

CIRCULATE

OFA Bulletin

The Information Source for the Floriculture Industry Since 1929

OFA – an Association of Floriculture Professionals

Perennial Pest Management

Raymond A. Cloyd
University of Illinois
Department of Natural Resources
& Environmental Sciences
National Soybean Research Lab
1101 W Peabody Lab
Urbana, IL 61801
217-244-7218
Fax: 217-333-4777
rcloyd@uiuc.edu

Perennial plant production in the United States has increased as consumers are now interested in horticultural crops that last for more than one year. However, perennials generally take longer to grow to marketable size than annuals. As a result, they are more prone to pest problems. There is a complex of plant-feeding pests (insects, mites, slugs, and nematodes), both above and belowground, that attacks perennials. However,

the types of pests may vary depending on whether perennials are grown outdoors or indoors. When side vents are open during spring and summer, this allows insects to move in and out of greenhouses. Perennials grown outdoors are subject to environmental conditions (rain and temperature extremes) and natural enemies (parasitoids and predators) that may provide some pest control. This is similar to perennials that are planted into landscapes and gardens.

Pests that attack perennials may be categorized based on their feeding behavior, which is related to the damage or injury they cause. The major feeding behaviors of pests that attack perennials are chewers, suckers, miners,

and borers. The primary pests of perennials (depending on location) and their feeding behaviors are listed in Table 1 (page 14).

CHEWERS

Slugs – Slugs are worm-like, legless organisms, which are actually in a group called mollusks. They are ½ to 6 inches long when fully grown, depending on the species. Slugs are referred to as “naked snails,” because they do not possess a shell like snails. Slugs vary in color from yellow, brown, to black. They hide during the day and come out at night to feed, leaving a silvery slime trail when they move

around. Slugs chew large irregularly shaped ragged holes in plant leaves. They prefer moist conditions. Most overwinter as eggs in debris.

Hosts: Hosta, sedum, delphinium, bergenia, campanula, daylily, gypsophila, rudbeckia, and iris.

Beetles – Japanese beetle adults are ¾ to ½ inch long, metallic green with coppery wing covers. There are white tufts of hair around the margin of the abdomen. Japanese beetle adults feed continuously for 30 to 45 days consuming leaves and flowers. They generally

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CAN SELLING WATER GARDENS BE PROFITABLE?

Bill Hoffman
Hoffman's Garden Center
Pond Supplies of Ohio Inc.
1021 E Caston Road
Uniontown, OH 44685
330-899-9981
Fax: 330-896-7150
bill@pondsuppliesofohio.com

Nine years ago, I debated whether I should handle more water gardening products – at least more than five pumps, two pillbox-size filters, two liners, and a few other miscellaneous products. Some of my garden center customers had been asking for other pond products and aquatic plants that I didn't stock, nor knew much about. That winter, I made the commitment (or at least I thought so) and ordered approximately twice as many pumps, filters, liners, etc. Then, I really became daring and ordered some bare root (not much else available) water lilies, marginal plants, and a few other aquatic plants.

Unfortunately, when these plants arrived in the spring, I was not prepared for them or prepared to sell water gardening.

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OFA Bulletin

The Information Source for the Floriculture Industry Since 1929

OFA Mission Statement

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

OFA – an Association of Floriculture Professionals

2130 Stella Court
Columbus, Ohio 43215-1033 USA
614-487-1117 Fax: 614-487-1216
e-mail: ofa@ofa.org home page: www.ofa.org

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EDITORIAL STAFF

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Editor

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RAYMOND A. CLOYD

MONICA DESCH GARRISON

BILL HOFFMAN

JIN-SHENG HUANG

BILL McCURRY

PAUL V. NELSON

LIN SCHMALE

PAUL A. THOMAS

DANIELLE TURCOLA

LINDA ZOERB

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TO BE OR NOT TO BE

Linda Zoerb
La Crosse Floral Co Inc.
2900 Floral Lane
LaCrosse, WI 54601
608-784-7500
Fax: 608-784-8603
lindazoe@fflax.net



That is the question, it really is. What do you want to be as a business? Do you want to be a wholesaler, a retail garden center, a retail florist, an interiorscape company, a landscaper, a ... well, you get the point. And just when you figure that out, there's more. If you want to be a wholesale grower, what kind of product do you want to grow – cut flowers, vegetables, perennials, annuals, plugs, tree stock? If you are a retail florist, will you also sell giftware or have seasonal kiosks in the local mall? If you are an interiorscaper, will you also install holiday decorations or maintain outdoor corporate flowerbeds?

There are days when I wish I was just one of the above. Instead, we are a retail florist, a retail garden center, a wholesaler of potted blooming crops (smaller percentage), and an interiorscaper. Currently, the retail florist and the retail garden center comprise the majority of our income. We grow annuals, perennials, herbs, vegetables, Holland bulbs (we have our own cave), a few cut flowers, blooming pot crops, and all the associated garden combos of hanging baskets and mixed pots. I'm sure I've forgotten something that my grower will remind me of. We buy in foliage plants, most cut flowers, some tropical patio plants, and blooming crops to supplement what we grow.

La Crosse Floral was founded in 1908 with a greenhouse range built on the edge of town. A retail floral shop in the small downtown area quickly followed. I know we were one of the first 10 "florists" to sign on to what is known as FTD. Business was conducted by telegraph then. When the Great Depression years arrived, floral sales fell and the greenhouses were used to grow tomatoes. As the years went by and times improved, we went back to growing potted blooming crops and cut flowers like chrysanthemums. In addition, garden plants were also grown. Progressing to the 1960s, green plants in offices became popular, so we offered installation and servicing of plants. I remember having a day off from school and getting to go with my dad to his radio show, and then to water plants in some of the big buildings in town. I have many of those same accounts today. Through the 1950s, 1960s, and the 1970s, our wholesaling of plant material grew. We mostly supplied small town florists.

All good things must come to an end, which occurred in the 1980s when big wholesalers within a 200-mile radius of us began supplying the small town florists. At the same time, gardening began to grow into a national

pastime. This was the opportunity to expand our retail aspect of the garden center. This takes us to the present day where we are selling in a modified growing range under glass.

I believe it is advantageous to be more than one thing as long as you know what division of your business may take precedence on any given day. Being multi-faceted as we are certainly helps cash flow. I was recently talking with a group of men about their success in marriage (DO NOT turn to another article just yet!). One of them said that each morning when you wake up, you need to read what kind of day it will be. Some days might be 100 percent all about your spouse, other days could be 50 percent you, 10 percent your spouse, and 40 percent your kids. The key to success was being able to read what kind of day it was going to be and to run with it. I believe there is a parallel to the business world.

By the time you read this, Valentine's Day will have passed. However, as I write this, we are finalizing our plans for this holiday. This year, Valentine's Day is on a Friday – the busiest day possible for a retail florist. How do we handle the projected increase in business? I am thankful for our Plant Patio staff and our seasonal workers who return to help us. These people restock supplies, process flowers, wrap and route deliveries, make deliveries, answer the phone, update our incoming wire-service orders, fill water tubes, wash vehicles ... whatever is necessary. Our grower sees that we have lunch provided in the crunch. Our head of maintenance takes care of vehicle rentals and additional cell phones. I will call in local physical therapy students to give upper body massages. We are all cross-trained.

Valentine's Day is a major cut flower holiday. I know that when I wake up February 10 through 14, each day will be 100 percent retail floral. We will still need to service our interior-scape clients, and some plugs may fly in needing to be planted, but the focus will be on retail. Many businesses hire temporary help for the holidays; we have known performers that are eager to contribute to the big picture.

This year, Easter is incredibly late – April 20. Our customers will have the itch to plant early, even in Wisconsin. This is the first year we will not be growing all our own Easter lilies. I believe the amount of space required coupled with the cost of production is better spent on bedding plants. Profitability is always on the top of my mind. Sometimes we need to sit back, analyze, and stop doing something just because we have always done it that way. Growers have a tendency to be nostalgic about their crops. Thankfully, Easter lilies are not on my grower's nostalgia list.



Several years ago, I came up with a way to take the pressure off our grower, who was always challenged to quickly change her growing range into a retail environment. Thus, we now have "Fun In The Sunday," a

workday when we are closed to the public. Not only does our garden center get set up (about 80 percent of our 100,000 square feet is transformed), the event is open to all employees and their families and friends. We pay everyone, even the six-year-olds. We feed them. We assemble teams of people who would not normally work together, and assign a team leader one would not expect, such as a 17-year-old seasonal worker. I think it is because of days like this that everyone has an appreciation for what each other division does. After all, we are one company, not a bunch of separate divisions.

There are so many ways in which cooperation can result in "making" it through a holiday. As a flip side to our Fun In The Sunday, the floral shop needs to be transformed for Christmas with about 16 themed trees and vignettes. Once again, seasonal employees, Plant Patio staff, and office staff all help. Our head of maintenance and the grower make sure outside decorations are up, the Christmas tree stands are out, and the fresh evergreen wreaths are decorated. It is a group effort.

I envy the floral shop on the Monday following Mother's Day. While their business slows down comparatively, the garden center is in the middle of a peak. The focus shifts to garden center, and the rest of May consists of all 100 percent days. Some employees from the floral shop come out to augment the garden staff. The sharing of employees is critical. The middle to end of May signals corporate planting jobs which are done with the help of shared employees. My worst fear is a need for a plantscape tech sub for the month of May ... we are all maxed out. Somehow, with cross training, we survive. The sharing continues throughout the summer with outside maintenance, wedding setup, and vacations to get through.

I truly believe your success as a multi-faceted company depends on whom you hire. Do you hire a person as an assistant grower, a designer, an office manager, or a plantscape technician? Or do you hire a position? Not a title. If the person you hire thinks of themselves as their title, you will never have the cooperation necessary to cross company division lines. Consider hiring some of your customers. They already know your product and may have an idea of your corporate culture. Okay, that's another topic for another day ...

One last thought. Those who know me know that I am not a morning person. While I may not be able to "read" the workday when I wake up (I am still sleepy until 10 a.m.), I do know that it is a 100 percent La Crosse Floral day. When I can no longer "read," I'll retire. Oh-oh, I must still be sleeping or dreaming, because retirement is a long way off ...

OFA

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Global Finesse

The Art of Doing Business Here and Abroad



Danielle Turcola
Professionalism International
 10124 Bissell Dr
 Twinsburg, OH 44087
 330-963-0011
 Fax: 330-963-0047
 danielle@askdanielle.com

As I was setting up my exhibit at the 2002 OFA Short Course, I noticed the man across the aisle staring at me. I was standing precariously on a chair attaching international flags to the top of the display. He watched my every move. There was a broad smile on his face. When I finished, I asked him what country he came from, and he proudly pointed to the second flag from the right and then pointed back to himself repeatedly. "My country, my country," he declared with pride. He was from South Korea, and he was overjoyed that I had displayed his country's flag. I was his friend for the rest of the trade show. Throughout the show, international exhibitors and attendees would stop by and identify their country's flag with the same sense of appreciation and personal pride. It created an instant bond.

We Americans often fail to appreciate the importance of such small gestures like displaying a flag until we are in a foreign country and we catch a glimpse of an American flag on a building. Suddenly, we feel safer. We've just identified a piece of home and hopefully an ally in time of emergency. Well, it's the same feeling for international business contacts who come here and experience gestures of consideration.

Did I know a Korean exhibitor would be across from me? No. But, I did know that 30 countries, including Korea, would be represented, and I had flags of each country. What can you do to create an instant bond with international contacts? With or without flags, you can have this kind of impact when you understand and appreciate the dramatic differences and expectations of various cultures around the world.

When people think etiquette, they think social manners and conduct. **International etiquette is conduct that is considerate, courteous, and honoring of people and cultures worldwide.** Global finesse is a skill you develop to navigate international business. It's the working embodiment of tact, polish, refinement, and diplomacy.

At first glance you might ask, "Why should I learn about the customs, greetings,

ceremonial colors, and geography of other cultures when my main business is local?" The answer: your business growth depends on it. With technology, global access is only a click away – and so is your next customer. You are one of many resources in the world. A global business approach gives you access to a wider range of customers, suppliers, and economies.

Fear is at the heart of most endeavors whether you're looking to grow globally as either a supplier or purchaser. Here are some strategies to overcome the most common fears.

• **Personal safety.** With terrorism on everyone's mind, personal safety is now the top fear. Being careful is not enough. When traveling abroad, register with the embassy upon arrival. Give copies of your itinerary to family and colleagues and notify them throughout of changes. Be mindful at ATMs. Con men sometimes try to tap you for money or distract you after you have withdrawn money. Also, don't be alarmed to see armed soldiers in airports and town centers in some countries. Machine guns poised in the square in Bogotá, Columbia kept one client confined to his hotel until his driver arrived to take him to his appointment. Don't walk alone in remote areas, and stay in international status facilities.

• **Food and water accessibility.** Mealtimes vary around the world. Supper in Spain is after 10 p.m., and you may be used to eating at 6 p.m. I always encourage clients to pack power bars, instant soup packets, and instant cereal packets to fill in those times when you are hungry but can't get a meal. They are small, individually wrapped, and filling. I always travel with bottled water and purchase at least two small bottles of an internationally recognized brand like Evian, Perrier, or Dannon daily.

• **Understanding the currency exchange.** I create a 2-inch by 3-inch card of the exchange values when I prepare clients for international business. The card has the equivalents of \$1, \$5, \$10, \$25, \$50, \$75, \$100, \$500, and \$1,000 in the local currency. This is a quick reference in restaurants, airports, and shops.

• **Language barriers.** Another quick reference card I've developed lists common phrases (Figure 1).

Mastering these five phrases in the language of your business contacts makes you look and sound like a diplomat. Speaking several foreign languages is a global advantage, because it gives me immediate entrée. People appreciate an attempt to speak their language, because most Americans are monolingual and have a reputation of

	Hello	Goodbye	Please	Thank you	Excuse Me
Spanish	Buenos días	Adios	Por favor	Gracias	Perdóneme
French	Bonjour	Au revoir	S'il vous plaît	Merci	Excusez-moi

Figure 1. Five common phrases to record for quick reference while traveling.

expecting the world to speak English.

• **Breaking local laws.**

Taking local transportation is the best advice if you are worried about breaking local laws. Most problems are related to driving in foreign countries. Driving on the opposite side of the street in London can be tricky and dangerous. If you hurt someone in Mexico while driving, you are responsible for them the rest of your life. Take a taxi and be safe.

• **Getting sick or stranded.**

Be sure to take out an international insurance policy like SOS or Global Assist if you plan extensive travel. Your medical coverage probably does not extend to overseas care facilities. Take extra contacts or glasses and copies of prescriptions. Also, get the numbers of a 24-hour apothecary and a British-American hospital in the major cities you'll visit. Have access to extra money if you are stranded due to weather conditions or illness. ATMs are plentiful in metropolitan areas.

• **Losing passports and credit cards.** A stolen passport is worth thousands of dollars. Write your passport number with permanent marker inside your shoes. If you should be parted from the passport, you will have the number for the police and American Embassy to trace. Make copies of passports and credit cards for family at home and include the 800 customer service number. You cannot access the 800 number outside North America.

Now that I've alleviated your fears, let's look at your global opportunities. Every year, you invest an incredible amount of time and money to exhibit or attend premier international events like the OFA Short Course. Your

objective is to establish a working relationship with both domestic and international customers, suppliers, and vendors.

- How can you establish rapport in a short time?
- How can you project yourself as a global partner?
- How much do you know about the international contacts with whom you hope to work?
- What gestures or remarks would embarrass them and cause them to lose face?

ATTENTION TO DETAIL

Attention to detail and preparation are essential to global business success. Here are the areas in business where Americans fall short in the eyes of the world.

Business Presence. First impressions are lasting impressions, whether traveling overseas to prospect for business or hosting international visitors at your U.S. operation. Rapport is based on a credible impression. We make more than 25 assumptions about a person's capabilities, intelligence, effectiveness, attitude, and status in five seconds.

I observe every manner of dress at trade shows and in business. Some are appropriately and credibly dressed, and some are dressed for the beach or amusement park. If you want people to take you seriously and not dismiss you, dress in clean, pressed clothing that is not too casual, too tight, too short, or too revealing. Shirt buttons about to pop, stained clothing, and worn shoes are credibility robbers. Low necklines, bare midriffs, and short hemlines are subject to ridicule. Your professional appearance speaks volumes about you.

Project yourself as a serious global partner. As an



attendee, you will appear professional and organized to the international vendors and suppliers if you have a contact information sheet. It contains your contact information, including a photo, company address with USA added below the city, state, and zip code. Include phone numbers (800 numbers do not work overseas), e-mail, web site, key staff names with titles, and a few lines for their notes. This saves you time and avoids embarrassing spelling mistakes for them.

You sabotage your efforts by not having business cards or running out of cards. The Short Course is like your mother's birthday – you know well in advance when it's scheduled, and you should plan accordingly. Having no business card means you have no status within your organization. It also indicates a weak financial position with not enough money for the most basic of business essentials – business cards. It communicates, "I'm not ready to be a global partner."

Communication. Smile throughout your conversations. It is the universal gesture of approachability, friendliness, and acceptance. You don't have to talk louder or mimic an accent when speaking with someone from another country. Most Americans think that pumping up the volume, slowing the pace, and mimicking their language will help them be understood.

Don't underestimate someone's ability to comprehend the English language either. Americans think other cultures are stupid because they don't conduct

business in English. But, many cultures study three or four languages including English. Often, they have deeper comprehension levels than conversation skills. Many foreign business people make the choice to reserve their English usage until they are comfortable and trust the person with whom they are dealing. Clearly stating your needs or the way your product performs in the simplest, nontechnical terms will be appreciated by everyone. If more complex technical information is needed, the person will ask for it.

GLOBAL CREDIBILITY

Projecting a credible business presence is only the beginning of global business success. You must be credible when you open your mouth. Learn as much as possible about your future global partners before pursuing business with them to avoid making erroneous statements about them, their country, their culture, or their products.

Know the following facts about their culture:

- country location – hemisphere, time zone, neighboring countries, coastal area.
- land mass – compared to one of our states (Japan is 5 percent of the United States, or about the size of California).
- population – i.e. Japan has half the population of the United States (130 million people).
- capital and key cities – i.e. Copenhagen is the capital of Denmark.

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GLOBAL FINESSE

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- economy – Where does the floral industry rank in their economy?

- government – republic, democracy, monarchy, etc.

- official language – i.e. Mandarin is the official language of China, but there are at least five others used in business.

- superstitions – i.e. Four is a bad luck number in Japan, so offer no items in groups of four.

- values – Efficiency and punctuality are foundational values in Germany.

- famous persons and their contributions – Hans Christian Anderson was a Danish author.

- national holidays – Las Fallas is in Spain, not a time for a business trip to Valencia.

Geography and culture.

This is an area of weakness for Americans. Test your skills – True or False:

1. Some Americans don't know that Canada and Mexico are foreign countries.

2. People speak Spanish, not Mexican, in Mexico.

3. Eye contact is rude in many Asian cultures.

4. Hans Christian Andersen was an author, not an Olympic skater.

5. Denmark is not part of Germany.

6. Holland is the Netherlands and Amsterdam is its capital, not a separate country.

The answer to each is true. These are statements shared with me by international exhibitors who were shocked by our lack of awareness about their cultures.

Formalities. Our culture is typically casual, so we have a tendency to refer to people by their first name. However, call your international contacts by their formal (family) name, i.e. Mr. Deiter, not their first (given) name when you correspond or speak to them and when you introduce them. Use their first name only after they have given you permission. Also, consider scheduling appointments with the international exhibitors or customers. Assuming they'll have time when you drop by their exhibit is a mistake. Value them and their time by calling for an appointment.

Introductions. Correct pronunciation and title are

two musts when making introductions. Ask your contact for the correct pronunciation of their name and write it phonetically, but not on their business card. Bad taste! Remember that rank is important when introducing several people from the same company. Always start with the highest-ranking person.

Here's a firsthand experience from an international trade event in which I participated:

The exhibitor's name badge read Chung Jang but his business card read HwaSuk Chung. The next day he introduced me to his associate, Paul Jang. His name badge read Chung Jang, too. They were bemused and said they were twins Chung and Chung because of their incorrect badges. I could sense their embarrassment. Their badges and business cards did not match. They struggled to explain the mix-up to every visitor.

On the second day of the show, I invited them to the registration area and promptly had their badges corrected to their delight. They were forever grateful to have their identities back. Here's where attention to detail is critical. This mistake

caused two people to lose face and suffer an embarrassment that they couldn't remedy with their limited communication skills. The watchword here is name order, which is different in cultures from the Pacific Rim and Latin America.

FINAL THOUGHTS

Colleagues and show organizers tried to give me a sense of the enormity of the OFA Short Course trade show floor before I arrived. The size and number of exhibit booths are overwhelming.

More surprising are the number of foreign growers and equipment manufacturers who invest large amounts of money in shipping, exhibit space, product, travel/lodging, and staffing to have a presence at the Short Course. They want to do business with Americans.

You can take full advantage of creating global partnerships if you pay attention to the details and prepare for the opportunities. Respect their cultural differences, and they will respect you. Together, you can build strong alliances that will ensure your longevity in the global market. **OFA**

RALSTONIA ALERT

Steve Carver, OFA • Steve Nameth, The Ohio State University

Ralstonia solanacearum Race 3, Biovar 2, which causes Southern Bacterial Wilt (SBW) has been confirmed by USDA-APHIS on diseased geraniums in greenhouses from several states this winter. This alert provides answers to some key questions and directions for finding additional information.

HOW WILL THE USDA ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS) RESPOND?

Because this organism is such a threat to potatoes and other food crops, and because of the fear that it could travel in infected plants from the greenhouse to the field, USDA has put *R. solanacearum* Race 3, Biovar 2 on its list of top hazardous pathogens to U.S. food and plant crops.

APHIS has notified the states of the finding and has sent a draft action plan notification. In response, inspectors in a number of states have begun quarantining greenhouses where the pathogen is confirmed or suspected.

APHIS is due to release its formal Action Plan as soon as possible, which will spell out inspection, quarantine, disposal, and cleanup protocol.

QUARANTINE: WHO IS AT RISK?

According to several sources: Greenhouses that received rooted geranium cuttings from Glass Corner or Pleasant View greenhouses during a certain time window are potentially at risk. Ultimately, the answer depends on the aggressiveness of APHIS's management strategies, to be spelled out in the Action Plan.

The current outbreak has been traced to a Goldsmith stock facility in Kenya. A small number of infected, but symptomless Americana 'Dark Red' cuttings were supplied with healthy cuttings also from Kenyan and Guatemalan facilities to two of their U.S. greenhouse partners for rooting.

Confirmed incidences of the pathogen, up to this point have been on rooted cuttings of several Americana cultivars shipped from Glass Corner. **But note that incidences of ralstonia have**

CAN SELLING WATER GARDENS BE PROFITABLE?

Continued from page 1

Despite customer interest, I knew so little about water gardening, and the aquatic plants were so anemic, that sales were a little less than brisk. I immediately recognized that there was not enough interest in water gardening to justify the embarrassment or the financial loss! No, not really! Actually, I realized that I had not prepared myself adequately. The water gardening department would have to wait until I could commit myself and the store's resources to doing it correctly.

One year passed without water gardening. I would not make the same mistake twice. The next year, the commitment was made. Many water gardening books and magazines were perused. Suppliers and potential suppliers were very supportive and free with valuable information and direction. Information on what and how to give a water gardening seminar to garden center customers was gathered and prepared. More than \$10,000 was committed to buying inventory and the construction of a display pond. By May, the display pond was running, the shelves were stocked, customers were inquiring about water gardening products and sales were being made.

In mid-June, we held our first water gardening seminar with approximately 10 in attendance. Boy, did I sweat. I didn't know the answers to many of the questions, but I took phone numbers. I found the answers and forwarded the information. Good old customer service. The person who learned the most about water gardening at this and each subsequent seminar was me! With each question that I had to search for the answer, I became more comfortable with water gardening.

The more I learned, the more I understood that not knowing an answer was nothing to be embarrassed about. There are many variables in a pond's ecosystem. To answer most customer questions, whether it concerns picking the right components to build a pond or correcting a problem (imbalance) with the ecosystem, you have to have an understanding of nature and the pond ecosystem. Learning water gardening would be an ongoing, never-ending process.

As my understanding of water gardening grew, I realized that the big box stores probably would never dominate the sales of water gardening products. Most big box stores in the North will not dedicate a "pond knowledgeable" person to such a seasonal department. Visits by myself and several of



my associates to these types of stores have confirmed my suspicions. People with little or no knowledge were manning and answering questions (incorrectly for the most part) in the water gardening area of these stores.

These misinformed customers from the big box stores often sought out our store looking for knowledgeable guidance. By the end of our first year of seriously committed water gardening, retail sales were in excess of \$40,000. The second year, retail sales were more than \$80,000 with margins well over 50 percent. This niche market was truly worth capitalizing on. Retail sales continued to grow between 23 percent and 75 percent for four more years until 2002, when the weather and economy took their toll. New pond sales declined in 2002, while maintenance products such as fish food and water additives continued to climb. If the weather cooperates in 2003, I feel retail sales of water gardening products will soar. A Tannton Press survey printed in *USA Today* on July 11, 2002, said, "If Americans enhance homes, one thing homeowners would add: water feature/pond—16 percent; deck—16 percent; pool—15 percent; patio—11 percent; garden—10 percent; and porch—10 percent."

As the survey shows, the business is there. The water gardening department can be one of the most profitable in your store. Profit margins are excellent. Competition is sparse. Interest is growing in leaps and bounds. The water gardening season is also unique – starting in March usually and going until Christmas when gifts of ponds, statuary, and gift certificates are purchased. One other benefit of selling water gardening is additional sales from cross selling. Once the pond is built, it needs landscaping and decorations.

Mr. Garden Center Owner, if you're asking yourself "Should we be selling water gardening products, or why aren't our sales doing well?" then ask yourself "Have I made the commitment, and do I have the right attitude?" As a friend of mine from another garden center told me years ago, "If you want to be successful with a new product or with a new department, go all the way. Jump in and make the commitment or stay away from it." As with everything in life, half-hearted efforts don't produce success, whether it is on the sports field, at home, or in business.

OFA

RALSTONIA ALERT (CONTINUED)

only been confirmed on geranium cuttings (not other genera), and only on those geranium cuttings originating from Kenya.

Both Glass Corner and Pleasant View have been cleared by USDA-APHIS to continue shipping geraniums sourced from Guatemala.

WHAT ARE THE SYMPTOMS OF SBW? WHAT SHOULD I DO IF I SEE SUSPECT PLANTS?

Leaf yellowing and wilting of infected geraniums are typical symptoms. The wilting starts at the lower leaves and petioles and works its way up the entire plant, older leaves first and younger leaves last. These symptoms develop more rapidly under warmer daytime temperatures. Eventually the entire plant collapses onto the growing medium. The end is plant death.

There are several other geranium diseases that will exhibit similar symptoms. Therefore, suspect plants need to be sent to a university or private lab. If your facility has already been quarantined, you must follow the quarantine directive to get samples analyzed. If you are not quarantined, contact your supplier for directions or ship sample directly to a lab. Place plants in a sturdy, securely sealed double plastic bag that is

stored in a refrigerator until shipping. It is important to minimize movement of suspect plants in the greenhouse, so bag the plants at the bench.

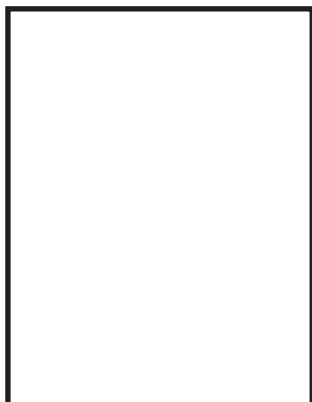
Every greenhouse owner should be extremely concerned with this disease. It is very important that we do everything possible to contain and eradicate this disease. That means everyone has a responsibility to help detect and destroy diseased plants following the exact protocol outlined in the USDA-APHIS Action Plan. **DO NOT DISCARD ANY SICK GERANIUM BY SIMPLY PUTTING IT IN THE COMPOST PILE.** If you have been quarantined, minimize movement of targeted plants and follow the directive in the APHIS Emergency Action Notice. Do not dump quarantined plants unless you have been cleared by USDA to do so. A USDA-APHIS official must be present to observe the dump. Containing and destroying this disease is possible if we all work together.

We are still in the early stages of this episode, but with patience, diligence, and cooperation with USDA-APHIS, the industry will get through this challenge and minimize the ultimate economic impact on each of us. **OFA's complete Hotline can be found at www.ofa.org.**

OFA

LETTER FROM WASHINGTON

Lin Schmale
Society of American Florists
1601 Duke St
Alexandria, VA 22314
703-838-5232
Fax: 703-836-8705
lschmale@safnow.org



"What's the climate in Washington?" a West Coast industry friend asked me during a recent phone conversation. My ungrammatical and inelegant answer: "It's weird."

Thinking back, I can't even recall a similar atmosphere at the outset of a brand-new, sparkling clean and ready-to-go Congress. The 108th Congress, in fact, does not seem to be any of those things, except brand-new.

First of all, of course, the 107th Congress adjourned well into Fiscal Year 2003 (which began on October 1, 2002), without passing permanent budgets to fund most of the federal government. They simply passed a Continuing Resolution, extending funding at last year's levels until January 11, 2003, and left it for the 108th Congress to iron out the unfinished budget issues. The 108th Congress convened on January 7 and passed a further measure to keep the government open through January 31. As I write this article, the Senate is deep in debate over a final, omnibus bill that will roll all of the unfinished departmental budgets into one big "omnibus budget" package.

It's not just the unfinished appropriations process that is getting the 108th

Congress off to a difficult start. The Senate's last-minute change in majority leader, and subsequent difficulty in organizing its new committees ... the continued uncertainty of the economy and of international events ... and the frenetic focus on the new Department of Homeland Security, are all making life and politics different from business-as-usual, and somewhat more stressful.

As I am writing these words, it seems almost certain that the final spending bill, which will be passed well into the fiscal year, will provide most of the dramatic domestic spending cuts that the Bush Administration has requested. The Department of Agriculture Appropriations budget, containing (among many, many other things) the funding for the Floriculture and Nursery Research Initiative, is one of the as-yet-unfinished bills that will assuredly be affected by the fiscal wrangling. The Initiative is currently funded at \$5.5 million per year, and I think we will be fortunate even to maintain that level of funding. We will probably know, by the time you read these words, what is the new bottom line.

All in all, it's a good time to stop, review, take stock, and look forward; and it

might be a good time to do just that with the floral industry's piece of the new budget – the Floriculture and Nursery Research Initiative.

WHAT'S HAPPENING WITH THE FLORICULTURE AND NURSERY RESEARCH INITIATIVE?

The Initiative, as noted, is currently funded at \$5.5 million annually. It is an unprecedented partnership between the floral and nursery industry, the USDA's Agricultural Research Service (ARS), and universities. It has been led by SAF and the American Nursery and Landscape Association, with the strong support of OFA. Based on Dr. Marc Cathey's extensive survey of research needs in the early 1990s, and developed by the industry itself, the Initiative outlines major goals and priorities, yet is flexible enough to accommodate new problems and ideas. It was presented to Congress in 1998, and was first funded at \$1.2 million the next year.

The Initiative has continued to grow at a steady, but manageable pace since then, to its current \$5.5 million annual level. However, in this era of increasing emphasis on homeland security, defense spending, and economic stimulus, it may require an increased industry push to continue increases in the Initiative. More about that later!

Partnership – among industry, government, and universities – is the key to the Initiative. Success has depended, and will continue to depend, upon balance, communication, and cooperation among industry segments, trade associations, university and government researchers, privately funded foundations, taxpayer interests, and Congress.

The Initiative addresses critical areas of importance for the industry which are also suitable targets for taxpayer support. However, the floral and nursery industry also has a very generous record of supporting its own research through the privately funded research foundations, and the Initiative works cooperatively with those efforts. Cooperation – among private industry, the government, and universities – is the essential factor in success.

COMMUNICATION AND ACCOUNTABILITY DRIVE THE EFFORT: RESEARCHERS' MEETING SCHEDULED

Communication among all of the players is of the utmost importance for continued success of the Initiative. Accountability is imperative, not just because the Initiative is spending taxpayer dollars, but also because the research must meet the needs and priorities of the industry which supports it.

The first major funding agreements through the Initiative were written as three-year agreements, and they are just now coming to the point where research results and reports can be expected. Ongoing results of the research will, of course, be communicated in many ways – through written papers and articles, presentations at industry and academic meetings, and so on.

However, the Initiative is also scheduling a special Researchers' Meeting, to be held March 24-27, 2003, in Raleigh, North Carolina. During the two and one-half day review meeting, each of the research teams funded by the Initiative will have an opportunity to present its research goals and results.

The Researchers' Meeting will be an opportunity for communication among the researchers themselves – a time when they can network, discuss their research, and build bridges to better help achieve goals. It also will provide a means for ARS and the ornamental industry to see the progress of the Initiative and its research project portfolio.

AND IN THE MEANTIME ...

Without getting into the details of any of the research, here's an overview of just a few of the floriculture projects being supported by the Initiative. (Remember that it's the Floriculture and Nursery Research Initiative, so about half of the research funding goes to nursery projects, although there is overlap between the two.) The Initiative is supporting many different kinds of research, but the common thread is that, ultimately, the research should result in improved plants and flowers, production practices, and environment and resource management practices – making life better for everyone: growers, wholesalers, retailers, and consumers.

ROOT DISEASES

Margery Daughtrey, Tom Weiler, and John Sanderson, of Cornell University's Department of Horticulture, are investigating the diverse root diseases that can ruin flowers and plants and developing methods to deal with these diseases. They are working in partnership with Steve Jeffers of Clemson University, who is focusing on identification methods for the Phytophthora pathogens. Gary Moorman at Pennsylvania State University is studying identification measures for Pythium pathogens.

Mary Hausbeck of Michigan State University is targeting both flower and root enemies. She is participating in the Phytophthora studies,

and is also studying the epidemiology of Botrytis flower blight and poinsettia scab.

Bill Miller at Cornell is looking at diseases of bulb crops, using Initiative funding to focus on problems in hybrid lilies. Dr. Gary Chastagner, Washington State University, is studying a new way of fighting Botrytis.

INSECTS

Michael Parrella at the University of California-Davis is leading a team of comprehensive integrated pest management (IPM) studies, which will help growers use combinations of pest- and disease-control methods to make their operations more environmentally friendly, yet still effective and efficient. Also using funding from the American Floral Endowment, the team's researchers are targeting pests like thrips, spider mites, and powdery mildew.

Kevin Heinz of Texas A&M University is participating on the IPM team and is also conducting a separate but related project on the interaction of insects and diseases in irrigation systems. Does the stress of disease treatments make plants more susceptible to insects? How do both interact with water or temperature stress?

VIRUSES

Viruses are the focus of the USDA's Beltsville, Maryland ARS lab. They are also the subject of a study by Jim Moyer at North Carolina State University, who is conducting genetics research to help growers identify the source of a virus and thus prevent future infections.

ORNAMENTAL PLANT GERmplasm CENTER

The OPGC is funded in part through the Initiative, to collect and preserve important germplasm material for the industry.

NEMATODES

These are being studied

OFA Legal Briefs

at the Universities of Florida and California.

RUN-OFF

This is being studied at the University of California and by a consortium from Clemson, North Carolina State, the University of Florida, and ARS. The ARS in Wooster, Ohio is working with The Ohio State University – and members of both the floriculture and the nursery industry – on improved spray application technology.

These are just brief descriptions of some of the important work being funded by the Initiative. In nearly every case, the researchers are working closely with members of the industry to test and refine their ideas, and to make sure that the research will be usable in "real-world" situations.

It's a cooperative effort, supported by the dedication, hard work, and talents of a lot of people.

YOU CAN HELP!

Earlier in this article, I mentioned that in this era of increased budget emphasis on homeland security, defense spending, and economic stimulus, an increased industry push may be required to continue increasing the Initiative. My prediction for 2003 and beyond is that the Initiative is going to require the same exceptional level of industry and academic involvement and support that it has enjoyed to date.

First of all, attention will continue to be necessary – both from industry and from researchers – to ensure that the research stays on track. Projects must be accountable, relevant,

and useful – and that requires a two-way effort. The researchers need to hear from and have the support of growers and others in the industry. The private endowments continue to require the industry's involvement and support – for their own work and for the partnerships and information they provide to the Initiative as well. And, of course, the industry very much needs the researchers and their work.

Finally, and of equal importance, are the continued support and involvement of industry members with their Congressional representatives. It's not complicated: members of Congress will only advocate and push for increased spending in areas where their constituents are asking for it! SAF and ANLA, as the Washington voices of the industry, can and will continue to push as hard as we can for increased funding. But our efforts in Washington can only be effective when they are supported by voices in the home districts.

It really is true that it makes a difference when you write your Congressman or Congresswoman, stop by their district office to meet them, give them even a small campaign contribution, or in other ways just take the time to let them know that you and your business are among their constituents.

Is there a new paradigm in Washington? Despite what I said earlier, I don't think so. I believe, and hope, it's still the same story: successes in Washington DC depend upon and are not possible without you. **OFA**

PLANT INFLUENCES ON ROOT SUBSTRATE pH

Paul V. Nelson

North Carolina State University
Department of Horticultural Science
Box 7609, Kilgore Hall
Raleigh, NC 27695-7609
919-515-1191 • Fax: 919-515-7747
paul_nelson@ncsu.edu

Jin-Sheng Huang

Michigan State University
Department of Horticulture
A434 Plant Science Building
East Lansing, MI 48824-1325
517-353-2639 • Fax: 517-353-0890
huangji@msu.edu

Greenhouse crops vary widely in their pH requirements, as seen in Figure 1. Some crops, such as geranium and African marigold, need a substrate pH level at or above 6.0. These crops are efficient accumulators of iron and manganese and may take up toxic amounts when grown in acid substrates. Availability of all micronutrients except molybdenum increases with declining substrate pH. Conversely, crops such as bacopa, calibrachoa, pansy, petunia, sanvitalia, snapdragon, and vinca are inefficient accumulators of iron. These crops tend to develop iron deficiency at pH levels above 6.0. They are most safely grown in the pH range of 5.4 to 5.8.

We know that crops alter the pH level of the substrate in which they grow. Further, the direction and the magnitude of this alteration is crop specific (Huang, et al., 2001). The effects of 25 taxa of bedding plant seedlings on substrate pH are shown in Figure 2 (page 12). This test was conducted in a seed germination room under cool white fluorescent lamps, and seed germination paper was used as the substrate. The germination paper was moistened with acidic fertilizer (40% ammonium + 60% nitrate, similar to 20-10-20) and the seeds were sown. After germination, when cotyledons were fully separated, pH of the germination paper was measured. The pH of germination paper without seedlings was 5.9. Half of the plant taxa lowered pH, while the other half raised it. Levels of pH had a range of 2.5 units from 4.8 to 7.3.

This test was repeated with 11 taxa on a substrate of 3 sphagnum peat moss:1 perlite (Figure 3, page 13). Results differed surprisingly from the paper test. Calendula, verbena, and zinnia lowered pH in the peat substrate as opposed to raising it on paper. Pansy and petunia raised pH more in the peat substrate than on paper. Effects of other taxa were similar in the two tests.

It is not possible at this time to predict when or at what magnitude pH shifts will occur. Their occurrence however, does cause considerable damage for growers. Geranium is a good case in point. One grower may not experience a pH shift, while another grower in the same locality, at the same time, and in the same substrate will encounter a pH decline from 6.5 to 3.8 in a matter of a week or two. A number of bedding plants are subject to iron and/or manganese toxicity due to

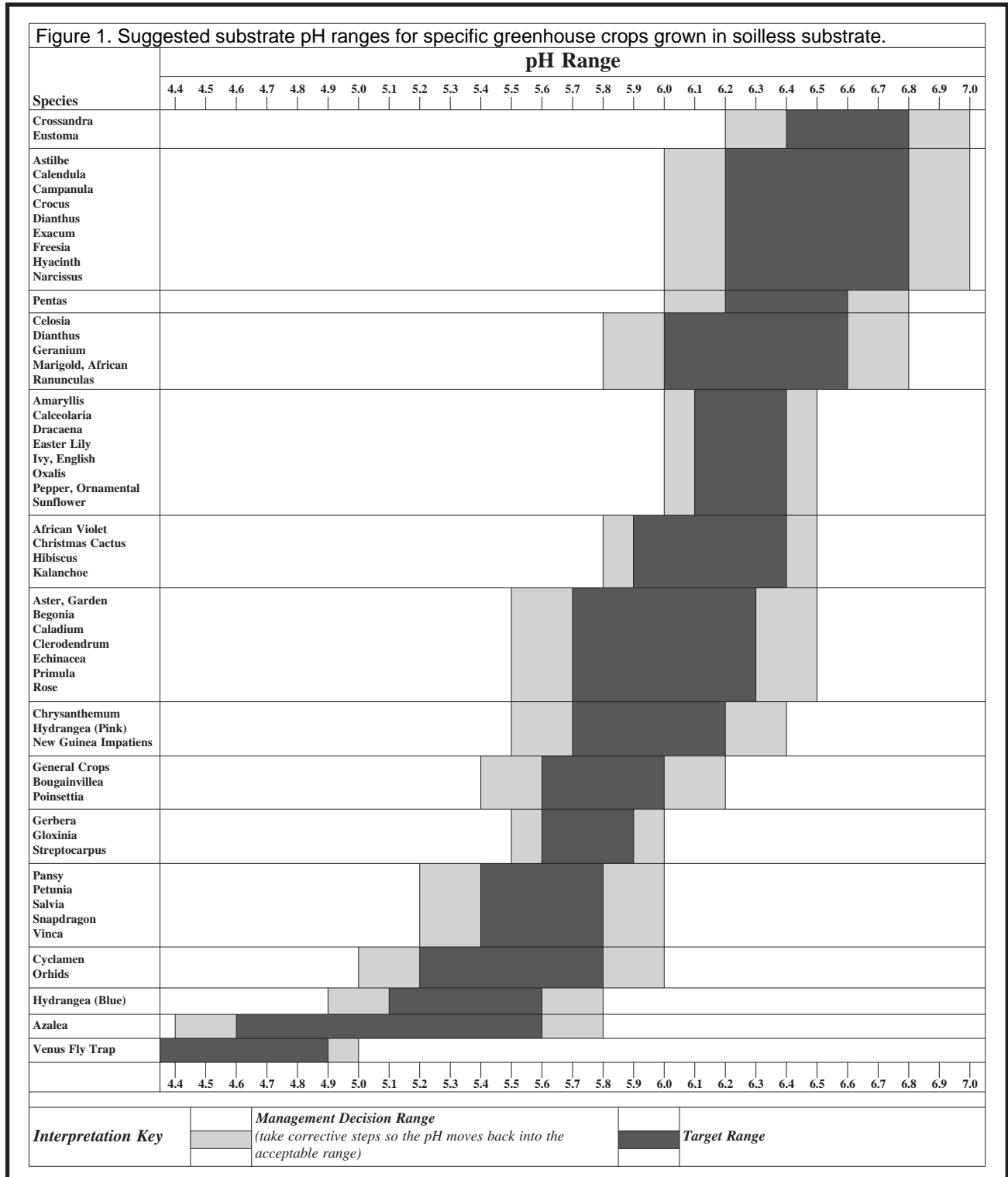
rapid acidification of substrate that appears to be plant controlled. These are African marigold, cosmos, hollyhock, nasturtium, pepper, and tomato. It is common to find the substrate pH considerably higher in vinca and lower in tomato than in the rest of the species within a bedding plant mix. This will be the case even though all plants were transplanted on the same day, in the same substrate, in the same greenhouse, and were fertilized with the same fertilizer. Thus, there are some situations where the pH shift is predictable.

Effective prediction of pH shifts will ultimately depend on a full understanding of the signals that cause them. Two signals are currently known that stimulate these shifts. The first is the balance of positive-to-negative charged nutrient ions that is being taken up by the plant. When positively charged ions, including ammonium (NH_4^+), potassium (K^+), calcium (Ca^{++}), and magnesium (Mg^{++}), are taken up, plants release acidic hydrogen (H^+) ions into the substrate. On the other hand, when negatively charged nutrient ions, including nitrate (NO_3^-), phosphate (H_2PO_4^-), and sulfate (SO_4^{--}) are taken up, the plant can undergo any of three alternative reactions – each of which ultimately consumes H^+ in the substrate, thus raising the pH. Since ions with one negative or positive charge are taken up much faster by plants than ions with two charges, the single charged ions have more effect on pH. Ammonium sulfate $[(\text{NH}_4)_2\text{SO}_4]$ is an acidic fertilizer salt because it is composed of two single charged ammonium ions (NH_4^+) that are rapidly taken up and one double charged sulfate ion (SO_4^{--}) that is slowly taken up. More positive charge is taken up in a given time period, thus there is a net release of H^+ into the substrate. Calcium nitrate $[\text{Ca}(\text{NO}_3)_2]$ is a basic fertilizer salt because it contains one double charged calcium ion (Ca^{++}) that is slowly taken up and two single charged nitrate ions (NO_3^-) that are rapidly taken up. More negative charge is taken up in a given period of time, thus H^+ is consumed in the substrate, bringing about a pH rise. Against this background, it is easy to see how the salts that are selected to make up a fertilizer can alter its level of acidity or basicity. The acidity and basicity levels of the common salts used in fertilizer formulation are presented in Table 1 (page 13).

Although it is a fact that the balance of all nutrient ions in a fertilizer determines its pH altering properties, it is still commonly stated that it is the form of nitrogen alone that controls pH alteration. Is this true, and if so why? It is true much of the time, because nitrogen is the only mineral nutrient that can be supplied as either a positive or a negative ion; and there are more nitrogen-containing ions taken up by plants than all other ions combined. Nitrate ions, being negative, are associated with rising substrate pH, and positive ammonium ions are associated with declining pH. There is a third form of nitrogen, urea, which has no electrical charge. It is always included with ammonium as an acid-forming nitrogen source. It breaks down into ammonium in the substrate and/or inside the plant and ultimately impacts pH the same as ammonium.

With this point established, one might then be tempted to conclude that a fertilizer with equal numbers of ammonium (NH_4^+)

Figure 1. Suggested substrate pH ranges for specific greenhouse crops grown in soilless substrate (Whipker, et al., 2000).



and nitrate (NO₃) ions would have a neutral effect on substrate pH. This is not the case. Ammonium nitrate, a salt that contains equal number of ammonium and nitrate ions, is very acidic (1,220 pounds of equivalent calcium carbonate acidity per ton of fertilizer). This indicates that ammonium ions are taken up faster than nitrate ions. Each type of single-charge

ion is taken up at a different rate, and the same is true among members of the double-charged ion group. On the whole, the single-charge ions are taken up faster than the double-charged ions.

This leads to the question: What balance of ammonium (and urea) to nitrate ions is required in a fertilizer for it to

Continued on page 12

PLANT INFLUENCES ON ROOT SUBSTRATE pH

Continued from page 11

have a neutral effect on substrate pH? There is no single answer for all fertilizers since the non-nitrogen ions differ across these fertilizers and have their own effects on pH in addition to the nitrogen ion effects. In general, fertilizers with higher proportions of nitrogen in the ammoniacal + urea form tend to be more acidic. This should not be the only criteria for determining a fertilizer's acidity or basicity, because notable exceptions do occur. For instance, one brand of 20-10-20 fertilizer has an acidity of 422 with 40 percent of its nitrogen in the ammoniacal form, while 17-17-17 has a lower acidity of 218 but a higher 51 percent of its nitrogen in the ammoniacal form. This points out the need to check the label of each fertilizer one uses to determine its acidity or basicity rather than rely exclusively on the ammoniacal content.

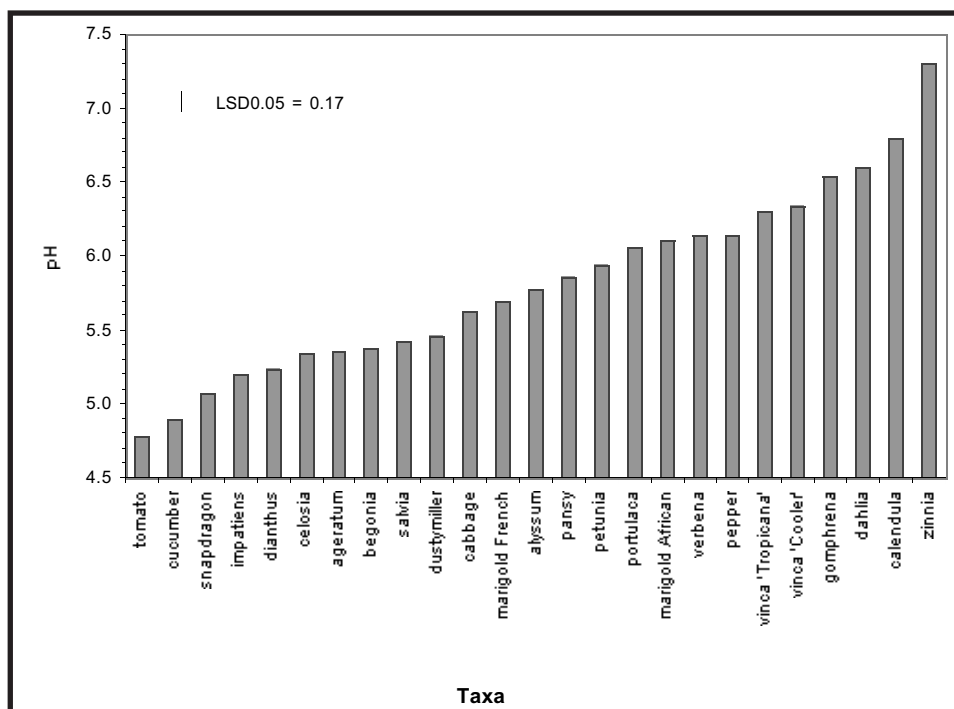
Changes in pH discussed thus far are gradual processes. These changes can be easily controlled by proper selection and timely shifts in fertilizers. A mistake commonly made is that of associating a particular type of fertilizer with a crop and resisting use of any other formula for that crop. Plug special 13-2-13 (200 pounds basicity) may be an excellent choice for a situation where irrigation water is very pure and substrate pH tends to fall. But, a plug seedling firm faced with alkaline water and a chronic rise in substrate pH would be well advised to avoid this fertilizer and use an acid fertilizer such as 20-10-20 (422 pounds acidity) in its place. Azalea 21-7-7-acid (1,700 pounds acidity) works well for azalea and other acid-loving plants, but should not be restricted to these crops. It is an excellent fertilizer for short-term application to rapidly lower substrate pH of most any crop. Lily special 16-4-12 (73 pounds basicity) is a good choice when pH is under control, and there has been a history of potassium levels in the substrate slowly

creeping up over time. It should be immediately apparent that in the fertilizer series 20-10-20, 21-5-20, and 20-0-20, the first can be used to raise, the second to maintain, and the third to reduce substrate phosphate levels while maintaining nitrogen and potassium constant.

It would be better if crop names were not associated with fertilizers. More functional names would include: high nitrogen, high potassium, low phosphorus, balanced, high acid, moderate acid, or high base. Each firm should have in its tool chest fertilizers such as highly acid 21-7-7, moderately acid 20-10-20 or 20-9-20, moderately basic 15-5-15 or 13-2-13, and highly basic 15-0-15 or 13-0-44. Above all, it is important to be willing to switch fertilizers as often as necessary to keep substrate pH and individual nutrient levels within recommended ranges.

Earlier it was stated there are two known signals that cause plants to alter substrate pH. The first causes a gradual rise or fall in pH and is due to the balance of nutrient ions that surround roots. We will now look at the second signal, which brings about an extremely rapid downward shift in pH. Deficiencies of iron, zinc, and phosphorus have been found to cause rapid acidification of the root substrate. In the former two deficiencies, within non-grass plants, H⁺ (acid) is secreted into the soil from roots. Laboratory tests have shown a decline from pH 7.0 to 4.0 in 6 to 10 hours brought about by pea, sugar beet, and bean when iron was removed from hydroponic solutions. The decline would probably be slower in soilless substrate due to buffering, but would still occur at a startling rate. In the case of phosphorus deficiency, organic acids may be secreted by roots or a major shift may occur that favors uptake of positively charged over negatively charged ions. In this latter case, excessive uptake of positive ions leads to root secretion of H⁺. Little is known about the occurrence of these pH decline syndromes in greenhouse crops. However, these possibilities need to be investigated, given the extremely large and rapid drops in pH currently being experienced in geranium crops and some bedding plants.

Figure 2. Impact of seedlings of 25 taxa at the time of complete separation of cotyledons on the pH of chromatography substrate paper. Paper was moistened with an acidic complete nutrient solution with nitrogen supplied as 40% ammonium + 60% nitrate when seeds were sown (Huang, et al., 2001).



In summary, it is imperative for a grower to assemble a table of all available fertilizers, regardless of source, that indicates for each: 1) potential acidity/basicity, 2) nitrogen-phosphate-potassium content (N-P₂O₅-K₂O), 3) secondary nutrient content (calcium, magnesium, sulfate), and 4) whether micro-nutrients are included. Next, it is important that routine substrate and tissue tests be conducted to monitor substrate pH as well as nutrient availability and balance. Finally, the grower must freely shift from one fertilizer to another to hold substrate pH and nutrient balance within the prescribed ranges for their crops. It is best to use the concentration of nitrogen for controlling the rate of crop growth while regulating the levels of all other nutrients simply to keep them in balance with nitrogen.

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OFA

Table 1. Potential acidity and basicity ratings for 11 nutrient sources that could be used in greenhouse fertilization programs.¹

Source	Potential Acidity ²	Potential Basicity ³
Ammonium sulfate	2,200	
Urea	1,680	
Diammonium phosphate	1,400	
Ammonium nitrate	1,220	
Monoammonium phosphate	1,120	
Superphosphate	0	0
Potassium chloride	0	0
Potassium sulfate	0	0
Calcium nitrate		400
Potassium nitrate		520
Sodium nitrate		580

¹From Mortvedt and Sine (1994).

²Pounds of calcium carbonate limestone required to neutralize the acidity caused by using 1 ton of the specified fertilizer (divide potential acidity or potential basicity values by 2 to convert to kg limestone per metric ton).

³Application of 1 ton of fertilizer has the effect of this many pounds of calcium carbonate limestone.

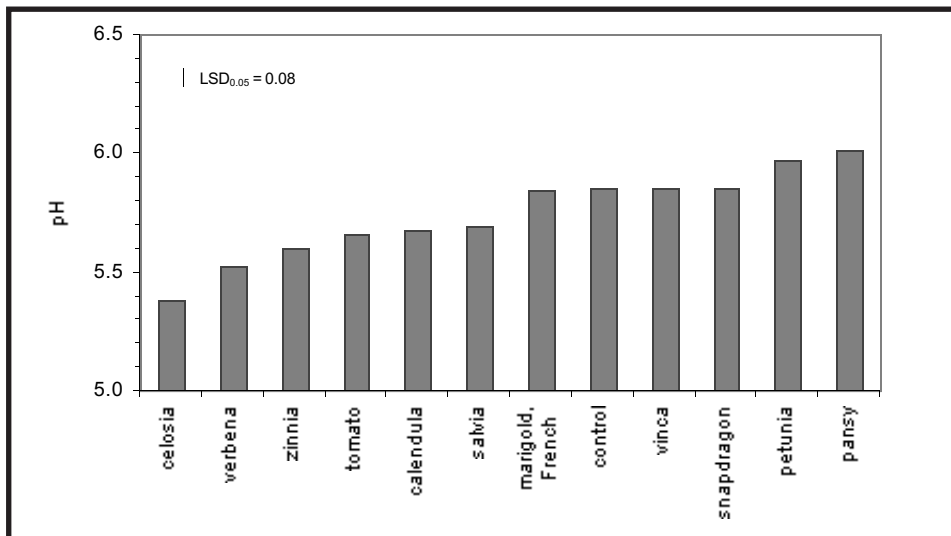


Figure 3. Impact of 11 bedding plant taxa plus a control without plants on pH of a peat moss:perlite substrate at the time of complete separation of cotyledons. Substrate was moistened with 20-10-20 fertilizer when seeds were sown (Huang, et al., 2001).

PERENNIAL PEST MANAGEMENT

Continued from page 1

congregate in large numbers on plants. Japanese beetle overwinters as pupae in the soil.

Hosts: Astilbe, aster, dahlia, daylily, digitalis, gaillardia, and paeonia.

Flea beetle adults are $\frac{1}{16}$ inch long and vary in color from black to blue depending on the particular species. They possess enlarged hind legs that allow them to jump off leaves when disturbed. The adults chew small multiple holes in leaves. Adult females lay eggs near the base of plants. Flea beetle larvae are located in the soil and feed on plant roots. The insect overwinters as an adult in weeds and plant debris.

Hosts: Oenothera, cabbage (ornamental), kale (ornamental), phlox, and helianthus.

Spotted cucumber beetle adults are $\frac{1}{8}$ inch long, yellow-green with a small black head. There are 12 black dots on the body (abdomen). The adults chew holes in plant leaves and flowers. They commonly feed on pollen, causing no damage. Adults overwinter in plant debris.

Hosts: Dahlia, chrysanthemum, daylily, and coreopsis.

Blister beetle adults are $\frac{3}{8}$ inch long, elongated, and vary in color from black, brown, gray, to blue, with or without stripes. They have a characteristic constricted neck. The adults feed on flowers and leaves. Blister beetle overwinters as larvae.

Hosts: Phlox, veronica, and chrysanthemum.

Black vine weevil adults are $\frac{3}{8}$ inch long, black in color, and the body is covered with patches of fine yellow hairs (Figure 1). The adults have a short, snout-shaped mouth, which creates notches in plant leaves when they

feed (Figure 2). Black vine weevil adults cannot fly. They are primarily active at night and hide during the day in debris or under plant containers. Larvae are white grubs located in the soil.

Hosts: Asters, clematis, bergenia, heuchera, hosta, paeonia, phlox, and physotegia.

Fungus Gnats – Fungus gnat adults are black, winged, $\frac{1}{8}$ -inch long insects, with long legs and antennae. They are primarily located on the surface of the growing medium. The larvae are white, transparent, legless larvae that are approximately $\frac{1}{4}$ inch long. They have a distinct black head capsule. Larvae feed on plant roots and create wounds that allow secondary soilborne pathogens such as Pythium and Phytophthora to enter. The larvae may also tunnel into plant stems. Both the adults and larvae are capable of transmitting diseases.

Hosts: Hosta, heuchera, and chrysanthemum.

Sawflies – Sawfly larvae, which resemble caterpillars, are generally brightly colored (yellow, green, or red). Larvae normally feed in groups at night. The young larvae skeletonize leaves; however, as larvae get larger, they consume the entire leaf except the midvein. The adults are large, robust insects that resemble bees or wasps. Females lay eggs on the undersides of leaves.

Hosts: Chrysanthemum, dahlia, and coreopsis.

Caterpillars – Caterpillars, which are the larval stage of moths and butterflies, cause damage to perennials by feeding on leaves, whereas the adult moths feed on nectar and pollen. However, the adult females lay eggs that hatch into the plant-feeding

caterpillars. There is a wide range of caterpillars that feed on perennials, including beet armyworm, corn earworm, imported cabbage-worm, cabbage looper, red-banded leafroller, yellow woolly bear, saltmarsh, and variegated cutworm.

Hosts: Cabbage (ornamental), kale (ornamental), delphinium, chrysanthemum, dianthus, dahlia, daylily, salvia, verbena, penstemon, physostegia, phlox, and papaver.

Grasshoppers – Adults are 1 to 2 inches long. They vary from brown, red, yellow, to green. Grasshoppers have modified, long hind legs that are adapted for jumping. Adults are also strong fliers. Grasshopper feeding creates ragged holes in plant leaves. They prefer to feed during the day. The insect overwinters as eggs in soil.

Hosts: Echinacea, heuchera, phlox, and salvia.

Table 1. The major feeding behaviors of perennial pests and the primary pests associated with these feeding behaviors.

Chewers	
A. Slugs	
B. Beetles	
• Japanese Beetle	• Coreopsis Leaf Beetle
• Flea Beetle	• Blister Beetle
• Spotted Cucumber Beetle	• Black Vine Weevil
C. Grasshoppers	
D. Caterpillars	
• Cutworm	• Imported Cabbageworm
• Corn Earworm	• Cabbage Lopper
E. Fungus Gnats	
F. Sawflies	
Suckers	
A. Aphids	
B. Mites	
• Two-Spotted Spider Mite	
• Cyclamen Mite	
• Broad Mite	
C. Thrips	
D. Leafhoppers	
E. Whiteflies	
F. Mealybugs (aboveground and root)	
G. Spittlebugs	
H. Plant Bugs	
• Four-Lined Plant Bug	
• Tarnished Plant Bug	
• Lace Bug	
Miners	
A. Leafminers (i.e. columbine and verbena)	
B. Foliar Nematodes	
Borers	
A. Iris Borer	
B. European Corn Borer	

SUCKERS

Aphids – Aphids are soft-bodied, 1/6 to 1/2-inch long, pear-shaped insects with two tubes (cornicles) projecting from their back. Color varies, depending on the host plant fed upon, from brown, green, red, yellow, orange, or black. Aphids produce honeydew (clear sticky liquid) during feeding

that attracts ants and serves as a growing medium for black sooty mold fungi. Aphids feeding on perennials outdoors are susceptible to many natural enemies including parasitic wasps, ladybird beetles, green lacewings, and syrphid (hover) flies. Green peach, melon, and foxglove aphids are among the many different

types of aphids that attack perennials.

Hosts: Paeonia, aquilegia, delphinium, digitalis, iris, penstemon, rudbeckia, papaver, sedum, echinops, verbena, chrysanthemum, dahlia, dianthus, gaillardia, day-lily, aster, veronica, oenothera, monarda, and coreopsis.

Plant Bugs – The four-lined plant bug is slender and 1/4 inch long (Figure 3). The young nymphs are red-orange with black spots on the thorax, and the adults are greenish-yellow with four black lines running down the back (hence the common name). They have piercing-sucking mouthparts, and their feeding creates small brown spots in leaves that eventually coalesce. Both the nymphs and adults move very rapidly when disturbed. The four-lined plant bug overwinters as an egg.

Hosts: Chrysanthemum, phlox, and veronica.

Tarnished plant bug is 1/4 inch long and oval shaped. They are mottled brown in color with tiny yellow, brown, red, or black markings on the body. There is a black triangle at the front of the abdomen. They have piercing-sucking mouthparts. Tarnished plant bug overwinters as an adult.

Hosts: Chrysanthemum, gaillardia, echinops, heuchera, dahlia, rudbeckia, lavandula, paeonia, coreopsis, geranium, scabiosa, phlox, verbena, helianthus, and sedum.

Lacebugs are approximately 1/8 inch long, flat, and white, with transparent lace-like wings (Figure 4, page 16). The nymphs are black and they possess spines that cover the entire body. Lacebugs have piercing-sucking mouthparts and their feeding causes stippling of leaves. All life stages (eggs, nymphs, and adults) are located on leaf undersides. In addition,

black fecal droplets may be found on the underside of leaves.

Hosts: Aster, chrysanthemum, and verbena.

Leafhoppers – Leafhoppers are small, slender, wedge-shaped insects approximately 1/2 inch long. They are typically light green in color. The wings are held roof-like over the body. Their feeding causes stippling of plant leaves. Adults and nymphs are active and move quickly when disturbed. The primary leafhoppers that feed on perennials are aster and potato leafhopper.

Hosts: Aster, dahlia, gaillardia, centaurea, phlox, papaver, rudbeckia, scabiosa, coreopsis, echinacea, heuchera, salvia, and dianthus.

Spittlebugs – Adult spittlebugs, often called froghoppers, are yellow, brown, or black in color. The nymphs produce a frothy white mass or “spittle” in the center of stems and leaf axils. This protects them from predators and environmental conditions. The main perennial feeding species is the meadow spittlebug. Spittlebugs don’t cause much plant damage; they are more of an aesthetic concern.

Hosts: Aster, coreopsis, dahlia, gaillardia, centaurea, phlox, papaver, rudbeckia, scabiosa, achillea, echinacea, penstemon, and dianthus.

Mealybugs – Mealybugs are orange-pink in color when young, and white as mature adults. They are approximately 1/8 inch long, and primarily feed in leaf and stem axils and along the veins of leaves. Mealybugs produce honeydew, which attracts ants and provides an ideal growing medium for black sooty mold fungi. They can be a problem on perennials grown both inside and outside greenhouses. Root mealybugs are difficult to



Figure 1. Black vine weevil adult can be seen feeding at night, or found in debris around plants during the day.



Figure 2. Notching of leaf margins that is characteristic of black vine weevil adult feeding.



Figure 3. Four-lined plant bug.

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PERENNIAL PEST MANAGEMENT

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control because they are hard to reach with pest control materials.

Hosts: Aquilegia, papaver, chrysanthemum, heuchera, digitalis, helianthus, salvia, and verbena.

Thrips – Thrips are very small (less than 1/16 inch long), slender insects with hairy wings. Thrips are easily moved around on air currents. They feed on both leaves and flowers. Thrips feeding results in a characteristic “silvering” of plant leaves or flowers. There are many species of thrips that feed on perennials including onion, greenhouse, western flower, flower, and gladiolus thrips. In addition to the direct injury they cause, thrips are also capable of transmitting viruses to perennials.

Hosts: Dahlia, dianthus, campanula, digitalis, gaillardia, paeonia, verbena, chrysanthemum, daylily, delphinium, hollyhock, and lupine.

Whiteflies – Whiteflies are 1/16-inch long insects with two pairs of wings covered with white wax. They remove plant fluids with their piercing-sucking mouthparts. As a result, whiteflies are capable of producing large quantities of honeydew. Whitefly eggs

are located on leaf undersides. The whitefly species that feed on perennials include greenhouse and silver-leaf whiteflies. Whiteflies can easily move into greenhouses from weeds located outside.

Hosts: Hibiscus, lupines, salvia, verbena, chrysanthemum, heuchera, monarda, penstemon, veronica, lantana, echinacea, aster, boltonia, coreopsis, and rudbeckia.

Mites – Twospotted spider mite adults are oval, approximately 1/16 inch long, and vary in color from greenish-yellow to reddish-orange. They are marked with two black spots on the back. Twospotted spider mite feeds on leaf undersides. Their feeding causes leaf stippling. In addition, leaves may appear yellow to bronze, especially under high mite populations. Some webbing may also be evident with severe infestations (Figure 5). Twospotted spider mite may also cause flowers to be discolored or faded. Adult females can lay up to 100 eggs on leaf undersides. Twospotted spider mite prefers hot, dry conditions.

Hosts: Daylily, shasta daisy, platycodon, salvia, buddleia, penstemon, clematis, monarda, aquilegia, dahlia, delphinium, gaillardia,

rudbeckia, phlox, verbena, and chrysanthemum.

Cyclamen mite cannot be seen with the naked eye, as the adults are 1/100 inch long. They are oval or elongated in shape, and white or amber in color. Similar to twospotted spider mite, cyclamen mite females can lay up to 100 eggs. Feeding by cyclamen mite causes leaf curling, twisting, distortion, and leaves may become brittle. In addition, cyclamen mite feeding may prevent perennials from flowering.

Hosts: Delphinium, dahlia, chrysanthemum, and verbena.

Broad mite resembles cyclamen mite in size and appearance. They feed on young, tender growth. Broad mite feeding causes puckering and distortion of new growth. New leaves may appear shiny and brittle. High populations of broad mites may stunt plants.

Hosts: Chrysanthemum, dahlia, and veronica.

MINERS

Leafminer larvae feed within plant leaves, creating winding (serpentine) tunnels or blotches (Figure 6). The larvae fill the tunnels with black fecal material (frass). They pupate in the soil. Adults resemble houseflies and are black with yellow bands or spots.

Hosts: Aquilegia, chrysanthemum, dahlia, salvia, verbena, delphinium, heuchera, and gypsophila.

Foliar nematodes are extremely tiny (0.02 to 0.03 inches long), colorless roundworms. They require a film of moisture to move around. The nematodes feed on new growth and leaf tissues causing plant stunting, leaf twisting, curling, and spotting. Foliar nematodes enter leaf tissue through the stomates, feeding within the spongy mesophyll. They spend most of the growing season in leaves. The nematodes are unable to move across main leaf veins while inside the leaf, which results in affected areas clearly bounded by veins. They create blotched (similar to blights) areas on leaves. Foliar nematodes overwinter on debris and in the crown or buds of plants.

Hosts: Paeonia, chrysanthemum, heuchera, hosta, iris, papaver, and phlox.

BORERS

Iris borer larvae or caterpillars feed on leaf surfaces and then bore into leaves a few inches above the ground. They then create large tunnels in the rhizome. The mature larvae are fat, smooth, approximately 1 1/2 inches long, and pink with black spots on the side. Iris borer feeding injury



Figure 4. Lace bug – note typical ornate pattern of the wings.



Figure 5. Leaf stippling, bronzing, and webbing are indicative of heavy spider mite feeding.

provides an entry site for the soft rot bacteria, *Erwinia carotovora*. The adult is a night flying moth that has dark purple forewings and yellow-brown hind wings.

Host: Iris.

European corn borer larvae (caterpillar) are 1 inch long, gray to pink in color with a black head. Dark spots are present on each abdominal segment. The caterpillars initially chew on leaves and then tunnel into plant stems. Adults are yellowish-brown with dark bands on the wings. They are primarily active at night.

Hosts: Dahlia, aster, veronica, shasta daisy, and chrysanthemum.

MANAGEMENT OF PERENNIAL PESTS

Managing perennial pests involves implementing cultural, chemical, and/or biological control strategies. The best approach is to use a combination of the following strategies.

Cultural Control

- Remove weeds and plant debris such as leaf litter from inside and outside greenhouses. These provide sites for pests to use for survival or for overwintering (outdoors), and then they can move onto the main crop. Weeds serve as a source of viruses, which can be transmitted by thrips and

other insects and they provide a refuge for whiteflies, aphids, beetles, plant bugs, leafminers, thrips, and spider mites. Existing weeds may be killed using a postemergent herbicide, or they can simply be removed by hand. Pre-emergent herbicides (prior to weed emergence) may be used outside the greenhouse to prevent weeds from emerging and thus reduce the potential for insects to colonize weeds and then move into greenhouses. Be sure to read the label before applying any herbicide.

- Maintain plant health, because perennials that are properly watered and fertilized are able to tolerate some pests without showing injury. Don't overwater perennials, because this may increase problems with fungus gnats and/or shoreflies. Use a well-drained growing medium. Avoid overfertilizing perennials, especially with nitrogen because this can increase susceptibility to such pests as aphids and spider mites. Overfertilization also stimulates insect and mite development and reproduction.

- Always use clean (new) growing medium and new containers. Dispose of old stock plants since these are a source of insects, mites, nematodes, and diseases.

- Grow perennial cultivars that are tolerant of certain



pests. If possible, avoid growing cultivars that are highly susceptible to a wide range of pests.

- Monitor or inspect perennials regularly, both aboveground and belowground plant parts, to detect pest populations early.

Chemical Control

Following are the major perennial plant-feeding pests and several pest control materials recommended for use. The active ingredient or common name is listed, followed by the trade name in parentheses.

Slugs

1. Metaldehyde (Deadline)
2. Iron phosphate (Sluggo)
3. Methiocarb (Mesurol)

Beetles

1. Carbaryl (Sevin): Outdoor use only
2. Cyfluthrin (Tempo): Outdoor use only
3. Bifenthrin (Talstar)
4. Imidacloprid (Marathon II)
5. Cyfluthrin (Decathlon)
6. Lambda-cyhalothrin (Scimitar)
7. Rotenone

Caterpillars

1. *Bacillus thuringiensis kurstaki* (Dipel, Thuricide)
2. Tebufenozide (Confirm)
3. Spinosad (Conserve)
4. Azadirachtin (Azatin/Ornazin)
5. Cyfluthrin (Decathlon)
6. Bifenthrin (Talstar)
7. Permethrin (Astro)

Fungus gnats

1. Diflubenzuron (Adept)
2. Pyriproxyfen (Distance)
3. Cyromazine (Citation)
4. Chlorpyrifos (Duraguard)

Aphids and Whiteflies

1. Imidacloprid (Marathon)
2. Pymetrozine (Endeavor)
3. Potassium salts of fatty acids (Insecticidal Soap)

4. Acephate (Orthene)
5. Paraffinic oil (Ultrafine Oil)
6. Bifenthrin (Talstar)

Spider Mites

1. Bifenazate (Floramite)
2. Abamectin (Avid)
3. Hexythiazox (Hexygon)
4. Clofentezine (Ovation)
5. Chlorfenapyr (Pylon): Inside use only
6. Fenpyroximate (Akari): Inside use only
7. Pyridaben (Sanmite)
8. Paraffinic oil (Ultrafine Oil)

Broad Mites

1. Bifenthrin (Talstar)
2. Chlorfenapyr (Pylon)
3. Pyridaben (Sanmite)
4. Abamectin (Avid)

Cyclamen Mites

1. Chlorfenapyr (Pylon)
2. Dicofol (Keltthane)
3. Endosulfan (Thiodan)
4. Abamectin (Avid)

Thrips

1. Spinosad (Conserve)
2. Methiocarb (Mesurol)
3. Abamectin (Avid)
4. Acephate (Orthene)
5. Fluvalinate (Mavrik)

Mealybugs

1. Potassium salts of fatty acids (Insecticidal Soap): Aboveground
2. Paraffinic oil (Ultrafine Oil): Aboveground
3. Imidacloprid (Marathon): Aboveground
4. Acephate (Pinpoint/Orthene): Belowground
5. Kinoprene (Enstar II): Aboveground

Leafminers

1. Abamectin (Avid)
2. Spinosad (Conserve)
3. Cyromazine (Citation)

Plant Bugs

1. Acephate (Orthene)
2. Bifenthrin (Talstar)
3. Cyfluthrin (Decathlon)
4. Potassium salts of fatty acids (Insecticidal Soap)
5. Pyrethrins + Rotenone (Pyrellin)

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Figure 6. Leafminer injury quickly destroys the aesthetic value of leaf and plant.

PERENNIAL PEST MANAGEMENT

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Leafhoppers

1. Cyfluthrin (Decathlon)
2. Potassium salts of fatty acids (Insecticidal Soap)

Grasshoppers

1. Potassium salts of fatty acids (Insecticidal Soap)

Foliar Nematodes

1. Chlorfenapyr (Pylon)

Biological Control

Biological control involves the use of living organisms (natural enemies) such as parasitic wasps (parasitoids), predators, and pathogens to manage perennial pests in greenhouses or outdoors. A parasitoid inserts its eggs into an insect, the eggs hatch into young larvae that consume the insect's internal contents, and then mature into adults that eat a hole in the dead insect and fly away. Parasitoids don't kill insects immediately, but they do reduce reproduction and fitness. Parasitoids are generally specific to the pest species and stage preferred for

attack. Predators consume portions of or eat the entire insect. They generally feed on all insect stages including eggs, young, and adults. Pathogens such as bacteria, fungi, and nematodes work very similar to parasitoids in that they use the insect or mite pest as a food source by eating the internal contents. Both parasitoids and pathogens are slower acting than predators.

It is important to release natural enemies early, before insect or mite populations are high, in order to obtain sufficient control. Release immediately upon arrival as biological control agents have a very short shelf life. In addition, check biological control agents prior to release to make sure they are alive.

For questions on the use of biological control, it is best to consult a biological control supplier beforehand. Commercially available

biological control agents or natural enemies for some of the plant-feeding perennial pests are listed below.

Common names or trade names are in parentheses.

Fungus gnats

Predators

1. *Hypoaspis miles*

Beneficial nematodes

1. *Steinernema feltiae* (Nemasys, Entonem, and Scanmask)

Mealybugs

Predators

1. *Cryptolaemus montrouzieri* (Mealybug Destroyer)
2. *Chrysoperla* spp. (Green Lacewing)

Parasitoids

1. *Leptomastix dactylopii*: Citrus mealybug

Whiteflies

Predators

1. *Delphastus pusillus*

Parasitoids

1. *Encarsia formosa*: Greenhouse whitefly
2. *Eretmocerus eremicus*: Silverleaf whitefly

Beneficial fungi

1. *Beauveria bassiana* (Botanigard/Naturalis)

Spider mites

Predators

1. *Phytoseiulus persimilis*

2. *Mesoseiulus* (=Phytoseiulus) *longipes*
3. *Neoseiulus* (=Amblyseius) *californicus*
4. *Amblyseius* (=Neoseiulus) *fallacis*
5. *Feltiella acarisuga*

Thrips

Predators

1. *Amblyseius* (=Neoseiulus) *cucumeris*
2. *Amblyseius* (=Iphiseius) *degenerans*
3. *Hypoaspis miles*
4. *Orius insidiosus*

Beneficial fungi

1. *Beauveria bassiana* (Botanigard/Naturalis)

Aphids

Predators

1. *Chrysoperla* spp. (Green Lacewing)
2. *Aphidoletes aphidimyza*

Parasitoids

1. *Aphidius colemani*
2. *Aphidius matricariae*
3. *Aphidius ervi*

Beneficial fungi

1. *Beauveria bassiana* (Botanigard/Naturalis)

Caterpillars

Parasitoids

1. *Trichogramma* spp.

Black vine weevil

Beneficial nematodes

1. *Heterorhabditis bacteriophora*

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MAGIC: CUSTOMER SERVICE MAKES MONEY (PART II)

Bill McCurry
McCurry Associates
 301 N Harrison St., Suite 677
 Princeton, NJ 08540
 800-553-1332
 Fax: 609-688-1192
 williammcc@aol.com

Editor's Note: Bill McCurry presented a session at the 2002 Short Course called "Good Shop/Bad Shop – The Art of Customer Service." McCurry and Gary Hudson, Hudson Associates, collaborated on research for the presentation. The following is Part II of a series of articles based on their research findings.

"We get excited by coming to the Short Course, and we take that back to our customers and employees. Every trip we've made to Columbus has been valuable – and we've made money from what we've learned. We know what should be done; it's learning how to do it that's priceless. Learning from what others are doing makes it easier to implement."

Van Cooley, Malmberg's of Brooklyn Center, Minnesota

"How much do you want to spend?" It's the most common phrase florists say today – and it's the most effective tool for killing customer satisfaction and profits. No customer ever approaches a merchant with the goal of spending money. They are looking to achieve a result that justifies their expenditure. When we focus the customer's attention on price instead of product, we distract them from their original goal.

As you've heard us say at the OFA Short Course, in order to best serve customers and to best reward the florist, we must keep everyone in the transaction focused on WIIFM? (What's In It For Me?). Customers use WIIFM? to convey a message, make a statement, or express a sentiment through the florist's product.

"You have to set the table for the customer's expectations," said John Herb of Jack Herb Florist in Cincinnati. "You can only do that by proper listening."

Customers aren't buying flowers; they are buying the ability to "reach out and touch someone." In researching industry trends for the 2002 OFA Short Course session called "Good

Shop/Bad Shop – The Art of Customer Service”, we interviewed a florist who bluntly stated, “I’m not in the damn balloon business; I only sell flowers.” Here’s a poster child for “Unclear on the Concept.” Had this florist been attuned to his customers’ needs, he would realize that many customers – as well as recipients – see balloons as adding fun, excitement, and novelty to the message. Wise florists have diversified, offering gift items with their flowers. These range from simple theme containers for the arrangements all the way to food, desserts, or toys.

If the question “How much do you want to spend?” is ever asked, it’s a sign the florist is new and untrained, or tired and in a hurry. Florists new to the industry think that asking the money question will help close the sale more quickly and efficiently. Usually the reverse is true. Setting a limit in the customer’s mind curtails our ability to create a design that will truly capture what the customer desires.

Recommendation: Never ask the how much question. Let’s “listen in” on a real conversation with a florist who maximizes the customers’ desires.

Customer (on phone): Can you deliver flowers to a hospital if all I have is the hospital name and street, but not the exact address? (Note: This may be a sign the customer isn’t real familiar with ordering flowers.)

Florist: Certainly, we deliver to every hospital in the area. Which hospital is it? (Normally you would ask for delivery instructions later in the sales process. The wise florist asks it now since she knows the customer will be able to answer. Being able to positively answer a question gives the customer confidence. Confident customers buy more and are more pleased with their selections.)

Customer: The maternity ward at Southside Hospital.

Florist: Someone had a baby, how thoughtful of you. (Always reinforce the customer’s decision.)

Customer: My wife.

Florist: Congratulations! Boy or girl?

Customer: A girl.

Florist: Wonderful. What’s her name?

Customer: Samantha Kate.

Florist: Oh, I like that name. Is this your first?

Customer: Sure is.

(Now you might be thinking, “get to the point!” In fact, this conversation will lead us to the point – what the customer wishes to accomplish – and the depth of the message the customer wishes to convey. Follow how this process works.)

Florist: You must be very excited.

Customer: I sure am! She was just born. I’ve sneaked off to call you. I wanted to get flowers here right away. How soon can you deliver?

Florist: This really is a good day for you. You called early enough so we can have them on the morning delivery. Any idea what you want to send, or would you like some suggestions?

Customer: I have no idea, but I want something my wife will remember, something that will definitely let her know I was thinking of her. She’ll probably be going home tomorrow.

Florist: Well, we have what we call our Very Proud New Daddy Package – it’s a very large arrangement including six Mylar balloons with a new baby theme, a stuffed teddy bear for Samantha Kate (notice how the florist personalized the order based on what she knew), plus a dozen chocolate chip cookies baked fresh this morning for Mom and her visitors. The arrangement is in a baby carriage vase that’s designed for you to take home and have on the table when all the relatives come over to see Samantha Kate. Its size will surprise your wife in the hospital and brighten your home when she returns.



Customer: Dare I ask what that would cost? It sounds like a lot.

Florist: It’s a good value when you consider everything you get. It’s one package that saves you several trips to buy these things. The spectacularly vivid floral arrangement comes complete with the colorful balloons, a dozen fresh baked chocolate chip cookies, the cuddly teddy bear, and a precious baby carriage vase all for only \$149.90 – and that includes the delivery. (Notice we haven’t mentioned the type of flowers or their color – this customer is looking for impact.)

Customer: Not as much as I thought for all that, let’s do it.

Florist: I need your wife’s name... (He then proceeds to complete the paperwork including getting the man’s e-mail address, so 51 weeks later the florist can send him a private e-mail suggesting he send flowers to his wife to celebrate the anniversary of Samantha Kate’s birth.)

Not every new dad will be in a position to spend \$150. It’s a sure thing that this father wouldn’t have done it if the florist asked the sales killer question “How much do you want to spend?” By focusing on the new father’s desires, the florist was able to fulfill his needs and make a nice sale at the same time.

If we look at the process our wise florist went through, we see how easy it would have been to fulfill the customer’s needs by reducing the offering. Had the customer said, “Hey, I have a new mouth to feed, I can’t afford that much,” the florist could have pulled off the balloons and reduced the price. If that’s still too much, we can delete the cookies and quote a lower price. There’s also the possibility of leaving off the cuddly teddy bear and reducing the price again. There’s the option to downsize the quality of the container or even reduce the size of the arrangement. What this florist did was present the options to the customer in one package and let the customer guide the conversation. By starting at what the florist thinks is the best option, it allows the conversation to go where the customer is comfortable.

As we stressed at the Short Course, the best way to increase the amount of the sale is to be quiet and listen to what the customer is saying. Let the buyer show you how best to direct the transaction. It works! John Herb reported, “Helping our sales team understand the importance of listening is critical. This year we took four staff members to the OFA Short Course. It was fantastic. They got a lot from the customer service sessions because it repeated the lessons I’ve tried to teach them. The key to learning is repetition, repetition, repetition! At the Short Course, my staff got to hear it from experts rather than from the same boss they hear every day. It made a huge difference for us.”

How to build your customers into repeat customers and get profitable referrals is the topic for the next article by Bill McCurry. Watch for it in an upcoming edition of the *OFA Bulletin*. **OFA**

You can order an audiotope of Bill McCurry’s “Good Shop/Bad Shop – The Art of Customer Service” from the 2002 OFA Short Course by calling 800-347-2902 or e-mailing info@mac-av.com. Please ask for tape #120. With your OFA member discount, your investment is only \$8.75 plus \$2 shipping.

Artificial Plants: Threat or Opportunity?

Monica Desch Garrison
*Rentokil --Tropical Plant
Services*
6300 Commerce Center Dr.,
Suite G
Groveport, OH 43125
614-837-0099
Fax: 614-837-3238
mdeschgarrison
@rentokil-tps.com

Artificial, plastic, silk, permanent, replica, fake. These are all words used to describe those plants we find almost everywhere we go, including restaurants, doctors' offices, and your own home. As an interior plantscaper, I have always been an advocate of using live plants first; but if live will not work in the space I am designing, the logical choice would be to use the artificial plants. But therein lies the dilemma for many of us. If we are going to use artificial plants, we want to find the ones that look real!

Let's first take a quick look at the artificial industry, how it has evolved, what the trends are (and how they are helping our choices), and a quick case history of how artificial plants can become a very important part of your sales mix – a definite opportunity.

Artificial plants have been used for many years. After searching the Internet, I found a mention of "silk plants" in a 1939 article about top Chinese businesses. What transpired since has resulted in artificial plants on the market today looking and even feeling so life-like that even experienced "plant people" cannot tell the difference if we are not looking closely. Over the last 20

years, artificial plants have improved in several ways to help the interior plantscaper provide the end user with a good product.

One of the best changes has been in the construction of the artificial plants. Many of the quality artificials are made with "one-piece construction," meaning that the leaf and the stem are all one piece. This results in a much sturdier plant, one that will not fall apart when bumped. Another important factor in using artificial plants, and very important to clients, is that they be fire-retardant. Many building codes require this. The artificial industry has responded to this need, and many manufacturers offer this service, usually as an extra charge. You can also fire-retard the artificial plants yourself by either dipping or spraying with the approved fire-retardant solution.

Another improvement in artificial plants is in the "wiring" of the leaves and the branches. This enables our designers to manipulate the artificial plants to achieve the best possible life-like look. Another of the best improvements in the artificials has been the fabric and colors we now find in use. The artificial plants are not silk, but a poly-silk combination that has improved the color and durability of the plants. Many artificials have become "everlasting" with proper care (another opportunity).

Finally, in the past five years, the industry has responded with a wide array of varieties that closely

match what interiorscapers traditionally use in live plants. It is almost to the point that you can respond to a specification of a live plant job with identical artificial plants. There are that many choices!

Knowing all of this information is great. However, one of the challenges you will encounter when you have decided that artificial is the way to satisfy your client will be the search to find what you want. There are literally hundreds of suppliers and manufacturers of artificial plants, and the quality varies widely. To become adept at getting what you want, a lot of research and establishing relationships with a few quality vendors will go a long way to making sure you get what your customer expects. Beware that nearly 100 percent of these products are manufactured in the Far East, so availability of items can be questionable if you are using large quantities. It takes time to produce and ship overseas. One frustration I've had has been finding a nice spath or pothos, only to have the manufacturer discontinue that item, forcing us to find a substitution.

Let me tell you a brief story illustrating the opportunity I see for artificials. We have a client that has a number of retail outlets throughout the country. We were fortunate enough to get the contract to decorate all of the outlets with live plants. As you can imagine, the light was poor, and against our better judgment, they insisted on using live plants. They also contracted

for a guaranteed maintenance program. We had a battle on our hands, with many strikes against us from the start. Within six months, our client started talking with us about replacing live plants with artificials. Our client finally saw that live plants were not adaptable to the environment. Because we have established great working relationships with many artificial suppliers over the years, the task to help our clients was made a bit easier.

After a few months working with several suppliers, we were able to get artificial plants that closely resembled the live plants we had originally tried to use. We were able to accommodate our client because we knew what the opportunities could be. The client was thrilled, and the plants look great all the time. We are now in the process of working with the client to sell the company a regular cleaning contract (that other opportunity) so we can get some of the monthly revenue back that we lost when the artificial plants were installed.

In summary, live plants will and should always be the first choice when given the opportunity to enhance your clients' space. The benefits of the live plants cannot be ignored. However, artificial plants do have a number of benefits. And in these challenging environments and these hard economic times, you must allow yourself to look at those opportunities that present themselves, do your homework, and then go for something different. **OFA**

ACADEMIC UPDATE: THE UNIVERSITY OF GEORGIA

Paul A. Thomas
University of Georgia
 215 Hoke Smith Building
 Athens, GA 30602
 706-542-2340
 Fax: 706-542-2375
 pathomas@arches.uga.edu

In keeping with a tradition of brandishing new ideas, the OFA staff has decided to ask universities to update its faithful *Bulletin* readers on what's going on at their particular institution. My goal today is to give you a reasonable idea what we are up to here in Georgia. I've tried not to make this a blustery technical parade of graphs and tables, rather more like a simple program review.

I'll start with the senior floriculture team member, Allan Armitage, who spends most of his time writing best-seller books and giving keynote speeches around the country. However, when he is not "lolling about," he manages to teach the second semester of greenhouse management and annual and perennial identification classes, and carry out some interesting research projects and outreach programs.

ENVIRONMENTAL PHYSIOLOGY OF GREENHOUSE CROPS

Armitage has recently redirected a greater proportion of his research efforts toward looking at problems with new crops. Currently, he is looking at production schedules based on photoperiod, temperature, and light for *Hydrangea macrophylla* 'PennyMac,' a new generation hydrangea that blooms on new wood; ruellia 'Ragin Cajun,' a compact form of the red ruellia; and acmella, a new crop useful medicinally and ornamentally. There are several dozen new crops that will be scrutinized by Allan and his team over time, and you can expect to see the results published by ASHS and *Greenhouse Grower* magazine.

NEW CROP INTRODUCTION PROGRAM

This of course, is what most of you know is Allan's forte. The University of Georgia (UGA) new crop introduction program is one of the largest in the United States. It incorporates the campus greenhouses and the Horticulture Gardens, and quite a few staff dedicated to determining if a new selection has potential for introduction. Plants are first propagated, then grown out for potential greenhouse problems. If they pass that test, then they are placed in the Horticulture Gardens for at least two years.

Plants which are then deemed worthy of introduction follow two paths: 1) They are given to interested growers directly. Armitage continues to promote new plants to the general industry – the latest being aster 'English Countryside' (a real knockout!) and saxifraga 'Athens.' These are available to growers by contacting Armitage. 2) Some plants are selected for a program of virus indexing, tissue culture, and stock plant maintenance. Armitage was approached to recommend unusual and new crops to a marketing group called Athens Select™. Those plants which Armitage recommends and the marketing group approves are multiplied and sold. The commercial members of Athens Select™ purchase unrooted cuttings for sale to interested finishers. A small percentage of the cost is returned to UGA to support Armitage's research program.

Of course, the entire program depends on a steady source of new plants. To find new crops, Dr. Armitage works with colleagues, gardeners, breeders, and dozens of overseas contacts to obtain

new candidates for the program.

USING PHOTOSYNTHESIS/CO₂ TO EVALUATE FERTILITY REGIMES

Marc van Iersel's research is focused in the areas of plant nutrition and physiology. This research has included the development of fertilizer guidelines for about 20 different bedding plant species, and how fertility programs should be adjusted based on the weather conditions. According to van Iersel, growers should monitor the EC of the growing medium, instead of trying to match fertilizer concentrations to the ever-changing environmental conditions. As a rule of thumb, the growing media of slow-growing plants should be between 1 and 2 mS/cm, while fast-growing plants prefer a somewhat higher EC (1.5 to 3 mS/cm, determined with the pour-through method). In his physiological research, van Iersel has found the fertilizer effects on growth often are not directly related to nutrient deficiencies or toxicities. Instead, high fertilizer concentrations may inhibit the leaf elongation, which in turn slows down growth. In addition, applying high fertilizer concentrations may result in plants with healthy looking tops, but very small root systems. These plants are unlikely to do well after they are transplanted into the landscape.

Conversely, applying low fertilizer concentrations will result in plants that put all their energy into making large root systems, while the growth of the top of the plants is slowed down. Maintaining the growing medium EC within the recommended range will assure that there is a healthy balance between the growth of the roots and tops.

CALCIUM CRYSTALS IN PLANTS AND THEIR ROLE IN CALCIUM METABOLISM AND NUTRITION

Pennisi is also looking at an interesting aspect of plant anatomy. Calcium oxalate crystals are abundant in higher plants such as dieffenbachias. Current research suggests that they are not an end-product of metabolism, as previously believed. Unlike in animals and humans, calcium oxalate crystals in plants are non-pathological and are used to store calcium ions, to be used when the plant is under Ca stress. Some plant species store much higher crystal quantities than others, and there is evidence that the former types are able to postpone deficiency symptoms when under calcium stress.

Evidence has shown that plants use acidic proteins to control crystal growth and modify crystal morphology, thereby creating biomineral substances with unique properties. The goals of this research are to elucidate the pathways of crystal deposition and develop guidelines for calcium nutrition of crops that are sensitive to low rhizospheric calcium (e.g. poinsettia), using internal calcium reserves.

EVALUATING THE LANDSCAPE PERFORMANCE OF FOLIAGE PLANTS FOR SHADE GARDENS IN SOUTHEASTERN GEORGIA

Pennisi and Thomas have undertaken a project designed to evaluate foliage plants as potential shade-tolerant and perhaps cold-tolerant outdoor landscape materials at the UGA Coastal Gardens. The Foliage Trial Garden was planted in April 2002; it contains 30 foliage plant taxa. Plant availability and selection for shade gardening is not currently extensive, and growers and landscapers are always searching for new materials.

Many new foliage plant introductions with improved cold tolerance have been successfully used in the landscape, notably in Florida. Foliage plants are uniquely suited to thrive in low light,

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ACADEMIC UPDATE: THE UNIVERSITY OF GEORGIA

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hot and humid environments where few flowering plants do well. Their multicolored, bold foliage, with interesting textures and shapes, can have a tremendous impact under deep tree shade.

SOAKING TOMATO SEEDS IN UNICONAZOLE OR WATER REDUCES SEEDLING GROWTH

The objective of this study (by Paul Thomas and Stephanie Burnett, Thomas' graduate student) was to determine if soaking in any solution resulted in reduced growth. Seeds of *Lycopersicon esculentum* 'Better Boy' were soaked in aerated solutions of 0, 150, or 300 mg/ml uniconazole for 10, 20, or 30 hours. In this study, concentrations of uniconazole soaking solutions did not significantly affect plant height over that of a water-only control.

Seeds soaked for increasing durations in all concentrations of uniconazole (including the 0 mg/ml control) resulted in linearly decreased growth at two, four, or six weeks after treatment. In other words, soaking in water alone caused height control in tomatoes for more than four weeks in the seedling stage. Soaking seeds for longer periods in uniconazole resulted in no germination, suggesting that once seeds imbibe the triazole, suggested rates of PGR for seed soaking may be fatal.

JUST A FEW EXTENSION PROGRAMS

There have been a great many changes in the Extension program at UGA. Bodie Pennisi is now taking the leadership role in Extension programming at UGA, and Paul Thomas has been assigned increased teaching responsibilities, including the first semester of greenhouse management, a class in tropical plant identification, and a very popular class in interiorscape management. Thomas will also be teaching a new graduate level class in carbohydrate biosynthesis, metabolism, and management in seeds.

WATER AUDITS – EVALUATING GREENHOUSE WATER USAGE AND CONSERVATION (THOMAS)

With water use regulations and restrictions common, and new water use legislation being drafted in almost every state in the United States, it is essential that growers know how much

water they use and how to better manage it. Another important issue is how the cost of improved water management will affect grower profitability. The UGA floriculture Extension team (Thomas, Stegelin, Pennisi, and Seymore) has developed a greenhouse water audit process and are nearing completion of a bulletin that will walk a grower through the process and the interpretation without the need for professional assistance. We have accomplished one case study for the economics of drip irrigation and are planning more. We are implementing a rather extensive study of actual growers' water use over the next two years. As you may have read in the trade magazines, growers who have taken the time to assess and implement water conservation are saving significant money via labor and resource conservation. We hope our study will quantify the potential savings and prioritize the water-saving techniques growers can implement based upon return on investment.

GETTING STARTED IN THE GREENHOUSE BUSINESS AND PLANT PROPAGATION SCHOOLS (PENNISI & THOMAS)

Our program offers training for people interested in starting their own business. The annual school, which was started in 1993, is offered in two locations in the state. Topics covered are: basic greenhouse management, irrigation and crop nutrition, cultural guidelines for major floricultural crops, integrated pest management, pesticide safety, business and employee management. Information on new crops and cultural techniques as well as new automated technologies in greenhouses also is included. One of the modules of the propagation school has participants learning basic techniques of plant propagation, basics of plant growth and development, rooting hormones, and misting systems. A new component of the next program is the industry tour, which will include stops at greenhouses, gardens, and garden centers in the Atlanta and Savannah areas.

Given the space limitations, I'll stop here. Of course we are involved in much more than that listed in this article. Other floriculture team efforts include participation in the Southeast Greenhouse Conference, facilitating the Georgia Flower Growers Strategic Planning Conference, publishing *Southeastern Floriculture* magazine and the GFGA Newsletter, and coordinating the Master Gardener training and county agent programs throughout the state. Georgia is still committed to helping growers with greenhouse production problems, and all four team members get out and assist as the budget and time permits.

OFA

OFA AND SNA PARTNER

OFA and the Southern Nursery Association (SNA) are partnering to develop a unique trade show and educational event for the retail and wholesale florist industry and for retail garden centers and landscape contractors in North America. FloralWorld™ and ColorWorld™ will be unveiled at SNA 2003... The World's Showcase of Horticulture® scheduled for July 31 to August 2, 2003, at the Georgia World Congress Center.

FloralWorld™, a new section of the SNA trade show, will feature nearly 21,000 square feet dedicated to retail florist products, symposium-style design shows, and workshops by the industry's best, and new product demonstrations including innovative concepts utilizing foliage and cut branches.

ColorWorld™, also a new section of the SNA trade show, will feature nearly 12,000 square feet dedicated to the finest floriculture products for the retail and landscape trade, exciting new plant displays, innovative design concepts for annuals and perennials, and new color use demonstrations, as well as educational sessions.

Garden centers and retail florists will also have access to AMERICASMART-Atlanta, America's number one wholesale market for gift, silk and seasonal merchandise, and home accents. Attendees will also get an inside look at what's happening in other segments of the industry.

For information about exhibiting or sponsorship, contact Melinda Howells at OFA (614-487-1117; mhowells@ofa.org).

Reflections

*John R. Holmes, CAE
OFA Executive Director*

In February 2003, I celebrated my first anniversary with OFA. Anniversaries are often times to reflect, and I'm no different than most in that regard. It has been a year of challenges; some rewarding and positive, some tragic and trying. Regardless of the challenge, the association, the staff, and I have all grown stronger, more resilient and more determined than ever to make OFA the undisputed national leader in educating the floriculture professional.

During the last 12 months, I have literally traveled the world visiting OFA members in dozens of greenhouses, garden centers, florist shops, and interior plantscape operations. No matter who, what, where, or when, everyone I've met has a true optimism and passion for floriculture.

I have also had the fortunate task of representing OFA with our partners: America in Bloom (AIB)

and the Floriculture Industry Research & Scholarship Trust (FIRST). Both AIB and FIRST are doing great work and making tremendous strides on behalf of the profession and our communities.

Internally, I have been assessing OFA's operations and allocations of time and talent. While OFA has enjoyed success, it was evident that we could be more efficient and effective. The best example of how OFA has reallocated time, talent, and resources is our 2003 budget.

Not only does the 2003 budget represent an estimate of our financial plans, but it's a 12-month snapshot of a strategic and deliberate plan to invest in OFA's infrastructure and future, something long overdue. Without the benefit of a large amount of new dollars, strategic reallocation of resources makes the following types of necessary investments possible:

- New methods of member communication



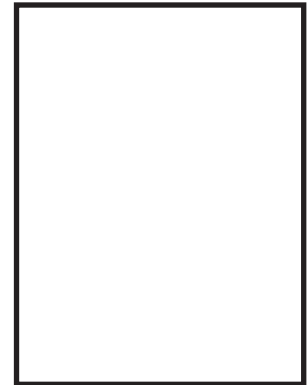
(website, e-mail, and electronic newsletters).

- Improved information technology so we can not only accomplish the above, but also process and access all types of data in useful and productive ways.

- OFA building improvements, in order to maintain this valuable asset and make the most of our current and future space needs.

- OFA staff, in order to preserve the experience and expertise necessary to not only maintain, but build on the value our customers expect.

Externally, the most visible accomplishments have been the adoption of a revised mission statement ("To support and promote floriculture professionals through lifelong learning, career enhancement, and public awareness.") and identity (OFA – an Association of Floriculture Professionals).



I suppose some will try to give me credit, or blame, for "changing" OFA. Frankly, I don't deserve either. OFA was primed to redefine itself with the leadership of a visionary Board and the support of a solid staff. If I've done anything, it has been to ask "why?" or "why not?" and give everyone permission to think creatively and substantially about their responses.

I am thankful to both of these groups, and you, for a year full of support and opportunity. **OFA**

Get into the Mix



**July 12-16, 2003
Columbus, Ohio**

OFA ANNOUNCES NEW BOOKSTORE AT SHORT COURSE

OFA is pleased to announce the addition of a new service for attendees of the 2003 OFA Short Course to be held July 12 to 16 in Columbus, Ohio. At the "OFA Bookstore – presented by Ball Publishing," Short Course attendees can purchase OFA publications, Ball Bookshelf reference books and production videos, and other florist, retailing, and gardening titles.

Short Course attendees will be able to purchase reference books and other publications from Saturday to Wednesday. Specific hours of operation will be listed in the Short Course program and posted in the Convention Center.

The Short Course program will be available in April. OFA members will receive a copy in the mail. You can also check out the program on the OFA website at: www.ofa.org.

P. ALLEN SMITH IS 2003 KEYNOTE SPEAKER

Gardening expert P. Allen Smith will be this year's keynote speaker.

Smith has become one of America's most recognized authorities on garden design. He regularly appears on The Weather Channel, the CBS *Early Show*, local newscasts, and his own nationally syndicated gardening show. Smith is also the contributing garden editor for *Woman's Day* magazine and an author.

Smith will present his keynote address on Sunday, July 13.



OFA SELECTS NEW LOGO

This is the new OFA logo, chosen February 23 by the OFA Board of Directors to reflect OFA's updated image and rebranding effort. During the 2002 Short Course, the OFA Board voted to "re-package" OFA's external image to "OFA – an Association of Floriculture Professionals." The corporate name will legally remain the Ohio Florists' Association, Inc., but the new brand and tag line will be used for external and marketing purposes.

NEW OPPORTUNITY FOR RETAIL FLORISTS

Retail florist members of OFA have previously been able to receive the *Michigan Florist* magazine in addition to the *OFA Bulletin*. To better reflect OFA's national standing and scope of membership, we have now partnered with *Florists' Review*, a national magazine.

OFA members can order a one-year subscription to *Florists Review* for only \$28, an \$11 savings off the regular subscription price. Please contact OFA for more information.



OFA EVENT CALENDAR

JULY 2003

OFA Short Course – July 12-16
Greater Columbus Convention Center
Columbus, Ohio USA



www.ofa.org

RECENT EVENTS

- A "Pest Control for Interior Plantscapers" seminar was held in January – providing pesticide recertification credits for attendees from four states (Ohio, Pennsylvania, Indiana, and West Virginia).
- OFA was represented at several shows this spring:
 - Central Environmental Nursery Trade Show, Ohio;
 - Tropical Plant Industry Exposition, Florida;
 - IPM, Essen, Germany;
 - Michigan Floral Association, Michigan;
 - Mid-Atlantic Interior Landscape Conference, Pennsylvania;
 - SAF Congressional Action Days, Washington, DC



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