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Design and Use of Mixed Container Gardens

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The urban environment is changing fast. Today's typical denizens of the cities and suburbs have little or no garden to call their own; in many cases, a small balcony or a tiny terrace is the only access that city condos and apartments offer to the great outdoors – and it is merely a patch of blue sky and a few fleeting hours of precious sunlight per day. However, these balconies and terraces are held in high esteem – they are seen as extensions of living quarters, as outdoor living rooms for entertaining and relaxing. Indeed, they are also furnished and decorated accordingly. Teak lounge chairs, expensive *impruneta* containers, water features, and antique statuary are all *de rigeur* on today's classy, upscale urban terrace garden – be it miniscule or on a grander scale.

For those who are investing substantial funds into furnishing their outdoor living space, the plants have to match their environs. Most consumers dream of emulating lush, well-manicured British gardens; Sissinghurst *en miniature* so to speak. Consumers want to bring the look of color-coordinated borders to their little patch of outdoor space. They want classy plantings and are willing to pay for them. That is why container gardening is so big nowadays. Mixed container plantings are mobile gardens, bringing variety and texture close to home.

But most consumers usually lack the time, patience,

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A DOLLAR CAN BE CHEAPER THAN A PENNY

PROFITABLE SECRETS UNLOCKED FROM HORTICULTURAL RECORDS

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"Can you believe it can cost less to spend a dollar than a penny?" asked Jack Schmidt as he watched thousands of Canaan Fir seedlings being unloaded at Timbuk Farms Inc. in Granville, Ohio. Jack knew some of these seedlings cost more than a dollar while the tree seeds were less than a penny each. However, good bookkeeping allowed Jack to accurately determine his costs and increase his profits by buying transplants rather than starting trees from seed. Without accurate cost numbers, Jack could easily have made the wrong decision and totally missed this cost-saving strategy.

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OFA Mission Statement

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

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BULLETIN
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DO YOU HAVE TOO MANY EMPLOYEES?

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Many owners and managers realize that because of the seasonality of the retail garden center business and the difficulty in obtaining and keeping qualified staff, keeping them focused and productive in their job during the slower times of business can be a challenge. Many of us do the semi-annual house cleaning and fix-up repair work after our busy seasons, then look for odd jobs to keep our staff busy between customers. But is this the best use of trained staff? Do we have so many full-time employees that we have to invent ways to keep them busy all year-round?

As we evaluated our own staffing during the slower times, it was not a matter of *how to* keep them busy but rather *what kept* our staff busy year-round, and were those activities productive for the company? More importantly, were they productive for the customer? Our staff is consistently busy because we strive to maintain a minimal full-time staff year-round (and supplement with as many seasonal employees as possible during the busy season), we have the year-round staff cross-trained in all aspects of job responsibilities.

By maintaining a minimal full-time year-round staff, we lower many payroll expenses and keep them reduced in the "off season." During this time of year, it is easy to "hold on" to seasonal help and have too many staff on the payroll with much reduced sales. We have found it is very easy to lose any extra spring earnings by spending it on seasonal payroll dollars during the slower times. By maintaining minimal full-time staff, they are kept busy doing all the jobs in the slow season that were supplemented by seasonal staff, thus making them cross-trained in all areas of retailing and not as specific in their role as they are during the busy season.

Cross-training our full-time staff has been very beneficial, not only financially (by controlling expenses as mentioned before) but also in training the staff and allowing them to learn additional responsibilities, thus becoming more versatile and valuable as team members.

From receiving and pricing merchandise, maintaining product, and creating displays to actually selling and cashing out the customer, each of our full-time staff understands and can complete each function.

By fully understanding the product's cycle from beginning to end and how the product is received, displayed, and sold to the customer, it allows all our staff the capability to complete

each sale from beginning to end. They create relationships with our customers throughout the entire season and even become proactive in sales by phoning or writing personal notes to "preferred customers" to stimulate sales in the off-season.

We are constantly training – especially during the off-season – by attending trade shows and seminars, such as the OFA Short Course and ANLA Management Clinic, as well as in-house review sessions on everything from merchandising to customer service to marketing. Many of our own brainstorming meetings produce the best ideas on how to increase sales and traffic.

The marketing department attempts to have an event each month. The staff gets involved in the preparation for the event through merchandising, product movement, and signage. With a minimal staff, the camaraderie and teamwork that helps make these events successful are worth their weight in gold to prepare our team members to be leaders and to improve communication amongst each other. **OFA**

Part 2: Basic Training: Surfactants, Wetting Agents, or Adjuvants

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In last month's issue of the *OFA Bulletin*, you experienced firsthand what can happen when a die-hard Extension person gets his or her hands around a boring topic without supervision. I really enjoy this job! However, we had not gotten around to which surfactants do what, when of all things, that issue of the *Bulletin* ran out of space. Graciously, Steve, Laura and Michelle all agreed to provide more pages to finish this topic off. It is my task today to familiarize you with a few more of the terms and jargon associated with adjuvants, so you may read those product labels like a pro. Before we start however, let's all take one last deep breath.

TODAY'S ADJUVANT MENU

Please allow me to review the general classes of products out there and what they do, and perhaps what damage they can cause if you haven't read the label. I don't have the space to review products, especially the new ones that have grand, wonderful chemical technology behind them. For specific information on available products, please call the various suppliers. Just keep in mind that things have changed. There are more than 200 surfactants, 35 wetting agents, and way more than 300 related adjuvant products out there, and only a few percent of them are suitable or labeled for greenhouse use. Even then, you must read the label carefully.

When you use a pesticide, the formulation is spelled out in the label text. The active ingredient is the material that does the work. However, the carriers or inert ingredients contain the carriers, the surfactants, and other things such as stabilizers. You must read the entire formulation description, because surfactants and the like are almost always listed in the middle or end. They may be very specific, using a chemical name, or general. When in doubt, ask.

ADJUVANTS VS. SURFACTANTS

In most of the university publications I have searched to do this article, the authors lament that the terms "adjuvant" and "surfactant" are often used synonymously. They are separate but related terms. Tom Jordan, a Purdue Extension weed specialist, provided one of the better definitions: "Adjuvants are materials that facilitate the activity of herbicides (and other pesticides) or that facilitate or moderate the characteristics of herbicide formulations or spray solutions. Surfactants are materials that facilitate and accentuate the emulsifying, dispersing, spreading, wetting or other surface-modifying properties of liquids."

He goes on to say that while all surfactants or wetting agents are adjuvants, not all adjuvants are surfactants or wetting agents. Examples include anti-foaming materials, buffering agents, compatibility agents, etc. OK, so it's not fun … but it is important. Let's go over the basics.

SURFACTANTS

Surfactants are called just that because they reduce surface tension within the external surface layers of water. You now know how they work, but did you know there are four different types of surfactants?

Anionic surfactants form a negative charge in water and enhance foaming and other spreading properties. Using an anionic surfactant can cause problems with sprayers that have an agitator, or any system where the foam could disrupt water flow. There are plenty of household cleaners that are high in anionic surfactants and their use can make a mess of a greenhouse spraying operation.

Cationic surfactants form a positive charge in water and are often very toxic to plants as they can disrupt membrane ion balance (Figure 1, page 4). There are very few instances where a cationic surfactant has made its presence in a horticultural product, but they are commonly found in heavy-duty cleaning compounds. Don't grab a bottle of the surfactant cleaner you used to clean the tractor engine and use it to facilitate spraying Easter lilies. The results are less than profitable.

Amphoteric surfactants are unusual in that they will

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PART 2: BASIC TRAINING: SURFACTANTS, WETTING AGENTS, OR ADJUVANTS

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form either a positive or negative charge in water, depending upon the pH of the solution. Their use in horticulture is rare also. These products are used very specifically to match the properties of specific pesticide formulations and are generally not available for use in the greenhouse trade as a stand-alone product. Given how much trouble we have with pH drift, imagine adding the pH effects of surfactants to the greenhouse.

Nonionic surfactants do not have a charge in solution and are the most common of the surfactants used in horticulture. They, as a class, do not harm plants when used properly; they remain stable and do a good job breaking water surface tension. These are also being researched in relation to controlling fungal infection, especially in hydroponic systems. It seems that if you coat fungal zoospores with a surfactant, they do not function well (Figure 2). Dr. Ann Chase and others are now hard at work reviewing products in light of this property.

Wetting agents allow materials, such as peat, which are often hydrophobic when dry, to accept water into their collective structure. Some products can increase the ability of a product to cover the surface of a dry, waxy leaf. The products all work the same way as surfactants in that it helps break the surface tension of water and helps the water transfer from particle to particle. As you might expect, overdose of a wetting agent can cause membrane permeability problems and cause toxicities that kill roots and leaves (Figure 3). Soil manufacturers are extremely careful adding wettings agents, and yet growers who have decided to mix their own often take the application of these products lightly. Just remember that temperature and weather can affect how the plant will react to the presence of a large amount of wetting agent in bark or peat soils, or how wetting agents sitting on hot leaves react over a few hours.

OTHER ADJUVANTS

Penetrants dissolve or penetrate waxy layers on leaves and allow other chemicals to interface with plant cell or insect epidermal tissue itself or enter the spaces between the epidermal cells, sometimes called "cell free space." Penetrants can be wonderful but they can also be deadly if misused. Perhaps someone can correct me if I'm wrong about this, but I do not know of any penetrants that are recommended for use in greenhouses as a stand-alone product. They are usually found in products that are intended to kill something. Penetrants can be made up of petroleum byproducts, oils, and other hydrocarbon materials.

Anti-condensates. If you have ever hung a mist system across a bench, you know that the mist condenses on the irrigation tubes and the drips can eventually wash out the soil in whole sections of a tray of cuttings, not to mention keeping that area too wet. Greenhouse walls made of carbon-chain film, especially in poly houses with poor ventilation have condensate problems and drip in the most inopportune places. Anti-condensates act like surfactants in that they make it easy for the water to spread throughout the surface of the film. If not present, water collects at any and all slightly hydrophobic areas on the plastic and drops form. By creating a film, the water can be carried off along the pipe or plastic film. Anti-condensates work great, but should never, ever be used on plants or soil.

Anti-foaming agents. Well, at least this group of compounds is easy to understand. Did you ever blow bubbles as a kid using "bubble stuff?" Bubble-stuff is a detergent saturated with oils

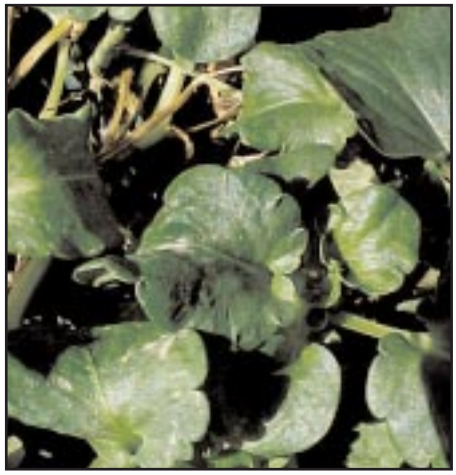

Figure 1. Cationic surfactant damage.

Figure 2. Excess nonionic surfactant. Note the regrowth.

Figure 3. Excess wetting agent in the soil.

and other things that allow "sheet cohesion," that is, the surface film molecules hold on tight – just like surface tension only 10 times greater. When a floating bubble touched your finger or the cement, it was the salts that disrupted the cohesion forces and burst the bubble. Drying out is the other main cause of bubble death. Plastic bubble rings are sufficiently inert and allowed the bubbles to cling so you could blow air inside to form a bubble. Anti-foaming agents prevent the cohesive forces of a solution of pesticide and adjuvant from forming large cohesive sheets. Rubbing alcohol and many, many other products disrupt bubbles, but anti-foaming agents can do this without ruining the intended properties of the surfactant, etc. They simply prevent sheet-cohesion, and thus bubbles break almost as soon as they form.

Thickeners not only cause volatile pesticides to become less volatile, they also cause the carrier solution to become more viscous and heavier. This means it sticks together more easily. This is a good thing if you are spraying an outdoor production area near a housing subdivision. A heavier solution has fewer tiny drops (mist) and more heavy large drops. It reduces drift, odor, and waste. Thickeners can also be overused and cause surface deposits on foliage, excessive exposure to the pesticide, and can sometimes clog spray nozzles. Use with caution in outdoor situations only, and only after reading the label twice for warning about compatibility and phytotoxicity.

Emulsifiers – This one requires an explanation. First, an emulsion is a "colloidal" (tiny, tiny particle) mixture of a liquid within a liquid. Consider oil and vinegar. When run through a blender at high speed they form a temporary, but delicious emulsion. Oils and surfactants form emulsions and so on. Emulsifying agents work by coating tiny clusters of liquid particles or groups of the liquid molecules in such a way that it prevents any of them from adhering with unlike molecules or coagulating with other like molecules. Unlike the oil and vinegar, which eventually separates out, the emulsifying agents keep things separated in suspension for long periods of time. In other words, it keeps two liquids is a state of suspension together but separate. This is important if you are spraying an oily pesticide using a water-based carrier.

Spreader/stickers are often called other things, and we often call surfactants spreader/stickers. However, they are different. Spreader/stickers are usually oil-based rather than detergent-based compounds that cause the surface tension of the pesticide to be reduced in such a way that it easily spreads into a very thin film over most waxy and hydrophobic surfaces. Yet, the material also is heavy and resistant to being washed off. This increases the efficiency of the pesticide dramatically. They are very similar to surfactants, with extra added twists in that they often are oil-based, long-chain organic compounds, very much like thickening agents or oils in that they cause the pesticide solution to adhere to the leaf surface, resisting rain, evaporation and runoff. These products are commonly used on field crops where residue on leaves is no big problem. However, in greenhouses, they can cause a mess, especially on leaves with indentations such as Pileas, or hairy plants such as Dusty Miller (Figure 4). Some spreader/sticker combinations are famous for causing phytoxicity in tender annuals and herbs.

OFA Back to Basics

Oils. There are two types. There are the common "crop oils" that are derived from soybean and other crops, and then there are inorganic oils that come from petroleum refineries. Some are used as suffocants, which cover the insect and cut off air supply. Others are used as penetrants to bypass the chitin layers and kill insects like scales. Many more are used in a similar way as surfactants, in that the oil quickly forms a film over the leaf thus keeping it wet much longer that could it be using water and thus increasing the time the leaf is in

Figure 4. Agricultural-grade spreader/sticker damage.

Figure 5. Oranosilicate surfactant damage from application in a hot, sunny greenhouse.

Figure 6. A high-tech dishwashing liquid.

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PART 2: BASIC TRAINING: SURFACTANTS, WETTING AGENTS, OR ADJUVANTS

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OFA Grower

contact with the pesticide in the oil. Crop oils do not evaporate and remain in place for a long time. Modern crop oils are now made of up to 20 percent surfactants in addition to the oil itself. If you indiscriminately add crop oil and a pesticide that already has a surfactant together, you could again be eating some interesting form of crop jelly sandwich the next day.

NEW PRODUCT CLASSES

Alkyl polyglucosides. Of all things, this term refers to modified sugars. It seems that some modified sugar molecules have surfactant-like properties, and also serve as good spreader/stickers and wetting agents. This new class of adjuvant has been around but is now becoming popular due to its organic origins and its biodegradability. There are low-foaming and high-foaming types. They started out as environmentally sound cleaning agents (carwash cleaners) in England, and have emerged to become useful in washing clothing and as an agronomic adjuvant. This product has very low potential for phytotoxicity as it is derived from sugars that come from plants. Look for research on these materials to continue; the basic work published to date states that they work very well with Glyphosate herbicides.

Organosilicates are not exactly new, having been developed in the 1970s, but they have recently been sold (marketed) to horticulturists over the last five to eight years as wonder products. Organosilicate surfactants are very good at increasing the rainfastness of pesticides. Silicone-based sprays have been used to waterproof camping tents for years. Yet these compounds do more than that, they also reduce the surface tension and allow everything from micronutrients to fungicides to enter leaf stomates and hydathode pores with ease. The trouble is, it also allows bacteria and fungi to more easily invade the plants. There are some very good products on the market, which I have used with great success. However, you must have a fairly sanitary facility, careful, attentive applicators and an application rotation plan with other surfactants to enjoy the greatest success with these products. One last word. Overdoses, or application in 90+°F weather have very unpleasant side effects, generally clearing tissue and causing death (Figure 5).

Inorganic salts. There is continuing research on the use of certain inorganic salts as surfactants. However, most of this work is in herbicides. Do you remember where I indicated that organic cationic surfactants often cause phytotoxicity? Inorganic forms do likewise. Many of these products are salts of sodium, potassium, and ammonium. They are most commonly used in plant herbicide formulations. There are other types that use calcium, iron, zinc, and magnesium salts that are used in industrial cleaning agents and adjuvants. They also cause plant problems. There are few reasons to ever use organic cationic surfactants or for using inorganic cationic salts in a greenhouse. Just because as a class, it works great in herbicides, doesn't mean it won't turn around and wipe out your crops when used with other pesticides.

SO WHY NOT JUST USE COMMON KITCHEN SOAPS AND DETERGENTS?

Once phosphorus became an environmental issue, and we dispensed with phosphate salt-based detergents, surfactants were called upon to do the job. There are very few "soaps" on the market now. Most of these are in bar form used for bathing. Secondly, soap reacts with cations in soil and fertilizer and leaves a precipitate residue. Many greenhouse workers have forgotten the pale whisper of gray precipitate that used to cover almost all roses and often sprayed crops. This was soap/cation precipitate residue. Soaps can also collect and gel in drain pipes and sewer lines and form slabs of thick sticky goo that clog pipes. This is especially true for restaurants that wash greasy pans, but it can clog irrigation systems with hard water in which it was misapplied also. There are very few liquid soap products in commercial production and none are used for dishwashing or laundry.

Dishwashing liquids are now commonly a combination of anionic and nonionic surfactants. In most circumstances, their combined effects are synergistic, and very potent. Consider that none are labeled for plants and the new formulation are often very destructive in warm temperatures (Figure 6, page 5). The old days of using dishwashing liquids on foliage plants are history since the change from detergents, which are very mild surfactants, to the aggressive anionic forms of surfactants. The good news is that modern dishwashing liquids contain no phosphorus. The bad news is you now must avoid using them as substitute surfactants. This brings a new meaning to the words new and improved.

BOTTOM LINE?

Certain pesticides must be applied with oils, others with only non-ionic surfactants. In many cases, the labels will specifically tell you whether an adjuvant is needed, and specifically which chemical class of adjuvant to use. These recommendations are strict and are there for a reason.

You must read beyond the active ingredient to determine what you are dealing with and whether you can add a surfactant, etc. The best thing to do is ask the company that produces the product. They will tell you if a surfactant is present or which surfactant products can safely be used with the pesticide. Get careless, and you'll remember the story of that arrogant mosquito that landed on what he thought was the same old thing. Don't be an arrogant mosquito … read the label and breathe easier.

OFA

CROPS THAT CAN BE GROWN AT COOLER TEMPERATURES

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At the end of the year 2000 and beginning of 2001, the cost of gas was an ever-present worry for many growers. I heard and read a lot about ways of handling this difficult situation. Some growers even started adding an energy surcharge, something difficult to believe in an industry so averse to increasing prices. I suspect, though, that the most common strategy was to lower thermostat settings in the greenhouses.

The amount of fuel used to keep a given temperature in the greenhouse depends on many internal and external factors. However, a "rule of thumb" indicates that for each degree Fahrenheit we reduce the greenhouse temperature, we reduce three percent of the cost of heating. If this rule is true, even modest reductions in greenhouse temperatures can produce substantial energy savings.

The question is: can we reduce greenhouse temperatures and still produce high quality crops? The answer to this question is yes and no. Some crops, like vincas and begonias, suffer at lower temperatures. Crops like nemesias and trailing snapdragons may actually reward lower temperatures with improved flowering. Other crops, like osteospermums, require low temperature for flowering by a process called vernalization.

In this article, I will describe some crops that can benefit if they are grown at lower temperatures. They are trailing snapdragons, argyranthemum, bracteantha, diascia, nemesia, and osteospermums. These crops share some cultural characteristics that I will discuss before giving crop specific details.

Growing mix. The challenge for every grower of container plants is to find a mix that optimizes the air porosity/water retention ratio. The challenge for growers of these crops is even greater, because at lower temperatures evapotranspiration is also lower. Under these conditions, it takes longer for plants to remove the water held by the mix and container. In other words, overwatering can result and with it, the risk of diseases like Pythium spp. is increased.

Fertilization. If watering is reduced, liquid fertilization will have to be adjusted accordingly. Do not use fertilizers with high percentage ammonia-nitrogen for two reasons. First, bacteria transform ammonia-nitrogen to nitrate-nitrogen and lower temperatures reduce the activity of these creatures. Thus, ammonia accumulation (and toxicity) can occur. Second, ammonia-nitrogen rich fertilizers can reduce pH levels of growing mixes below optimum levels.

A good fertilizer choice is a 15-5-15 because it has a low ammonia-nitrogen level. In addition, this fertilizer has low levels of phosphorus. Some of the plants that prefer low temperatures originated in Australia where soils are phosphorus poor. Calcium and potassium nitrate plus micro nutrients can be used. Ideal pH for these crops: 5.5 to 6.0. Ideal EC: 2.0 mS cm^{-1}.

Light. All plants described in this article are sun-loving. The higher the light levels, the better. In some parts of the country, like the upper Midwest, light is scarce during late winter or early spring. Make the most of available sunlight; maintain clean greenhouse roofs and avoid growing hanging baskets that throw shade over the crops.

Growth regulators. Most of these crops require application of growth regulators in order to have the correct containers to plant size and proportion. However, there is limited information on this subject. A good start would be to try B-Nine; it has no negative effects and it is economical to use. I have heard that most crops respond well to this growth regulator. While I have not heard or read anything about the use of DIF or DIP on these crops, I do not know of any reason why this technique should not work.

Insects and diseases. Disease tends to be a greater problem than insect infestations for these crops. This is because lower temperatures not only reduce evapotranspiration as I said earlier, but also because low temperatures may increase the potential for high relative humidity that favors diseases such as *Botrytis*. Insects can be less of a problem because lower temperatures tend to slow the insect reproductive cycle. Nevertheless, care must be taken because the inactive insect population at low temperatures can explode when temperatures increase during spring or when temperatures are raised to finish the crops.

Temperature. Plant development responds to temperature. At lower temperatures, plants take longer to reach flowering. However, this should be of no concern with the group of plants that we are describing in this article because their development is less sensitive to temperature. Figure 1 is a hypothetical situation showing the effect of temperature on time to flower of the two types of crops. Less sensitive plants are those in which the effect of temperature on development is less (Figure 1, line with open circles). An example of a plant with a high sensitivity to temperature is a begonia, while a plant with a low sensitivity is a nemesia. Despite the fact that the crops described in this article belong to the low sensitivity category, their development still will slow down somewhat at low temperatures.

In general, the following temperature protocol can be applied to these "cool crops":

1) After planting rooted cuttings: 65°F for 3 to 4 weeks;
2) After establishment (forcing), 45 to 70°F;
3) Some crops require vernalization after establishment, 45 to 50°F.

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CROPS THAT CAN BE GROWN AT COOLER TEMPERATURES

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Following are specific recommendations for each crop:

Argyranthemum

Establishment: 65°F average. After establishment, 60 to 70°F day and 55 to 60°F night.

Avoid high relative humidity because of *Botrytis*. For 4- to 6-inch containers: one cutting per pot; one to two weeks from transplant to pinch; 12 to 14 weeks total crop time. For 8- to 10-inch containers: three to four cuttings per pot; two weeks from transplant to pinch; 12 to 14 weeks total crop time.

Diascia

Establishment: 65+°F. After establishment: 50 to 70°F day and 45 to 60°F night. Low temperatures promote flowering but slightly slow development. Weeks to establish: two to three; weeks pinch to flower: 8 to 10; weeks for total crop: 10 to 13.

Trailing Snapdragons

Establishment: 60°F. After establishment: 50 to 70°F day and 50 to 60°F night. Low temperatures encourage flowering and compact growth.

Nemesia

Establishment: 65°F. After establishment: 50 to 70°F day and 45 to 60°F night. Low temperatures promote flowering. Weeks to establishment: two to three. Pinch to flower: 8 to 10 weeks. Total crop time: 10 to 13 weeks.

Bracteantha

Establishment: 68 to 70°F. After establishment: 55 to 70°F day and 50 to 55°F night. Low temperatures encourage flowering. Most cultivars take 12 to 16 weeks to be ready to sell. Benefit from trimming. Do not like high levels of phosphorus. Avoid fertilizers with high P levels. Do not use phosphoric acid to neutralize alkalinity.

Osteospermum

Establish: 60 to 65°F. After establishment: 40 to 50°F day and night to vernalize for a minimum of four weeks. This is required for good flower number and synchronization of flowering. After vernalization, 50 to 70°F day and 40 to 60°F night. Cool temperatures will help reduce the use of growth regulators.

To be successful with these crops, it is important to grow them "apart" both physically (different greenhouses) and culturally (give them what they need). Some growers have old glass greenhouses that can be dedicated to growing cool crops. These greenhouses are leaky which makes them cooler and, if the roof is clean, they may be brighter. In addition, retractable-roof or open-roof greenhouses may be ideal for these types of crops. **OFA**

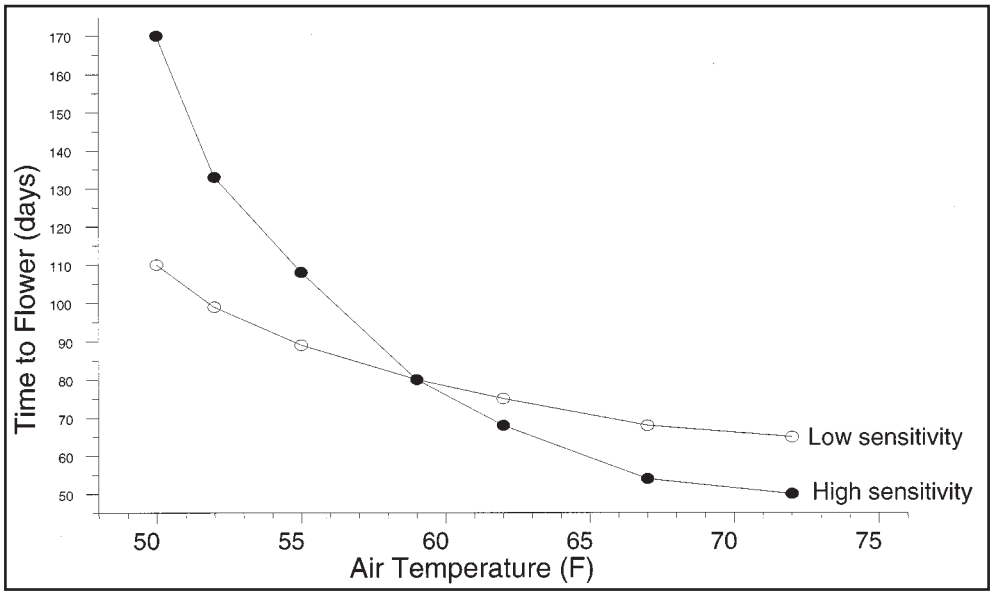

Figure 1. Effect of temperature on development to plants.

Mark your calendar for July 12-16, 2003 to "Get into the Mix" at the OFA Short Course in Columbus, Ohio

Painted Pot Technology: A Novel Method of Disease Control

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BACKGROUND

Controlling or managing the many diseases that affect greenhouse-grown bedding and potted plants is one of the many challenges that face today's growers. Most diseases are controlled by using a variety of methods, both cultural and chemical. Some diseases respond very well to cultural controls and in these cases minimal or no chemicals need to be applied.

More than likely, today's grower needs to take a more integrated approach and use a combination of cultural, biological, and chemical controls to produce a disease-free, sellable product.

For many reasons, growers are being forced to take an integrated approach. One major reason is to reduce the amount of chemical pesticide that is applied to a crop over the length of the season. Less chemical equals less expense and less regulatory "headache."

The modern grower is forced to deal with issues that his or her predecessors didn't remotely think about, let alone have to come up with answers to. For instance, the issue of pesticide breakdown products and where those products will end up after they leave the greenhouse. This is a serious concern growers are having to face. In the very near future, a grower will have to know exactly how much pesticide they have applied to the crop as well as knowing how much of the active ingredient is leaving the greenhouse through the drainage system and where that product will end up. Whether it's the grower's catch basin or the city sewer system, this information will need to be known. Too much run-off of a particular product could result in a fine or some other type of penalty.

Because of this, growers are going to have to pay much closer attention to the amount of product they apply to their crop. More than likely, the less they use the better. However, it won't be that simple. The grower will have to balance using less product with the reality of reduced disease control. There will be a fine line between adequate disease control and applying minimal fungicide. For this reason, the development of novel methods of pesticide delivery that will achieve the same degree of disease control are being explored by university researchers worldwide.

In 1996, Drs. Daniel Struve and Claudio C. Pasian, The Ohio State University, published a paper in the journal *HortScience* entitled, "Painted Containers: A New Method for Paclobutrazol Application." This paper described a method of incorporating this growth regulator into paint and painting the inside of the container prior to planting mums. Results of this study showed that this method of application was just as effective as a traditional drench application in controlling plant height. More significantly, the amount of active ingredient needed was as much as 100 times less than the traditional drench. Because these results were so promising, the researchers looked at how this same technology would work with a systemic insecticide. In 1997, Pasian, Richard Lindquist, and Struve published in the journal *HortTechnology*. Using the active ingredient imidacloprid incorporated into paint, the researchers were able to effectively control whitefly populations when compared to the traditional application method. And similar to the growth regulator work, a lesser rate could be used.

With the excellent results of these two pieces of research, it was only logical to explore the possible use of this technology as a method of fungicide delivery.

For the fungicide project, Dr. Claudio Pasian and I cooperated. We had the opportunity to co-advise Ms. Felicta Varela-Ramirez, a Ph.D. graduate student in the Department of Plant Pathology. This project was in partial fulfillment of the requirements necessary for her to receive a Ph.D. degree in plant pathology. Much of the content of this article will be taken directly from her Ph.D. thesis.

THE HOST PLANT

Poinsettia 'Freedom Red' was chosen for this study because its high value as a potted plant as well as its susceptibility to Pythium root rot disease. Plant material was kindly donated by the Paul Ecke Ranch, Encinitas, California.

THE PATHOGEN

The pathogen used in this study was *Pythium ultimum*. This particular fungus was isolated from a poinsettia with severe symptoms of root rot that was submitted to The C. Wayne Ellett Plant and Pest Diagnostic Clinic, The Ohio State University.

THE FUNGICIDE

The fungicide used in this study was metalaxyl. This fungicide was chosen because of its high degree of efficacy against Pythium and its widespread use in the industry. For this research, three different rates of metalaxyl were used: one-half the manufacturer's recommended rate, the recommended rate, and two times the recommended rate. These rates amounted to the application of 5.6, 11.2, and 22.4 milligrams of active ingredient per potted poinsettia.

THE TREATMENTS

There were six disease/paint/fungicide treatments used in this experiment; treatment 1) minus Pythium, minus paint, and minus fungicide, 2) plus Pythium, minus paint, minus fungicide, 3) minus Pythium, plus paint, minus fungicide, 4) plus Pythium, plus paint, minus fungicide, 5) plus Pythium, minus paint, plus fungicide, and 6) plus Pythium, plus paint, plus fungicide.

These treatments were compared to the standard method of fungicide drenching with the same amount of active ingredient used. The standard drenches were applied to the potted poinsettias at one and five weeks

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PAINTED POT TECHNOLOGY

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after planting. There were five replicates of each treatment, and experiments were arranged in a completely randomized block design. The rate response to the fungicide was determined by regression analysis using SAS.

GENERAL METHODS

Poinsettia plants were planted in Scotts Metro Mix in 4-inch plastic pots that had been painted on the inside with 100 milliliters of white interior flat latex paint into which the metalaxyl had been mixed at the rates described above. The painted pots were allowed to dry for 24 hours before planting. Immediately following planting, the plants were fertilized with a 14-14-14 slow-release fertilizer. Potted plants were placed in a greenhouse under a controlled environment and analyzed for the presence of Pythium-induced disease development.

The amount and severity of Pythium root rot was accessed visually using a disease severity index from 1 to 6 where 1 = no root rot, 2 = mild root rot (less than ⅓ of the roots rotted), 3 = intermediate root rot (⅓ to ⅔ rotted), 4 = severe root rot (greater than ⅔ of the roots rotted), 5 = severe root rot and crown infection, and 6 = plant death. The amount and severity of root rot was also determined using a digital imaging method developed by Pasian et al, 1998 {Pasian, C., Varela-Ramirez, F., and Nameth, S.T. 1999. Digital video technology as a means of quantifying root rot. *HortScience* 34:(2):294-295}.

RESULTS AND CONCLUSIONS

Based on the results of two complete experiments, there were no significant differences in the control of Pythium-induced root rot of poinsettia when either method of fungicide application was employed. In other words, the incorporation of the fungicide into the paint was just as effective as using a standard fungicide drench. These results are important, in that root rot disease control was not compromised by employing the painted pot method. This compares favorably to the previous painted pot research with growth regulators and insecticides discussed in the background section of this article. In this research, there were also no significant differences between fungicide rate treatments (½X, versus 1X, versus 2X) in controlling Pythium root rot. However, in both experiments, the manufacturer's recommended rate (1X) resulted in the best control. Since the same amount of active ingredient was applied to the plant's root system either by paint application or by conventional drenching, a comparison could not be made as to whether or not the painted method could be used to reduce the amount of fungicide needed to get adequate disease control. With the growth regulator research and the insecticide research, this was shown to be the case.

Irrigation leachates collected from both methods of application were collected and analyzed with high pressure liquid chromatography (HPLC) to determine the amount of metalaxyl coming out of the bottom of the pot. These results indicated that there was no significant difference in the amount of metalaxyl in the leachate of the two types of application methods.

In conclusion, novel methods of fungicide application will need to be further explored as growers become more and more accountable for what goes in and out of each pot. Incorporating metalaxyl into paint and painting the interior of a poinsettia pot proved to be just as effective in controlling Pythium-induced root rot when compared to the traditional drench method. The potential for this method of fungicide application needs to be investigated in greater detail.

Imagine the convenience of purchasing pots that are already coated with fungicide at the correct rate to control or target disease. This has the potential to be a safer method of application because, handled properly, it can reduce the degree of grower exposure to fungicide, particularly when pesticides are used that confer a high degree of danger when handled in the conventional manner.

Further work will need to be conducted that takes a serious look at significantly reducing the rate of fungicide in the paint. This, in turn, will allow for less product to be leached out of the bottom of the container. And in this day and age, that can only be a good thing. **OFA**

Research

A DOLLAR CAN BE CHEAPER THAN A PENNY

Continued from page 1

WHERE'S THE PROFIT?

Horticulturists know that profits can be elusive. Growers and retailers alike see record keeping resources as more than a necessary evil demanded by the tax man. By law we are required to keep various records for income tax, sales tax, hazardous materials reports, payroll, and a host of government and bureaucratic regulations. With slightly more effort, combined with a more directed focus, we can turn the business record keeping chore into an invaluable resource for profit enhancement.

For most of us in horticulture, the "grow it or buy it" decision is emotional. As Jack Schmidt said, our natural inclination is that it's cheaper and more fun to buy the seed than it is to buy seedlings. Surprise! That inclination is often incorrect. It takes good record keeping to lead you to the right decision.

For years, Stanley Turner of Turner's Florist and Greenhouse in Ann Arbor, Michigan, started his pansies and marigolds from seeds. His son, Jim, went to business school. When he joined the firm, they began to analyze the costs of labor, fertilizer, material, utilities, germination success rate, etc., for the first time, and as a result, realized that the old way wasn't the most economical. Today, Turner's bedding plants and poinsettias are delivered in sprouted flats at a greater profit than starting from seed.

"We're a family business and still make decisions around the kitchen table," says Stan, "but now we use numbers to guide us to the right business decision."

The "grow or buy" decision was easier for Terry Norman of Snyder's Florists in Canal Winchester, Ohio, who leaves his greenhouse empty until April. "When you examine the facts, it's amazing," Terry reported. "We paid less for plugs than we were paying to heat the greenhouses. All that money was going up in hot air. It may not be as much fun, but it's definitely more profitable to let someone else start the plants. It has made a significant difference in our bottom line."

KNOW THE SCORE AND ADJUST THE GAME STRATEGY

The business community commonly resorts to sports metaphors, like keeping score. As humans, we always want to know "how we're doing." Even in a pick-up family volleyball game, it isn't long before someone becomes the score keeper. In business, keeping score doesn't take very long, and the resulting details reveal areas of strengths as well as areas needing improvement.

It's easier to correct trends that threaten your business if you have factual information. When Susan Patten looked at her sales numbers at A.J. Rahn Greenhouses in Cincinnati, Ohio, she wasn't happy. The amount of her average transaction (total sales divided by number of cash register transactions or invoices) was increasing; but while sales were climbing slightly, the total number of customers was declining. This was a good trend masking a bad trend – a decline in the total number of orders or retail store visits by customers. Additionally, she saw that new customers weren't coming to her retail greenhouse.

Susan is a disciplined marketer. For years, A.J. Rahn Greenhouses ran an ad in *The Cincinnati Enquirer* every Tuesday. The ad always had a consistent format and was always in the same section of the paper. Armed with her sales data, Susan took a bold move and changed her weekly schedule to Saturday. When she measured the results, she saw an immediate increase in new, younger customers. She knew her advertising shift was paying off. She's continuing to adjust her advertising and promotions with a watchful eye on the sales data.

Ask Susan if members of the horticultural industry need accurate records, and she'll answer, "Of course you must have them! How do you know where your business is going if you're not tracking it? The only question is: How are you going to respond to what you see?"

YOU NEED TO KNOW WHERE YOU STAND

"You've got to measure everything you do," says Bob Van Cura of A Proper Garden in Delaware, Ohio. "We have a budget and do forecasting. How else can you know where you stand? Business has improved every week since we opened A Proper Garden in March 2001." Bob cares about the plants and he cares about his people. He acknowledges that he can't continue to grow and prosper without his finances being in order.

Each week, Bob gets a report showing his financial and sales pictures. His weekly financial reports consist of:

- Cash flow, present and projected;
- Accounts receivable, money customers owe him, and any serious delinquencies;
- Accounts payable, money he owes others in the near term;
- Profit and loss statement for the week with emphasis on areas he can control, such as hours worked and wages.

Bob's weekly sales information report includes:

- Sales by each department;
- Rolling sales history to account for seasonality;
- Comparison to his budget for the current season.

With this data, Bob feels he can respond to any situation before it's irretrievably out of control.

There are those who say bookkeepers come onto the battlefield and bayonet the wounded. Others say they are historians who only give you past history and not future projections. While there may be a grain of truth in these depictions, consider that "those who do not learn from history are destined to repeat it." Jack Schmidt reviews his firm's financial ratios against his history to see trends in his business so he can estimate with some accuracy how his financial year will end.

HIRE QUALIFIED FINANCIAL PROFESSIONALS

"Reality and accuracy" are the keys to good records in Kathleen Benken's opinion. "One of the myths of our industry is that you want family keeping the books because you can trust them and they'll keep things private." As vice president of OFA, Kathleen observes and hears from many family horticultural firms. Her advice on bookkeeping is, "Keep it professional, objective, and as good as you can get."

"Any firm doing $4 to $5 million needs a controller," says industry veteran Bob Maddux. Fortunately, Bob followed his own advice a decade ago. "Having an excellent controller, we were able to view our business accurately and grow profitably." Bob's Delhi Flower and Garden Center in Cincinnati employs 225 people today and is still growing, which he says wouldn't be possible if he didn't know the status of critical numbers. Figure 1 on page 12 was invented using Bob's methodology.

Bob's graph is part of the flash report delivered to each of his five-member Executive Management Team (EMT). Each week, he holds two 60- to 90-minute EMT meetings. The team reviews the numbers, then goes out to meet with their respective department heads to give them information and determine corrective action when necessary on sales, costs, wages, hours worked, and other controllable expenses.

When applicable, Bob recommends keeping your records by department or division. In Delhi's case, they keep profit and losses by their three divisions – garden center, growing, and landscaping. The more your business expands, the greater the value of this detailed information. The biggest benefit is that you can hold people responsible for results – results they can see and understand. Sustainable long-term growth isn't possible without a team that feels responsible for the bottom line.

After 11 years in South Charleston, Ohio, Polly Agle, owner of Hazel's Flowers and Gifts, felt a new location in nearby Springfield would help her increase profits. Polly sat down with her CPA and had what she referred to as a "look see" to confirm her feelings. Together they met with her banker who agreed to fund the expansion, based on the information they were able to provide. Without this data and her CPA's assistance in putting it into the proper format, Polly feels she would still be limited to one location.

Good bookkeeping can provide a treasure trove of information to help you grow your business profitably. Once you better understand the daily fluctuations of your own business, you'll quickly see that the time and energy to establish these systems will pay back in ways you hadn't imagined.

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A DOLLAR CAN BE CHEAPER THAN A PENNY

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OFA Management

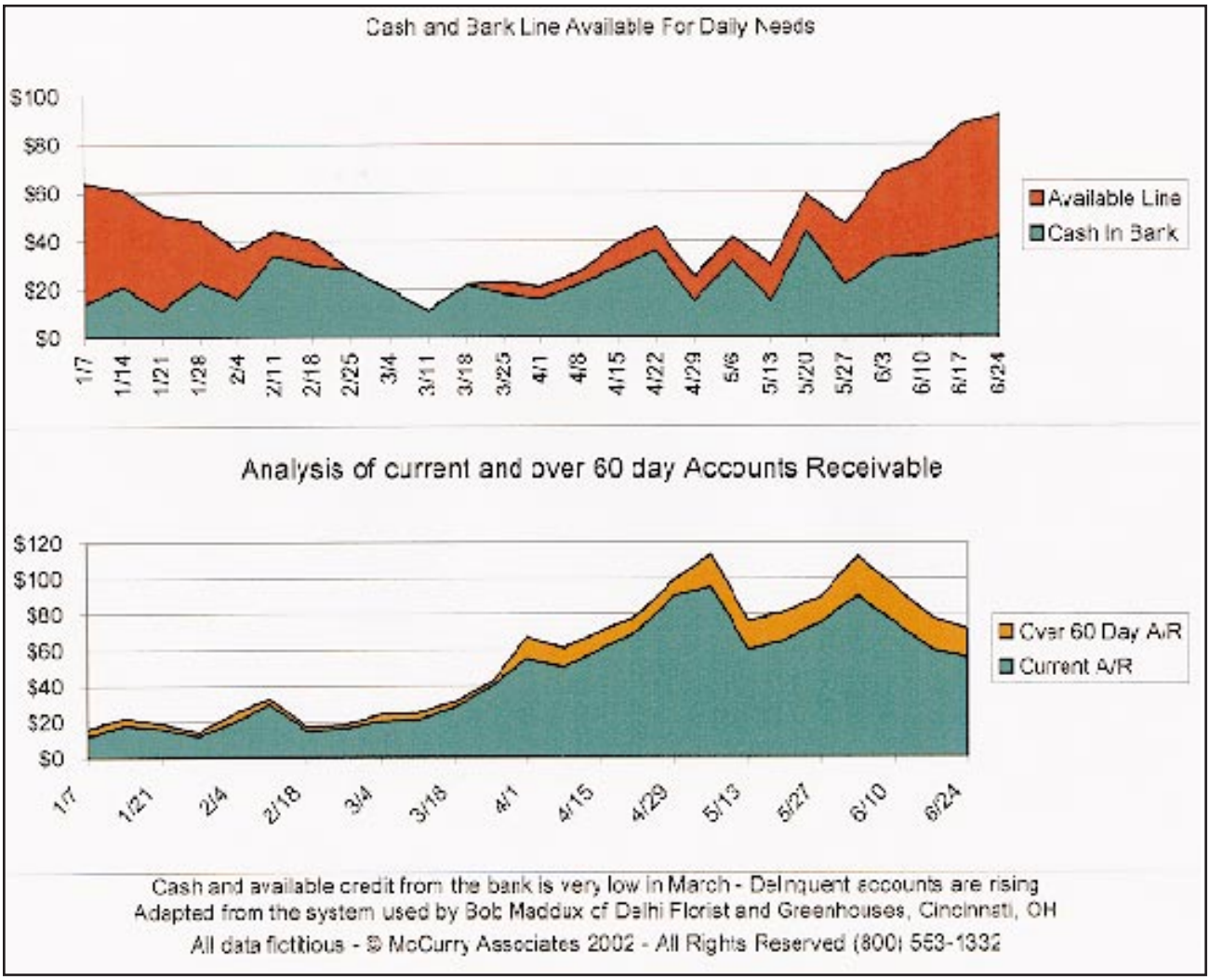

FIGURE 1. A PICTURE'S WORTH A THOUSAND PIECES OF DATA

One glance tells the management team at Delhi Flower and Garden Center, Cincinnati, what their cash level is. CEO Bob Maddux established a chart system that immediately shows the cash available to the firm. In our fictional re-creation, the top chart shows the cash in the bank in green and the amount left on the company's line of credit in red. The two combined equals the firm's available cash. It's easy to see that March is a tight time for the fictitious firm used in the example. Additionally, one quick glance shows how old accounts receivables are growing in the bottom chart, calling management's attention to a situation requiring immediate attention. Bob uses graphs to make it easier to see trends and changes over time in sales, wages, hours worked, and other controllable expenses.

ABOUT THE AUTHOR

Bill McCurry, chairman of McCurry Associates, is a regular presenter at the OFA Short Course. This article is adapted from one of his 2002 seminars, "Your Bookkeeper: A Liability or an Asset?" Bill is a professional speaker and advisor to management in the horticultural and imaging industries.

OFA

DESIGN AND USE OF MIXED CONTAINER GARDENS

Continued from page 1

and plant knowledge to compose successful container gardens. This is a huge opportunity for garden centers and retail growers to use their knowledge, experience, and access to a wide range of plant material to monopolize on this hot new trend. With a basic knowledge of the principles of successful container design – plus a bit of taste – it is possible to create aesthetically pleasing combination plantings that are easy to care for and perform for the consumer over a long period of time.

BASIC DO'S AND DON'TS OF DESIGN

Successful container gardens are like successful landscape plantings, gardens, or borders: they require a good color scheme and sufficient contrast in form and shape to make them "work." This is especially true of mobile container gardens; they are subject to much closer scrutiny, since they constitute an integral part of the outdoor living area. Thus, extra care has to be taken when choosing the plants used in the combos – and in the way they are combined.

Never combine plants that have a similar habit, or a similar flower size, flower shape, or foliage. This invariably results in boring, bland combos. Instead, use plants that have contrasting postures, leaf shapes, foliage colors, flower shapes, etc. For example, a tall plant toward the back/center, a trailing/cascading plant in the front, a bushy plant, and an airy, effervescent plant (Figure 1). The same goes for flower shape – round flowers, bold flowers in contrast to double flowers, tiny flowers, racemes, and spikes. Successful combos have a "face" and thus present themselves to the beholder.

Be prudent when choosing the colors used in combos. The brash anything-goes annual color bowls of the '70s and '80s are mega-out. No matter what you've seen before, bright pink does NOT go well with bright yellow and orange. Period. If you are inexperienced, start with monochromatic plantings, staying within various shades of a certain color (e.g. powder blue, medium blue, and violet). With experience, more daring color combinations such as orange with purple, primrose with blue, and cream with burgundy can be tried. Color wheels can be of some use, but a trained eye (and a bit of taste) are worth more than any pre-fab solution.

And never forget: the container itself is an integral part of any container garden. There is a bewildering array of containers to choose from nowadays, and there are good, classy alternatives for every budget. Be imaginative and try some of the newer materials, such as metal and mosaic. The shape, color, glazing, and surface of a container has to complement the planting and vice versa. A successful container garden becomes a pleasing entity of plants and container.

THE ROLE OF FOLIAGE

Plants do not consist of flowers alone. Reducing plants to merely the flower color and flower shape is doing them a tremendous injustice – like reducing people to the color of their hair. Plants display a bewildering array of different foliage shapes, textures, and sizes. Don't forget colors – glaucous blues, silver grays, deep bronze, burgundy, amber, chatreuse, gold, variegation patterns, and of course all shades of green. Use this wonderful variety in your combinations. Never forget – foliage is the glue that holds successful combos together, the backdrop to bring out the beauty of the flowers, the buffer between contrasting colors. The undisputed queen of container gardening, Kathy Pufahl of Beds and Borders, advises never to plant two flowering plants next to each other. And I must admit that combos with as much foliage as flowers are definitely the classiest and most successful combination gardens. Try it – you'll be surprised!

ABOLISHING PLANT GHETTOS

I hate plant ghettos. While I can understand the need for monocultures in farming, we should not go down the same path when trying to plant container gardens. Who wants a corn field on their terrace? Plantings of pure red geraniums or pink petunias may have an initial impact, but are unnatural and boring if you have to see them every day. There is such a huge range of beautiful and versatile plant material at our disposal today, it would be a shame not to use this variety in container gardening. Natural plant associations in the wild are a combination of many different plants; the same is true of gardens and borders. Using the same principles in container gardening is the key to success. Be adventurous; try combining annuals with perennials, shrubs, tropicals, etc. Mix your annuals with purple-leaved heucheras, striped cannas, grasses, flowering shrubs, trailing perennials, etc.

THE IMPORTANCE OF SEASONALITY

People often forget that the year has more than the

Figure 1. An example of a container garden.

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DESIGN AND USE OF MIXED CONTAINER GARDENS

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four months of summer. People who plant their containers only from May through September are missing out on great opportunities to create beautiful combination plantings with a much wider range of plants that bring interest and color into other times of year – times at which it is least expected.

Autumn has traditionally been dominated by garden mums, heathers, and flowering kale. With new programs such as Fall Magic® from Proven Winners, a much wider range of attractive foliage and flowering plants that look good well into late autumn is at our disposal. Mix in a few of the more unusual autumn-flowering crops such as grasses, sedums, gentians, toad lilies and asters, and you've got yourself extremely attractive plantings that will look good for months, sometimes right through the winter in milder regions.

Even early spring is an opportunity for classier combinations. There is more to early spring than polyanthas and pansies. There are beautiful new columbine varieties available today, as well as compact doronicums, aubrietias, arabis, erysimums and euphorbias. Combining these with foliage plants such as vinca, heuchera, or lamium can result in stunning, tasteful combos that will wow customers when everything else is still drab and gray.

The ultimate goal is to get consumers to be willing to plant and replant their containers – whether they are window boxes, baskets, or standard tubs – several times a year to complement the changing of the seasons. With the accessibility of such a wide range of plant material now at our fingertips, it is merely a matter of experimenting and trying what will work well together. Be imaginative, think out of the box. Use your knowledge of plants and your experience to create combination plantings that will wow your customers and walk right out the door. **OFA**

TIPS ON DESIGNING, GROWING, AND MARKETING MIXED BASKETS AND CONTAINERS

OFA Services Inc. has just released *Tips on Designing, Growing, and Marketing Mixed Baskets and Containers*. This book is an excellent "how to" publication intended to serve as a practical working guide for growers as they refine their mixed container programs. The book is priced at $32 or an OFA member-discounted price of $22. Shipping and handling is $5. Ohio residents must include 5.75% sales tax.

Terri Starman of Texas A & M University and Kathy Pufahl of Beds and Borders on Long Island, New York teamed up to write the sections on the principles of color and basic container design concepts. Plenty of full-color pictures of mixed containers are included to illustrate the principles they describe. Peter Konjoian of Konjoian's Floriculture Education Services in Andover, Massachusetts wrote sections on production, scheduling, and marketing.

The popularity of this topic is closely tied to the explosion of new crop species and cultivars being introduced by breeding companies worldwide. Growers are continually searching for and experimenting with new combinations of plants to use in mixed container programs. The crop category has grown to become a complicated program in any size greenhouse operation, one that growers find overwhelming if not planned and organized well. The book was written to provide tips on how to manage the crop effectively and profitably.

POINSETTIAS – WHERE DO WE GO FROM HERE?

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Poinsettias are one of those crops that evoke different reactions and emotions from growers. Some go as far as describing this as a "love/hate" relationship. As professional growers, we love to produce the crop. But market forces make us hate what happens when it comes time to sell the poinsettia crop; a lot of work often yields very little in return. Let's face it, buyers are trained to negotiate pricing for their company and are generally more successful in getting growers to compromise their poinsettias pricing than growers have been defending their prices. The good news is that we have talked to growers from all regions of North America that can share stories about how they did not agree to devalue their product and still made their sales. One of the key factors that helped them do this was a good understanding of their production costs. Armed with this information, they could place realistic values on their crop, their profit margins, and were able to get what's required to keep their business viable. We hope this becomes the minimum standard for all growers, because without this knowledge, how can you make pricing decisions that will not put you out of business?

Every year we are asked, what can be done to improve things in the market and make this crop fun to grow and sell again? I truly wish we had the answer that would solve this issue alone; the cure for this problem may be as far away as the cure for the common cold. What we do know is that growers around the country have found ways to be successful with the production and sales of poinsettias, and dare I say, actually make money on them. Let us look at some examples of strategies that have worked!

STRATEGIES THAT WORK

Don't compete on price. This is a game you will lose to those companies who have become masters at controlling their costs and selling for rock bottom levels. Build your program around a different set of parameters, including

enhanced quality and service levels to your customers. If you can set yourself apart from other suppliers, you can charge more for your product. Notice, I did not say your "competition," because you need to distance yourself from suppliers who work on price alone and avoid the influence they might otherwise have on your products!

So how do you do this? Quality is one factor that is almost a given; without it, you cannot even play on this field. Good quality helps assure less "shrink" (returns and credits), and is information closely tracked by retailers in all markets. It is more likely you will have to provide other tangibles to your customers to help insulate you from price issues in the market. Services like direct store deliveries, frequent deliveries of smaller quantities, and specialty packaging (value added programs, etc.), and point of sale support can all be used to help retailers sell more plants. For examples of what is available from the web for point of sale support, go to http://www.ecke.com/html/h_points/retmerch.html.

Take the time and effort to initiate discussion with buyers and retailers to identify what their needs are, what they want for their customers, and what problems they have that need solving. Use this information to identify where you have control and can assist in solving issues raised. Through these steps, you become more than just a supplier, you can become a partner in their success. At the same time, you can become less vulnerable to shifts in supply and pricing than growers who don't interact with these retailers in the same way.

Don't grow the same product forms that everyone else supplies. Saturation in the market usually leads to the erosion of prices. If 6-inch pinched plants are the standard in the market, grow something different.

For years, growers have felt justified that they have developed multiple market channels to move products through by offering "premium" or florist grade product sold at one price point while offering lesser quality product to mass market and large retail outlets at lower prices. This strategy only addresses discrepancies in quality found in the crop and limited distribution potential for each product. A more distinct approach has placed greater emphasis on larger product forms that can sell for a higher price (and greater profitability) in all outlets from big box stores to high-end florists.

To a lesser degree, small specialty items are also growing in popularity and offer high-density production, short crop-time alternatives that are more profitable as well. But it should not end there. Spend time working with your retail customers and ask what they would like to have to sell that either isn't available or hasn't been found yet. Use that information to develop new product forms, unique product packaging (tags, pots, etc.) or use novelty cultivars that create opportunity sales and fill their needs for unique merchandise. Remember that retailers are looking to differentiate themselves from their competition and as a result, capture more sales. As a grower, you are more likely to have more information on new products than your retail customers. When it comes to poinsettias, there are also enough consumer surveys being done that you can provide buyers with information on the opinions of the consumers they target. So it becomes a part of your relationship to keep your customers aware of what's new in the market rather than wait until they ask for it, ultimately helping them with their goal of establishing a unique position in the consumer market that equates to increased sales.

Don't always use traditional retail outlets for your products. Consider alternatives that provide you with flexibility and new opportunities for distribution. Fund-raisers, selling direct to the consumer through mail order, the Internet, or at your greenhouse are just a few of the strategies being used successfully by growers. Again, why compete in markets with little room for change; you are not likely to adjust how these retailers price and sell the crop under these conditions.

Market alternatives require initiative and work by the grower to seek out and explore potential for growth before committing their full resources. These markets also put a burden of developing appropriate support for distributing product that is not always an easy fix. Mail order and Internet sales in particular will drive a need for creative packaging and delivery systems that are fast, reliable, and not overly expensive. A key issue with sales through these methods is the volume of plants per customer required to package (small numbers of units for a large number of customers) that is less efficient and more costly to the grower. Also, the cold temperatures typical throughout late November and December make successful delivery especially challenging. For those that can work this out, the opportunities can be exciting.

We have also seen a shift in the market as small to mid-sized operations abandon their wholesale market and move to direct sales to consumers. The profit margins are certainly more interesting than what is available when selling wholesale! However, you better be prepared to deal with the public if you take this course. For those who can manage it, this is one of the best options to consider.

For those looking for an option that does not require going retail but offers better prices than wholesale, supplying fund-raisers is a good strategy. Pricing can generally be maintained enough above wholesale to improve profitability of the crop while remaining enough below market retail to allow the fund-raiser group to sell (and make money) on the product. With these programs, we have seen two distinct approaches to distribution for growers working with fundraising groups. One approach is to schedule and coordinate large volume deliveries of product to a single location, minimizing the need for multiple shipments from the greenhouse. This puts the burden of getting plants to the customers on the organization that sold them. Another approach, although considerably less popular than bulk shipments, has been the use of vouchers that can be redeemed by the customers directly at the greenhouse. If selling direct to the public, this certainly is an interesting way to get more traffic into the greenhouse and create the ideal environment for additional sales. It is hard for someone to pass up buying additional plants when they see a greenhouse full of poinsettias at the time they come to pick up their purchase. For the fund-raising organizations, it allows the opportunity to collect money and not be involved with the delivery of plants. There are good arguments for both systems. If you are already involved in these programs, or contemplating getting involved, check out the promotional materials and order forms at http://www.ecke.com/html/h_points/fundraising.html. These are available at no charge to support sales by these organizations.

There are no simple solutions to the problems faced by poinsettia growers and marketers. It takes a lot of work and effort to bring the crop from start to sale and make money. But for those who are willing to do more than sit back and let the dynamics in the market impact business, there are opportunities to be had. Where do we go from here? That is up to you, the producer, who ultimately must take control of your product and the method in which it is presented to be sold.

OFA

OFA News

OFA ELECTION RESULTS

OFA announced at its July 14 annual meeting the re-election of the Association president and vice president and the election of five new members to the board of directors.

Joe Boarini, owner of Grande Greenhouse in Indianapolis, Indiana, was re-elected as president.

Kathleen Benken of HJ Benken Florist and Greenhouses, Cincinnati, Ohio, was re-elected as vice president.

The five directors elected to the Board are:

Dick Bostdorff of Bostdorff Greenhouse Acres Ltd., Bowling Green, Ohio, was elected to the Ohio grower director position.

Mike Berns, Berns Garden Center, Middletown, Ohio, was elected to the Ohio garden center director position.

Henry Huntington, Pleasant View Gardens Inc, Loudon, New Hampshire, was elected to fill the grower at-large director position.

Marvin Miller, research manager for Ball Horticultural Company, West Chicago, Illinois, was elected to the allied at-large director position.

Barb Bennett, The Plant People, Inc., Orient, Ohio, was elected to the interior plantscape at-large director position.

Also at the Short Course, the OFA Board of Directors re-appointed Jim Broderick as OFA treasurer, Lilly Felder as board liaison, and John R. Holmes, CAE, as executive director.

SHORT COURSE ACHIEVES RECORD ATTENDANCE

The 2002 OFA Short Course once again showed its strength as the floriculture industry's leading educational event, with a total attendance of 10,499. This breaks all previous attendance records for the Short Course, and represents an increase of nearly 400 from 2001.

The 2003 OFA Short Course will be held July 12-16 in Columbus, Ohio.

OFA INDUCTS NEW HONORARY MEMBER

The OFA Board of Directors inducted **Bob Maddux** as its newest honorary member for his commitment to OFA and the floriculture industry. Maddux was presented with an honorary lifetime membership award at the OFA business meeting during the 2002 OFA Short Course.

Maddux has been an active member of OFA for more than 30 years, contributing greatly to the success of the association through volunteer work, monetary support, and his much sought-after advice.

Maddux (Cincinnati, Ohio) is CEO and founder of Delhi Garden Centers and Krueger-Maddux Greenhouses.

OFA ALEX LAURIE AWARD WINNERS ANNOUNCED

Joseph P. Albano, U.S. Department of Agriculture, and **William B. Miller**, Clemson University, were named co-recipients of OFA's Alex Laurie Award.

The Alex Laurie Award is presented by OFA to the author(s) of the most outstanding floriculture research paper published in *HortScience* or the *Journal of the American Society for Horticultural Science* during a calendar year.

This year's award is presented for the paper "Photodegradation of FeDTPA in Nutrient Solutions. II. Effects on Root Physiology and Foliar Fe and Mn Levels in Marigold," as published in *HortScience*, a publication of the American Society for Horticultural Science.

Full press releases for the above and other updated OFA information can be found on OFA's website at www.ofa.org.

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