhouse crop producers have been under increasing pressure to reduce their use of pesticides. The easiest way to reduce pesticide use and improve crop quality is to develop and implement an integrated pest management (IPM) plan. This article will describe how you can develop and implement an IPM plan for your specific crops. I will include an example from an ongoing project with a tropical hibiscus grower who is developing and implementing an IPM program.

Before developing an IPM plan, it is important to understand the basics of an integrated pest management program. IPM is a strategy to avoid or prevent damage caused by insects, mites, diseases, weeds, etc. It strives to use a combination of pest control tactics to minimize risks to human health, environment, and non-target organisms. IPM focuses on tactics that will prevent or avoid anticipated pest problems rather than trying to remediate problems only after they occur. IPM is a systematic, information-intensive approach which relies upon a basic understanding of the plant's requirements for normal growth, the pest's biology and status, and how these are influenced by the production system. An IPM strategy is designed to meet an individual's production goal in the most economically and environmentally sound manner possible.

Integrated pest management is the combined use of mechanical, physical, cultural, biological, and chemical control methods. To properly implement an IPM program, you need to evaluate all control methods available. Mechanical control employs labor and machinery to directly reduce pest

abundance. Mechanical control practices include hand-pulling weeds that serve as pest reservoirs, insect screening on vents to exclude flying insects, soil cultivation, and trapping.

Physical control (also known as environmental control) is the manipulation of a crop's environment to reduce the risk of damage due to pests. Practices include manipulation of temperature, light, and humidity regimes through ventilation, irrigation timing, and method (sprinklers vs. drip irrigation) and soil treatment through solarization or steam pasteurization.

Cultural controls are modifications of normal plant care practices to limit pest problems. These include selection and use of locally adapted or pest-tolerant plant species or cultivars, crop rotation, changing planting times, adjusting the frequency and amount of irrigation and fertilization, and the use of adequate sanitation practices.

Biological control is the use of beneficial organisms to control pests. Natural enemies of pests include pathogens, predators, and parasites. Biological control practices include the conservation of naturally occurring beneficial organisms through adequate selection and timing of least disruptive pest control alternatives, the mass release of commercially available natural enemies into crops, and the importation of exotic natural enemies through federal and state government officials.

Finally, chemical control is the use of pesticides to control or repel pests. Chemical control options include the use of insect growth regulators, insect pheromones, biological pesticides, and conventional chemical pesticides.

When developing an IPM plan it is important to familiarize yourself with the growing conditions favorable to your crops and the pests to which they are susceptible. It is important to determine the objective of your IPM program. Your objective may be to save money, reduce pesticide applications, improve plant quality, or use environmentally friendly pesticides. While you may want to achieve all these objectives, they may not be compatible. The IPM plan should be developed by a team of individuals. Having key growers, pest managers, and spray personnel involved in the process will help to ensure that all areas of production are addressed. By developing your management plan before you start your crop, it will be possible to discuss the plan with your employees and ensure you have the supplies you will need.

You can divide your IPM plan into three key parts. The first part of your IPM plan should address sanitary measures before and during production. A lot of time and effort can be saved by ensuring no pests are present when you start your crop. The second part of your plan should cover your pest monitoring program. A proper monitoring program is invaluable in any IPM program. Finally, determine how you will manage pests when they appear.

Sanitation

Sanitation is one of the keys to an IPM program. It is critical to start with a weed-, pathogen-, and arthropod-free greenhouse in proper working condition. In the development of your IPM plan, designate an individual who is responsible for ensuring that all the weeds have been pulled from under the benches,

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Developing and Implementing a Greenhouse IPM Plan

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benches are disinfested, and any old media or plants are removed from the greenhouse before a new crop is started. You will need to develop a policy that states what sanitary practices need to be followed during production. Foot baths and hand sanitizer can be used to reduce the likelihood of bringing pathogens into the greenhouse. Employees should understand that if they have been handling plants with an insect or disease problem, they are not to enter another greenhouse until they have changed clothes. Plastic bags should be available for the disposal of plants or plant debris infested with insects or plant pathogens. A compost or burn pile should be placed far away from the greenhouse air intakes to avoid reinfesting your greenhouse.

Monitoring

The second component of your IPM plan will be the monitoring program. Monitoring, also known as scouting, is the regular, systematic inspection of crops and growing areas. Pest monitoring is the foundation of effective IPM programs. Monitoring involves quantitative sampling on a limited number of plants to estimate pest population size in the whole crop. Regular scouting helps eliminate potential problems before they happen, determine the specific cause and severity of pest problems, identify locations requiring immediate treatment, and evaluate efficacy of pest control tactics.

To build an effective monitoring program, start simple and small. Develop clear and specific plans of how sampling will be done and who will do it. Scouting should be done at least weekly on a regular schedule and by a trained employee or professional. Designate and map contiguous areas of a similar crop for which pest man-



agement needs are similar, and for which monitoring results are summarized individually (typically 2,000 to 10,000 ft²). Plants and growing areas need to be inspected carefully, taking into account where on the plants pests are likely to be found and under which environmental conditions. Scouts need to be provided with sampling tools including a hand lens or magnifying glass (10-15 \times) and a clipboard or notebook to record observations and management actions. Learn what works best for your situation and modify the monitoring plan accordingly.

The most common monitoring technique is visual inspection of plants, checking all plant parts and the upper and lower leaf surfaces, especially on new growth. There are no set guidelines on how many plants to sample, but the more plants you check, the less likely it is that you will miss a potential problem. Sampling may be done on a predetermined number of plants or by spending a predetermined amount of time per unit area. Plants selected for sampling may be chosen at random and from those expected to have problems, such as plants surrounding hot spots, plants from pest-prone cultivars or pest-prone areas. Quantification can be done by counting the number of pests per plant or plant part (such as number per leaf), by measuring the percentage of infested plants, or by recording the number of pests on sticky traps. Whatever the method chosen, it is critical to conduct sampling using the same methods each time so results can be compared between sampling dates. This will also enable you to plot and visualize population trends in time and space to make the best pest management decisions. It is critical the greenhouse

scout have a designated person to whom they report the findings. This will ensure that if a control is needed it will be implemented as soon as possible.

Management

The final component of your IPM plan should address how to manage arthropod pests and plant pathogens. By determining in advance how you plan to manage common pest problems, you can be assured you have chemicals or biological control agents available when needed. It is important to update your chemical management program every year because new products enter the market all the time. Many of the new pesticides available are compatible with IPM programs in that they have a very narrow spectrum of pest susceptibility and are compatible with biological control agents. When deciding on control options, it is important to consider the plant's stage of production. For example, you would not want to apply a pesticide to control a pest occurring on new foliage in a crop that is about to be pinched or pruned. The pinching will most likely remove part of the insect population. It will also be easier to reach the insects after the plant canopy has been thinned out.

As you implement your IPM program, it will be important to keep constant communication with your employees. At the end of the season, a meeting should be held to discuss the effectiveness of the IPM plan and make any changes for next year's crops.

A recent IPM demonstration trial conducted with cooperation from a Cherokee County, Texas plant farm demonstrated that IPM cannot only reduce pesticide usage and still control

insect pests, it can save greenhouse managers money. Bobby Murray, owner/operator of Murray Plant Farms near Jacksonville, Texas operates 17 greenhouses, with 60 percent of his sales consisting of tropical hibiscus and the remainder in bougainvilleas. The 60 percent hibiscus represents 5,000 12-inch pots of hibiscus, and 11,000 one-gallon containers of both hibiscus plants and hibiscus trees. Specialization means Murray can concentrate on doing what he does very well. But specialization also means the outbreak of one plant disease or pest can be devastating. Consequently, when Murray began his business, he was spraying every two weeks. Later, his practice evolved to spray as needed, although “as needed” was based on observation. If a few insects were found in one greenhouse, it was procedure to spray all the greenhouses, just to be on the safe side. The “as needed” program worked. No crops

were lost to insect infestation, but when the Texas IPM Program advanced the idea that there was a way to use less chemicals but still achieve good control, Murray was interested.

“Using chemicals is not one of my favorite things, so I was ready to try it,” Murray said.

Murray was cautious, as are many plant farm operators. We began an IPM program in two of the plant farm’s greenhouses. An IPM plan was developed which relied on regular scouting to determine if pesticide applications were needed. The number of insects on sticky cards and the plant foliage was monitored once a week. Murray found the insect control in the two IPM greenhouses to be better than those in his other greenhouses. In one IPM greenhouse, Murray sprayed once in a three-month period, while in the other house he sprayed twice.

In comparison, Murray sprayed his conventionally managed greenhouses six times over the same period. This resulted in the IPM houses having a 24 percent savings over the conventionally managed houses. But there were other savings to which it’s hard to attach a dollar figure. There are the labor and human health issues involved in the additional pesticide applications. There’s also a lessened impact on the environment using IPM. But that’s for another article . . .

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Gearing Up for Spring



by **Holly L. Scoggins**

It may still be college football season (Go Hokies!), but the spring growing craziness will be here before you know it. In preparation, I humbly offer up some points to consider focusing on the lower half of the plant (my specialty). These tips have been collected from various growers and even a few academic-types over the years, including myself. Since the name of the game is to turn a bedding

crop as fast as possible, doesn’t it make sense to give them optimal growing conditions? Think of the root zone as the engine that powers growth.

What’s the substrate situation?

Every year, it seems the choices for growing media or substrate expand. Several are now available with a higher percentage of bark, which increases the drainage capability. These are great for growing species that really resent wet feet – including lots of perennials and Mediterranean-type herbs such as lavender and tarragon. Coir (coconut husk fiber) as a substrate component seems to be gaining popularity; one of the advantages is its ease of rewetting. Speaking of rewetting, can root substrate actually go bad? How long does it keep? That musty old mix from last spring is still useable, though be aware that it may be harder to rewet. The addition of a wetting agent will ensure a uniform watering-in.

Once the flat-filling starts, be careful when stacking the filled trays as they await the transplanting line. Research has shown that improperly stacked pots and flats cause nesting of the substrate particles. Compacted rooting substrate leads to all sorts of problems – reduced air space, lack of oxygen, stunted root growth. Remember: compacted is bad – fluffy is good.

Testing, testing, testing . . .

I’m always startled at the number of growers who will actually admit to never, ever checking in on the root zone of their crops. They’ll pay a premium for the hottest patented, indexed varieties and then ignore the bottom half. First, get a good meter, or even better, several. I’m particularly enamored with the Hanna Instruments HI 9811 dual pH/EC meter. The same probe measures both pH and EC, with a large digital LCD

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Gearing Up for Spring

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screen. And the protective rubber bumper-case helps protect it against the most fumble-fingered user (*moi*). Regular calibration of any meter is essential. Do it before each testing session. And keep lots of the pH and conductivity calibration solutions on hand so there's less temptation to skip this step. Your results are only as accurate as your last calibration. How to calibrate? I'll pass on the advice given to me by my dear graduate advisor, Dr. Doug Bailey: "R.T.M." – a handy acronym for Read The Manual! But don't be intimidated. The average coffee maker is more complex than a substrate testing meter.

If you're not already using the pour-through method of media testing, this would be a good time to familiarize yourself with it. This root zone solution extraction method – formerly known as the VTEM (Virginia Tech Extraction Method) which was used mainly on nursery crops – has been fine-tuned by the floriculture folks at North Carolina State University. It now has a snappier name and its own web site (www.pourthruinfo.com).

Easy and efficient, the pour-through method works on the concept of displacement of the water/nutrient solution in the root zone with the distilled water poured on the top. For most meters, approximately 50 ml (close to 2 ounces) of leachate will suffice. If you've been using another testing method such as the 1:2 (media:water) extraction or the SME (saturated media extraction) – expect slightly higher soluble salts measurements with the pour-through method since there is less dilution. The pH measurements should be approximately in the same ballpark.

Two important tips: First, wait for about an hour after fertigating before measuring. You want the media to be at "container capacity;" saturated, but finished dripping. This also gives the



salts already present in the pot time to mix 'n mingle with the new fertilizer just applied. If using a slow-release fertilizer, the same concept applies – wait about one hour after irrigation.

Second, test several pots/packs from the same crop – same species, cultivar, irrigation, and fertilizer regimen. Expect a bit of variation among those measurements, but average the data to get an overall account of the soluble salts and pH status of the root zone. The pH should fall between 5.4 to 6.5, with an EC of anywhere from 1.0 to 4.5 mS/cm (same as mmho/cm). The desirable substrate EC is very much crop-dependent, and also stage-of-growth dependent. For specific recommendations, again, visit the PourThruInfo website listed earlier.

Planning to grow your own plugs? Test them, too. The press extraction method has been developed specifically for seedling and vegetative plugs. The amount of substrate in each cell is so small, there is little buffering capacity. Necessary nutrients can be depleted (or present in excessive amounts) in just a few hours as root zone conditions change. Using the same post-fertigation/irrigation timing as for the pour-through, simply choose a representative tray, hold it over a saucer, and press gently on the top of a few plugs – enough to collect the amount of leachate appropriate for your meter. Sample at least five trays across the crop, and average the results. Again, look for a pH between 5.4 to 6.5, but an EC of no more than 1.75 mS/cm.

How blue is the water in your world?

What's coming out of the end of your hose? It's time for an injector tune-up. If you're using a water-

soluble fertilizer, regular testing of the fertilizer solution can head off major problems. All it takes is one malfunctioning injector to starve (or nuke) an entire range. Most companies print the appropriate EC for the corresponding ppm of N right there on the bag, for example, 200 ppm N from 20-10-20 should be right around 1.30 mS/cm.

Periodic testing of irrigation water, regardless of the source, is also important. Carbonates and bicarbonates raise the water pH, but more importantly, contribute to soluble salt content. First, use your EC meter; then if excessive alkalinity is suspected, reasonably priced test kits that can reveal the specific salts present. And if the water does contain soluble salts, be sure to deduct this measurement from the fertigation solution when testing the injector. Then the final number should be within 10 percent of the stated amount (the 1.30 mS/cm). If it's not, the injector needs to be calibrated (gotta find that manual!).

So take a few moments before the madness begins, and assess how you're handling the bottom half of your plants. Hopefully, I've raised one or two points about managing the root zone that you may have overlooked previously or feel you could do a better job with in the future.

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What You Don't Know About Your Utility Expenses May Be Costing You Money

Energy Deregulation Basics

The deregulation of the electricity and natural gas industries creates opportunities for businesses to reduce total expenses by selecting suppliers for the best combination of price and reliability. The primary objective of deregulation is to create a competitive market, resulting in lower energy costs. **This is working: the number of suppliers in the market is increasing, leading to more competition and lower prices. As a result, more businesses than ever now have the opportunity to benefit from deregulation.**

Electricity deregulation allows businesses to shop for the electricity portion of their bill. In a deregulated market, the supply component of electricity is approximately 50 percent of the monthly bill (although it can be as high as 75 percent to 80 percent in some areas). The remaining portion of the bill contains the costs for transmission, distribution, servicing, and administration, which are maintained by the local utility. This means the local utility will continue to service the account and deliver electricity through its wires. It is, however, indifferent to the supplier that actually generates the electricity used by your business.

Opportunities in the energy markets continue to expand. As anticipated, electricity rates have risen due to continued volatility of the natural gas market. Electricity markets remain competitive in Texas, Michigan, Ohio, Pennsylvania, New York, Massachusetts, and California. New opportunities exist for members in New Jersey, Oregon, and Maryland. Savings range from 7 percent to 50 percent depending on where the business is located, what the competitive market is offering, and what terms and conditions the business is willing to accept. Natural gas pricing is expected to reach new highs this winter, which will trigger increases in electricity costs.

Other Utilities

Many businesses incur a significant percentage of their expenses for utilities other than energy, such as telecommunications (voice and data), water/sewer, and waste removal. Ninety percent of telecom bills and 70 percent of other utility bills contain errors. Cellular phone bills lead the list.

Oftentimes, these bills are fraught with miscellaneous charges, incorrect rates, and extraneous fees.

As a business changes, so does its needs. Many utilities are lax in updating their service offerings and removing unnecessary services. Consequently, businesses end up paying for services they no longer need. Only a consistent, thorough overview of all services will result in netting the money left on the table.

The Solution

OFA is pleased to introduce the *APPI Savings Solutions* program. This new member benefit identifies and implements options that reduce the costs of each member's energy (electricity and natural gas), utility, and telecommunications (voice and data) services. OFA members choose which services best suit the needs of their business. There are no up-front, hourly, or retainer fees for this new service. APPI is compensated only when it demonstrates and delivers savings and/or refunds.

Consider the effect *Savings Solutions* can have on your profits. If your company operates with a 10 percent profit margin, it will take \$10 of income to equal the value of cutting \$1 in expenses. APPI Savings Solutions works to reduce every available dollar of operating expense.

The *Savings Solution Program* is managed by APPI, an independent utility consulting firm. APPI is not affiliated with any utility, vendor, or energy supplier. APPI's staff includes engineers, tariff and regulatory specialists, financial and legal professionals, and account management advisors with expertise in utility analysis, tariff auditing, and energy deregulation.

With so much on the line, it pays to have APPI perform a free audit of your company's energy, utility, and telecommunications bills. You will gain an understanding of what your true costs are and be advised of solutions that reduce operating expenses. Getting started is as easy as faxing APPI a copy of your recent bills. **For more information, contact APPI at 800-520-6685 or by e-mail at info@appienergy.com**

You Can Lower Utility Costs through the APPI Savings Solutions Program

OFA – an Association of Floriculture Professionals is now introducing the **APPI Savings Solutions** program. This new member benefit identifies and implements options that reduce the costs of each member's energy, utility, and telecommunications services. Members choose which services best suit the needs of their business. For OFA members who choose to use APPI, there are no up-front, hourly, or retainer fees for this new service. APPI is compensated only when it demonstrates and delivers savings and/or refunds.

The Savings Solutions Program is managed by APPI, an independent utility consulting firm. As the consultant for OFA and its members, APPI analyzes, negotiates, contracts, and manages the critical components of utility services. These services include energy (electricity and natural gas), water, recycling, waste removal, freight, credit card processing, and telecommunications (voice and data).

APPI operates independently. It is not affiliated with any utility, vendor, or energy supplier. Client relationships are based on a performance, value-added model. APPI's staff includes engineers, tariff and regulatory specialists, financial and legal professionals, and account management advisors with expertise in utility analysis, tariff auditing, and energy deregulation.

Jeffery Nickerson from Concrete Block Insulating Systems in Massachusetts, speaks of their experience working with APPI, *"APPI has been managing our electricity accounts for over two years. We have been very happy with its ability to bring us reliable supplier offers that have reduced our costs considerably. Our current electricity contract through APPI's program has even saved us money beyond our projected sav-*

ings through a manage-down discount. APPI's advice has proven to be in the best interest of our business. I would recommend everyone take a look at this program."

In addition to energy management, the Savings Solutions Program includes utility audit services that offer savings options to members in all states. APPI performs an analysis of your business' existing utility services (water, recycling, waste removal, freight, credit card processing, and telecommunications) to detect overcharges and erroneous fees within your current supplier network. The process of making the adjustments and recovery of refunds from your service provider is handled by APPI. In addition to procuring refunds, members are also able to reduce future costs.

Another example of the success this program brings to association members comes from the Health Care Association of New Jersey: *APPI reviewed the utility bills of a healthcare facility with more than 100 telecommunication lines. The account is being streamlined to T-1s. Savings for waste removal combined with the telecom changes will result in savings of almost \$17,000 over two years.*

With so much on the line, it pays to have APPI perform a free audit of your company's energy, utility, and telecommunications bills. You will gain an understanding of what your true costs are and be advised of solutions on how to reduce operating expenses. It's as easy as faxing APPI a set of bills.

For more information on this new OFA member benefit, call 800-520-6685, e-mail info@appi-energy.com, or contact OFA at 614-487-1117 or www.ofa.org.

AMERICA IN BLOOM HONORS COMMUNITIES

Winners in 10 population categories were announced at the second annual America in Bloom (AIB) Symposium and Awards Program on Saturday, September 20, at the Hyatt Regency Chicago on the Riverwalk. The event was hosted by the City of Chicago and the Chicago Park District. Known internationally for its greening and beautification efforts, Chicago was the grand winner of AIB's largest population category last year.

America in Bloom is a national campaign and contest that promotes enhancing communities through beautification. In the friendly competition, communities are matched by population and evaluated on their efforts related to floral displays, urban forestry, landscaped areas, turf and groundcover, tidiness, environmental awareness, heritage conservation and community involvement. Judges visited the communities this summer.

Nearly 40 communities from all regions of the country participated in the second edition of AIB. AIB's 2003 population category winners are:

- **5,000 or less** – Lewes, DE
- **5,001 - 10,000** – Warwick, NY
- **10,001 - 15,000** – Brecksville, OH
- **15,001 - 20,000** – Berea, OH
- **20,001 - 25,000** – Batavia, IL
- **25,001 - 50,000** – Lake Oswego, OR
- **50,001 - 100,000** – Reston, VA
- **100,001 - 300,000** – Akron, OH
- **500,001 - 1,000,000** – Indianapolis, IN
- **1,000,001 or greater** – Columbus, OH

Four special awards were presented to communities which received high marks out of all contestants in all population categories. These include:

- **Ball Horticultural Co. Floral Displays Award** – Lake Oswego, OR
- **Proven Winners Landscaped Areas Award** – Brecksville, OH
- **Communities in Bloom Community Involvement Award** – Indianapolis, IN
- **The Scotts Co. Turf & Groundcover Areas Award** – Glen Ellyn, IL

To get your community involved, here are some things you should do:

1. Get approval of your mayor, city council, or responsible municipal department and complete the registration form.
2. Organize a local AIB contest committee comprised of representatives from businesses, municipality, and private citizens.
3. Review judging criteria and documents received from AIB upon registration. Create notebook of year-round events in the community that relate to the evaluation grid criteria. Develop plans for recording ongoing events. Develop plans for those grid areas the community is not addressing. Borrow ideas for local contests from AIB.
4. Spread the word about the competition. Get the community press involved to raise excitement throughout the process. Use media kits from AIB.
5. Enjoy the time the judges are in your community.
6. Plan to attend the educational symposium and awards ceremony in the fall.
7. Make it fun and enjoy the journey!

For more information on America in Bloom, contact Laura Kunkle at lkunkle@ofa.org or 614-487-1117.

2004 OFA/Texas A&M Grower Seminar

Thursday, January 8, 2004 • 8 a.m. to 5 p.m.

Greenhouse Profitability

Are you making money with your crops? Learn how to calculate costs of production and compare crops for profitability. The equation can be complex: hundreds of crops, different container sizes, various bench spacing strategies, hanging baskets, retail and wholesale prices ... take an in-depth look at how all these variables affect your bottom line. Three important areas will be discussed in detail: cost accounting, revenue calculation, and profit determination. Growers will learn how to use these numbers to determine how to maximize profits in their production facilities. The central question for the day will be "How do we determine what crops, sizes, and quality to produce in order to maximize the bottom line?"

Who should come to this *Greenhouse Profitability Seminar*?

Anyone who:

- Has spent a lifetime in this industry
- Is new to the industry
- Is looking to earn a profit and stay in the industry
- Is an owner, grower, buyer ...
- In short — Everyone

The speakers for this seminar are: PJ Ellison-Kalil, owner and president of Ellison's Greenhouses, Inc.; Peter Konjoian, Konjoian's Floriculture Education Services; and Terri Starman, Texas A&M University. Each of these speakers is widely recognized and respected as a floriculture professional. They are widely sought-after speakers and regularly give presentations at the OFA Short Course each year.

OFA will donate 50 percent of the net proceeds to FIRST and 50 percent to the Endowed Floriculture Chair program at Texas A&M. "This is OFA's way of recognizing the significant contributions both of these organizations have made to Texas floriculture and the education of floriculture professionals nationwide," said John Holmes, OFA executive director.

The pre-registration deadline is December 29, 2003. The registration cost is \$95 for OFA members or \$105 for non-members. For registration after 12/29/03, please add \$10.

For information on upcoming OFA events,
visit our Web site: www.ofa.org

Recent OFA Outreach Programs

The Engledow Group recently hosted an OFA Interior Plantscape Fall Seminar and a Retail Sales Pro Workshop in Indianapolis, Indiana.

The interior plantscape seminar provided an in-depth look at designing and using color bowls and flower arrangements on interior accounts. Several sessions also focused on beneficial nematodes, fungus gnats, and biological resources. Speakers were Rich Batcho, Batch-O-Blooms, Oreland, Pennsylvania; and Suzanne Wainwright Evans, Buglady Consulting, Slatington, Pennsylvania. *Interiorscape* Magazine and NewPro Corporation co-sponsored lunch. Product sponsors were: Engledow Group, Gainey Ceramics, Grande Greenhouse Inc, Heartland Growers, Hill Floral Products, Integrated BioControl Systems, and NewPro Corporation.

The Retail Sales Pro Workshop was presented by garden center industry consultant Ian Baldwin. The focus of this workshop was to train sales staff about retail trends, who their customer is, and how to help customers spend more money. This workshop was also presented in Cleveland, Ohio. The Scotts Company sponsored lunch for the garden center workshops. Break sponsors were: Engledow Group, Grande Greenhouse Inc, and Meister Publishing.

OFA Event Calendar

January 8	OFA/Texas A&M Grower Seminar
February 20-22	OFA Board & Committee Meetings
July 10-14	OFA Short Course – Columbus, OH

www.ofa.org



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