



Bulletin

The Information Source for the Floriculture Industry Since 1929

CIRCULATE

Successful Propagation of Vegetative Annuals

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As the poinsettia production season winds down and shipping begins, our industry is gearing up for the intensity of spring season production.

Vegetatively-propagated annuals are playing an increasingly important role in spring sales, and this season will include innumerable new cultivars and species of these annuals in the product palette of growers and retailers. Growers have already ordered cuttings from young plant suppliers, and many have opted to buy unrooted, as opposed to rooted cuttings. This trend is on the rise for reasons partly related to quality control, but the decision is based primarily on economics: not only is the cost of an unrooted cutting a fraction of the cost of its rooted counterpart, but

overnight shipping costs are more palatable because the absence of a moist root medium decreases the weight and increases the number of cuttings that can be shipped per box. With more and more growers interested in pursuing vegetative propagation, we have prepared an article that we hope will provide some basic guidelines to help ensure success.

Asexual propagation of floricultural crops has be-

come a means of producing plants that have historically been grown from seed – crops like coleus, impatiens, strawflower, and verbena. Our knowledge about how to propagate these vegetative annuals has been gleaned from what we know about plants traditionally propagated from cuttings like chrysanthemums, geraniums, poinsettias, and New Guinea impatiens.

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SOMETIMES A GREAT NOTION

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Selling interior plantscape goods and services is unlike most other sales jobs. We call on corporations, restaurants, hotels, shopping malls, and high-end residential prospective clients to convince them to support the idea they need foliage. Next, we specify what type of plants and containers they'll need. Then, we give them both the price to either buy or lease the green and hard goods and our monthly fee to care for these plants at their site. And, to top it all off, we then guarantee to replace any plant that fails to thrive. And, we do all this bidding

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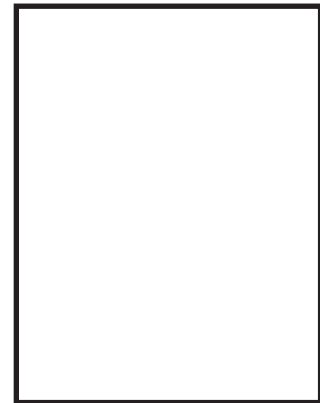
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IS FLORICULTURE HEADING TOWARD COMMODITY MARKETING?

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In last month's *Bulletin*, I wrote an article that dealt with a question that came from the recent Seeley Conference. The question was whether floriculture is experiencing a profit crisis. In that article, it was established that profit margins do indeed appear to be declining on an industry-wide level, but that the current consumer mindset favors more gardening. The conclusion was that the floriculture industry needs to figure out how to offer consumers what they want, and time is of the essence. The article ended by asking the question "will floriculture choose a path encouraging commodity or value-added pricing?"

The basis for this article is a presentation at the conference by an agricultural economist. While Seeley Conference attendees agree not to cite speakers by name in order to allow free and open discussion, the academic nature of this economic topic lends itself to detailed discussion. I have inserted a few personal experiences to help illustrate the principles.

Three economic forces impacting the floriculture industry are value-added marketing, a product's life cycle, and a firm's cost behavior in a mature market. Let's look at each individually, and then we'll tie them all together.

VALUE-ADDED VS. COMMODITY MARKETING

This is the question we asked last month, the \$64,000 question facing floriculture presently. How we choose to respond to this question over the next several years will define how the next generation of floriculturists will manage their businesses. Remember that many of us believe all we're doing during our own careers is accepting the responsibility to steward our businesses and industry successfully through our terms of leadership in order to hand them off to the next generation responsibly. None of us should think that the sun rises and sets on our individual business or career.

Consumers tell marketers frequently that they are willing to pay extra for added value. This doesn't mean they are willing to pay higher, value-added prices for all things all the time. After all, Wal-Mart and Home Depot aren't doing as well as they are because of value-added strategies. But when the time, place, and product are right, consumers are willing to

pay more if they perceive higher value. They desire the uniqueness that producers create in otherwise common items by adding value in any number of ways.

There was a day when pasting a small sticker on an apple was unique and allowed for premium pricing. Do you sell mature patio tomato plants complete with a tomato cage? The cost of the cage can be more than covered by the higher price and perceived value. What the customer sees is less work involved in staking a plant that few enjoy touching and smelling. Think of value-added marketing as creating a monopoly for the particular product category. If your package of product plus added value is real and unique, competition doesn't exist.

Mass marketers tend to subscribe to an economic theory that value is a function of price alone. Television ads are abundant that claim the lowest price in town carries the best value. With commodity items such as gasoline, that's correct. We now have confidence in our government regulations that 87-octane fuel is the same from station to station, regardless of brand. I'm sure my father can recall having to be careful to purchase quality gasoline from a reputable company instead of a low-price seller to avoid engine pinging.

Do you remember when service was the value-added item at a gas station? Some post-baby boomers have never had a station attendant pump the gas and ask to check the engine oil or wash the windshield while the tank was filling. Once everyone did the service thing, games, contests, and frequent purchase gifts hit the scene as value-added items. Today, it may be the brand of doughnut and coffee sold at the station that creates the added value. Notice that the added value doesn't have to have anything to do with the actual product. We need to learn this quickly.

Back to the value formula, time-tested economic theory states that value is a function of both product quality and service, relative to price. From last month's discussion, the decade of the '90s claimed that a service economy had arrived; but 10 years later, consumers are still waiting for quality universal service. Today, service can still be your ace in the hole if it's done well. Excellent service will still set a business apart from the competition, but it must be done right. Thus, value-added marketing results in premium pricing, while commodity marketing results in mere price taking.

THE INEVITABLE PATH

Now for the depressing news. Fight this if you choose, but consider yourself warned that the effort will be in vain. Today's value-added product or service becomes tomorrow's commodity. Any wind left in your sails? I'm still gasping for air, and it's been three months since the conference.

Isn't this true? We can put poinsettias, geraniums, and garden mums on the table and have some spirited debate as to whether they've become commodity crops. How about anything grown in a cell pack? We were given several examples from other industries: telephone pagers and the apple sticker mentioned earlier topped the list. Are cell phones or desktop PCs far behind? I'll add many hard goods that used to line my retail shelves, bales of peat moss, even decorative containers. There was a time for each of these categories when we were able to charge premium prices and make decent margins because they offered uniqueness. We've learned the hard way that knowing when to get out is absolutely critical to avoid



choking on slow-moving inventory.

My mixed container presentations make the point that the job of the small, independent grower and garden center is to continually search for new and different

things to offer. Staying ahead of the curve allows us to take advantage of value-added pricing and accompanying profit margins. Holding on too long results in overproduction as soon as customers learn they can purchase products similar enough at commodity prices. It's natural and inevitable, so get used to it. Gone are the days when I could grow something simply because it was fun to grow. Today, if it doesn't contribute to my business's bottom line positively and I can't figure out how to add value to it, forget about it.

We need to adopt a continual search strategy as a way of life; it needs to be a core value in our business. Those who prefer isolationism, the "just let me grow what I've always grown" strategy, will likely become casualties. Instead of being disappointed that Supercascade Petunias may be in decline in your operation, embrace the fact that Supertunias and Wave Petunias perform better and can be sold for higher prices. Instead of feeling sorry that there's no profit left in selling bales of peat moss, bag and brand your own potting soil for customers. Staying ahead of the competition works; ask any expert in marketing or economics.

Marketing academics always, always tell us that selling on low price alone fails. That's the good news. However, after decades of making a living in the greenhouse, I've realized that while what the professors are saying is true from a theoretical perspective, the real world brings something different. I agree that selling on price alone isn't a successful long-term strategy. We're seeing K-Mart in trouble today; many others have come and gone before them. The problem is, and here's the bad news, there's **always** someone else in town ready to jump in at commodity prices. My business professors forgot to tell me that while low-price takers will not survive, alas, there'll **always** be downward price pressure. What's that tagline on the rear door of every Wal-Mart trailer, "Low prices ... always." I always hit the left blinker and the accelerator to pass Wal-Mart trucks. There's something scary about that word "always."

PRODUCT LIFE CYCLE

The classic bell curve tells the story about any product's life cycle. During the introduction stage, sales increase quickly. Profit lags however, because the cost of production can't be covered until a critical number of units are sold. The growth stage follows, and profit grows at its fastest rate as demand is high and efficiencies of production are realized. At some point, the growth begins to level off; the product is now entering its mature stage. Profit will begin to plateau early in this stage, and then start to drop. The final stage is the decline stage; you can guess what happens at this point.

Here are some rules and advice from our economist about operating during the various stages of the product life cycle. First, like it or not, every product, business, and industry will eventually mature and decline. It's just like death and taxes; there's not much that can be done to avoid it. Just as a grower can't control an insect's life cycle by attacking the pupal stage of development, so to is it impossible to control a product's life cycle.

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IS FLORICULTURE HEADING TOWARD COMMODITY MARKETING?

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Kenny Rogers said it well in his song "The Gambler": "Know when to hold them, know when to fold them, know when to walk away, know when to run." We need to work the product life cycle theory just like the economic theory of supply and demand. I hate dumping plants, so the conservative message of the song works for me. You may be more of a gambler and risk taker, willing to grow more of anything new to make sure you satisfy your clientele's demand. However, there are always some dogs in the new introductions that you dump, discount, or give away. If that fits your business strategy, great. Back to my comment, I hate dumping things and prefer to be more conservative.

Be very, very careful to recognize the slowing of growth for a cultivar, crop, even your business as a whole. Learn how to adopt the necessary strategies for operating in the mature and declining stages of the cycle. Lastly, watch out for excess capacity, i.e. overproduction.

MATURE STAGE COST MANAGEMENT

It hasn't been determined yet whether floriculture is operating in the mature segment of its industry life cycle. I don't really believe we are, but still, understanding the following principle won't hurt. When an industry reaches its mature stage, how firms manage their fixed costs becomes a key ingredient in their success or failure. While variable costs are tied to actual production, it's the fixed costs that keep rising regardless of units sold. Overhead costs such as insurance, equipment replacement, and so on can turn profits into losses quickly if not managed well.

During this stage of the product life cycle, continuing to practice the value-added theory only increases fixed costs. That's why many industries strip down to commodity levels as products mature; it doesn't pay to try and keep the product at earlier, profitable levels. When was the last time that gas station attendant pumped your gas or checked your oil level? Does the station even keep a mechanic on duty or is that too much overhead to carry in today's economy?

The pitfall to maintaining profitability during this stage becomes spreading fixed costs over greater production volume. There's no way around this, as fixed costs always continue to rise. Because value-added marketing implies more fixed costs, it becomes more difficult to practice. Do poinsettias illustrate this economic principle? Let's see. Are our large growers trying to increase production volume and number of poinsettias sold? Are rising overhead costs threatening their profitability? Is it eating into their profits to have to provide value-added features such as pot covers, sleeves, care information, and signage ... at wholesale prices that don't cover the costs?

A logical conclusion for operating in a mature industry is so simple that it's complicated. Eliminate excess capacity.



Isn't that easy? Instead, many growers conclude that a more, more, more approach is needed to garner market share. The most difficult decision I've had to make in my family business started last year when we decided that taking a greenhouse down was best for our future. A second house came down this year. In all, we've decreased our production capacity by 10 percent. Does this mean we've entered our mature stage? I don't know, but there's no point in growing plants that aren't going to sell. What's that do to our profitability?

HALF EMPTY OR HALF FULL?

One conference, two articles, and months later, here's how I see the situation. We keep pointing to the huge number of nongardeners in the United States as untapped potential for future growth and profitability. However, the marketing effort that's needed to make this a reality has been practically nonexistent compared to the effort that's gone into increasing production capacity during the same time. The result ... too many plants for too few gardeners. If we don't grow our customer base, overproduction, commodity marketing, and declining profits paint a not-so-rosy picture.

How do we keep our products from aging and becoming stale in the consumer's eyes? I have nothing new to report to you; our leaders and marketing experts have been telling us how to battle staleness for years. Fortunately, our breeders understand what is needed and are continually rejuvenating our greenhouses and garden centers with new and different species and cultivars. We're really quite lucky that we're dealing with plants and living organisms that lend themselves to this strategy. After all, how much can you change bathroom tissue or laundry detergent?

In last month's first part to this article, I said that in reality, as an industry, we'll probably choose to take some products to the commodity level while guiding others to the value-added level. The degree to which this is managed is unfolding before our eyes. We're writing history with each season. There's danger in generalizing, but here goes. The growth of mass merchandising in floriculture is applying pressure to choose the commodity path. To those of us who are traditional retailers, from time to time we can't help but say, "Go away and leave us alone." But after living through such a significant shift in industry philosophy, we now realize that co-existence with the mass market is workable and can even be advantageous. It just takes more thought to learn to shy away from commodity items and jump on value-added items while they are profitable.

OFA

SUCCESSFUL PROPAGATION OF VEGETATIVE ANNUALS

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Determining optimal cultural practices for the vast number of species that are propagated vegetatively can seem overwhelming, and there is no question that we are still learning. Cutting nutrition, photoperiod manipulation, and plant growth regulation are just some of the areas on which research is currently being focused.

Propagation trends. Most unrooted material now comes from overseas. Off-shore production of cuttings will continue to be the trend because Southern Hemisphere locales offer the advantages of optimum environmental conditions and inexpensive labor. To ensure adequate distribution of rooted and unrooted cuttings, propagation firms have granted licenses to growers who have demonstrated exemplary growing practices such as producing high-quality material, installing concrete floors, adding thrips screening, and implementing extensive pest management protocols. While obtaining a propagation license to root and sell to other growers is very difficult, the opportunity to root patent-protected cultivars for one's own use has stimulated the purchase of unrooted cuttings by individual growers.

What it takes to root your own cuttings. The starting place is to make sure you have the right facilities for doing the job. The rooting area should be separate from the production greenhouses, and it should most certainly be away from retail spaces. Because the propagation area will be a "water world" much of the time, make sure that the space is well-drained. It is also necessary to have a layer of concrete or thick gravel on the floor because

this rigid barrier makes good sanitation practices easier.

The correct equipment for the job includes an automatic propagation system consisting of plumbing and emitters, bottom heat with a thermostat, a mist controller or regulator, a timer, and solenoid valves set up on benches. The incorporation of an in-line filter will help prevent problems from small debris clogging the mist emitters. Some propagators are now investing in supplemental light to increase daylength and light intensity during overcast days in winter. Don't forget to have a back-up plan in case the system fails. Manual mist nozzles; a back-up mist controller, timer, and solenoid valves; white plastic for a propagation tent; and/or a sprayer that can deliver fine mist to the cuttings can go a long way to avert a crisis. Run through this checklist of other considerations:

- Have you completed a cost analysis between buying rooted cuttings versus propagating unrooted cuttings? You may be better off purchasing some species as rooted cuttings.
- What is your rooting schedule for spring season?
- What type of propagation medium and size of rooting tray will you use?
- How will you receive your cuttings?
- Do you have skilled employees for the job who do not smoke or chew tobacco and are very detail-oriented?

WHAT TO EXPECT FROM THE EXPERTS

The mother plant. Because of intensive breeding efforts and competition among propagation firms, new and patent-protected cultivars with unique characteristics are appearing on



the market at a rapid rate. Stock plant establishment and large-scale propagation must be successful to increase market share and profitability. The primary objective of propagation firms is to maximize cutting quality and quantity. This requires development of a stock plant program that includes specific fertigation strategies, pest management, environmental regulation, and chemical growth regulation. In particular, keeping stock plants and greenhouses disease-free is a never-ending task. A cutting's performance during propagation can be directly linked to how the stock plant was grown. The following is what you should expect when you purchase a high-quality unrooted cutting.

Cutting size. Each cutting should be between 1.5 to 3.5 inches in length and have at least three to five leaves on it. A cutting that is stretched with long internodes, has a thin stem caliper, and/or has reduced leaf area will not root optimally. A cutting is also considered "poor" if it is too short, its caliper is too wide (a "tree-trunk effect"), or if its leaf area is so extensive that it will suffer from increased water loss under mist. Cuttings should have a quantity and size of leaves that will not hinder rooting of neighboring cuttings by covering their apical meristem (terminal tips).

Depending upon the species, some propagators will either "tuck" large leaves of cuttings down toward the rooting medium or cut the leaves by 30 percent to 50 percent to avoid shading the apical meristem of neighboring cuttings, but keep in

mind that any wounding may provide an entrance for pathogens.

Cutting age. Growers should receive softwood cuttings that have an actively growing meristem. Tissues that are too young or too old will root more slowly than cuttings that are at the proper stage of maturity. Fully developed flowers on cuttings are a sure sign that tissue may be too old to root optimally. Cuttings that are too old do not branch as extensively as younger, softer tissue. Visually inspect the lower portion of the cutting to check for woody tissue that is brown or grayish-brown in color. Cuttings that exhibit hardwood tissue may need to be recut closer to the shoot tip.

Pest free. Cuttings must not harbor bacteria, fungi, or viruses. Stock plants should be pest-free, and this requires adoption of a thorough IPM program, including pesticide applications, to produce "clean" cuttings. Microscopic spores cannot be visually detected on cuttings upon receipt, and the perfect environment for these pathogens – wet and warm with minimal airflow – awaits them in the rooting area. Watch for slimy, fuzzy, or mushy growth on the foliage, as this may be an indication of Botrytis or another disease organism. Inspect the undersides of the leaves before sticking cuttings for signs of feeding damage, eggs, or immature life stages from the common insect pests: whiteflies, thrips, and aphids.

Nutrient and carbohydrate rich. Stock plants that

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SUCCESSFUL PROPAGATION OF VEGETATIVE ANNUALS

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are fertilized appropriately will produce cuttings with enough nutrient reserves to “carry” them through the early stages of propagation. Adequate nitrogen (N) content is crucial in cuttings, because it is important for nucleic acid and protein synthesis in plant tissue – both of which are cornerstones of new growth. An increase in pre-rooting N concentration has been shown to increase the number and length of subsequently-formed adventitious roots of many vegetatively-propagated species.

However, if tissue N concentration is too high, rooting will be inhibited. Stock plants should be fertilized with both ammoniacal-N (NH₄-N) and nitrate-N (NO₃-N) to improve the quantity and quality of cuttings produced. Stock plants fertilized with high rates of NH₄-N will produce soft, lush cuttings that will not ship well. Because calcium and boron are essential for the development of new cell walls, it is critical that stock plants are not deficient in these nutrients.

Cuttings coming from the Southern Hemisphere should be rich in carbohy-

drates. Low carbohydrate reserves in cuttings are reflected in lighter, thinner, and weaker tissue that may result in poor root and shoot growth during propagation.

Plant growth regulators.

Because flowers or flower buds are not desirable on unrooted cuttings, stock plant producers apply ethephon (Florel®) to control reproductive growth and, for some species, enhance branching. Ethephon remains effective on plant material for six to eight weeks. A recommendation is to spray ethephon on stock plants two weeks prior to harvesting cuttings. With an average of four weeks spent in propagation, growers can expect to see flower buds appearing on cuttings at the end of the propagation phase. A general range of application of ethephon is 250 to 500 ppm, and keep in mind that higher or improper application rates can delay flowering. Even at recommended rates, a slight reduction in leaf area may occur.

GETTING DOWN TO BUSINESS: STEPS TOWARD SUCCESSFUL PROPAGATION

Stages of propagation.

Breaking propagation into stages, similar to how plug

production is described, is an effective means to describe cultural production strategies during cutting development. These Stages range from 1 to 4 and are categorized by cutting development: Stage 1 occurs from sticking the cutting through the development of a swollen cutting base. Basal swelling is an indication of root initiation, where root initials arise from the interior portion of the cutting, and the initial formation of callus tissue. Stage 2 starts when the callus begins to develop and is completed when root initials protrude from the basal portion of the cutting. Stage 3 occurs during the development of significant root and shoot growth, and the toning stage prior to transplant occurs during Stage 4. Refer to Figures 1 and 2 for a visual description of all four stages.

Propagation area preparation (pre-sticking).

Several tasks must be completed before cuttings are stuck. Excellent sanitation practices are a must in propagation space: the greenhouses should be “tight” to minimize pest and weed seed entrance, floors should be devoid of debris, and glazing and bench surfaces should be sterilized. Striving to eliminate algae is critical, as this is a food source for shore flies.

Propagation trays and tools should be washed with a disinfectant such as Green-Shield® (12 fluid ounces per 25 gallons) or a 10 percent bleach solution. Rinsing off the surfaces with tap water after disinfecting with diluted bleach is recommended. Consider filling a few shallow plastic basins with a mild bleach and soap solution (2 caps bleach + 1 tablespoon soap per 5 gallons of water) for washing hands and forearms before handling cuttings.

Take the time to plan the layout of your propagation area so species that prefer a drier environment are stuck on the perimeter of the rooting bench and those preferring higher humidity can be placed in the interior of the bench. Monitor the root zone temperature with soil thermometers at multiple locations throughout the propagation plot to identify “hot” and “cold” zones.

Receiving tags one to two weeks prior to receipt of cuttings, a service that is now offered by some unrooted cutting programs and tag companies, will alert the propagator to plan ahead. The root medium should be pre-moistened before sticking cuttings; this will avoid desiccation of the basal portion of the stem cutting.

Upon receipt of the cuttings.

Boxes of unrooted cuttings should be opened immediately. Select an area that is protected from direct sun to unpack and inspect the cuttings; and start the process of re-hydrating them by placing them under mist, ideally in a quarantined area to prevent inadvertent pest introduction to established cuttings. Another way to rehydrate cuttings that are not firm, or fully turgid, after opening the box is to place them in a cooler overnight. Keep labels included by the supplier that would allow precise tracking back to the



Figure 1. The first three stages of propagation demonstrated with *Argyranthemum*. (Photo courtesy of Brian E. Whipker.)



Figure 2. This well-rooted New Guinea *impatiens* cutting represents Stage 4 of propagation. (Photo courtesy of James L. Gibson.)

stock bed where cuttings were taken. Suppliers should be contacted immediately if there are problems with incorrect cutting numbers or signs of disease, insects, frost, or heat damage. A digital camera can be used to photograph any problems so images can immediately be sent to the young plant supplier.

If cuttings have to be held, store them in a cool environment with high (70 percent+) relative humidity. For example, geranium cuttings can be stored at 36 to 40°F, while impatiens require a 50°F storage temperature. In general, most vegetative annuals can be stored at 50°F, but storage temperatures above 65 to 70°F can result in increased respiration and cutting dehydration. Cuttings of most species should not be stored for more than three days and may require periods on the mist bench to maintain hydration.

The propagation medium. A propagation medium should be easy to handle, provide consistent uniformity, and provide vigorous roots in the shortest amount of time. In general, an ideal substrate for propagation retains moisture, but also provides adequate oxygen and supports cuttings upright. A propagation medium should have between a 25 percent to 35 percent air-filled porosity. When air-filled porosity exceeds 30 percent to 35 percent, moisture stress can occur. Propagation medium pH should be around 6.0, with an electrical conductivity value below 0.75 mS/cm.

Unrooted cuttings today are stuck in a variety of substrates, including peat-lite mixes, Jiffy® pellets, Preforma®, Oasis® or Agri-foam®, or Rubber Dirt to name just a few. Some propagators prefer a coarser sub-

strate such as a 50:50 peat: perlite mixture, while others use a fine-grade plug mix. Molded substrates like Rubber Dirt, Preforma®, and foams may provide the advantage of allowing for earlier transplant than when loose mixes are used for rooting, because the root ball remains intact even if the cutting is not very well rooted. Consider the watering style and transplanting schedule that your operation follows when you decide on an appropriate substrate.

The situation in containers. Containers have as much influence on porosity, water-holding capacity, and air-filled pore space as the root medium itself. Propagation containers are shallow, so as the container height decreases, the water-holding capacity increases and the air-filled pore space decreases. There is a flooded zone near the bottom of the container known as a “perched water table.” These physical property problems can contribute to poor rooting, so growers can adopt two strategies to improve rooting percentages.

First, because cuttings tend to be stuck too deep, make an effort to stick just deep enough to keep them upright and out of the perched water table. Secondly, choose a faster-draining medium that has a shallow zone of saturation like high-percentage perlite mixes or foams. While these materials increase drainage, be aware that demand for mist or need for occasional overhead watering often increases when they are used.

Rooting tray density. Tray sizes for rooting vegetative annual cuttings range from 36 to 200+ cells, with 105-cell trays being the choice of many. Cutting size is the key factor in determining how many cells per propagation tray growers should



use. More vigorous species, such as sweetpotato vine and petunia, should be produced with fewer cells per tray. Also consider the number of cuttings that you will stick per cell. For example, Mexican heather, diascia, nemesia, and bacopa are often propagated with two cuttings per cell to produce a fuller cutting. The choice of cell shape varies from propagator to propagator. Several growers choose hexagonal cell shapes because as roots develop, they do not spin in a circular motion. This helps avoid root wrapping if cuttings are held in propagation trays for extended periods of time.

Rooting hormones. Most high-quality cuttings will not require exogenously applied rooting hormone, but difficult-to-root or woodier tissue may benefit from an external source of auxin, the plant hormone that aids in the initiation of adventitious roots. A concentration of IBA (indolebutyric acid) at 1,000 to 3,000 ppm helps to speed root initiation, and NAA (naphthalenacetic acid) at 500 ppm may also be effective. Species that respond to rooting hormones include dahlia, lobelia, mimulus, monopsis, osteospermum, and thunbergia. Foliar sprays of rooting hormones directed toward the stem base can be applied with a spray bottle. Quick dips are also used when rooting vegetative annuals, but caution should be used when dipping because the chemical itself or the solvent (usually alcohol) can damage cutting basal tissue if the duration of the dip is excessive. In addition, dipping cuttings in a common

container can contribute to disease spread if some cuttings are infected.

Sticking depth. A problem that growers may experience is damage to the basal region of the cutting where callus develops. This can be caused by excessively warm bottom heat temperatures and, as noted earlier, lack of oxygen in the perched water table in shallow containers. In general, stick vegetative annuals 0.5 to 0.75 of an inch into the propagation medium – just deep enough for them to remain upright. Certain species, like vinca vine, require that a node be placed under the root medium surface to achieve better rooting.

Watch for next month's *OFA Bulletin* which will include Part II of this article. Details will be provided to help you optimize the propagation environment, and a handy table that summarizes appropriate environmental conditions at each rooting stage is included. In the meantime, check out this web site for more photos of the propagation process: www.ces.ncsu.edu/depts/hort/floriculture/crop/crop_prop.htm. **OFA**

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SOMETIMES A GREAT NOTION

Continued from page 1

against others that also want this job. Sounds crazy, no? Well, probably yes. Early on, we 'scapers realized that, unlike buyers of food, hair care products, and cell phones, the whole world is not a potential customer for interiorscaping services and only a very few need our special services.

That's why general advertising is not for us, nor are most of the tried and true ways usually used to generate sales. For us it's watching out for buildings going up (offices, hotels, etc), calling on potential and existing clients (new office building next year), keeping in touch with design professionals who might recommend or specify us, networking, and coming up with ideas from all over the place that might give us the edge in generating new business.

So here, in no particular sequence, are a few ideas meant to strike a spark and set your interiorscape sales brain on fire.

NEW PLACES TO LOOK FOR LEADS

- Office furnishing companies – They know who's building and who's moving.
- Office furniture movers – They know everyone who's moving.
- Interior designers – Make sure you talk to those who provide service for the market niche you are targeting (hotel designers for hotel work, etc.).
- Property managers – They can be with a corporation or manage space for an owner. Ask for introductions to other property managers.

ADVERTISING VS. PUBLICITY

Advertising is when your name is in the paper and you've paid for it. Publicity is when your name is in the paper and it's free. But you can't just wait for the media to call you. Think of the things your company does that provide a great photo opportunity – carrying that humongous planter into a new atrium, stringing holiday lights along Main Street, or carrying in the 14-foot Christmas tree for the library. Alert the local paper, set up a time, make sure they spell your company name right, and smile.

KEEP YOUR NAME OUT THERE

If you service a market with a lot of tall office buildings, consider having your company logo printed on the roof of your vans. That way, everyone looking down will see your name.

THINK OUTSIDE THE BOX

Surprise existing clients with a small plant at an unexpected time, not a holiday but just an ordinary day. This gets their attention for sure.

HOW DOES THE WORLD PERCEIVE YOU?

Often we lose sight (or sound) of how the public perceives us. For 'scapers, most contact with clients is by phone, so a



great phone answering setup is critical. Check out how the voice answering your phone sounds. If you use a message machine, make sure the message and any phone numbers are clearly and slowly enunciated. And make certain that you respond within a reasonable time frame (say 24 hours), and tell the caller this in your message.

RESIDENTIAL MARKET

Instead of dealing with one high-end home at a time, consider mapping the course for multiple properties by contacting high-end gated communities. They often have a management office; and with their help, you could become the preferred interiorscape service for the whole community or, at the least, permitted to make a brief presentation at a homeowner's association meeting. Bring cookies and punch, and don't forget to talk about entries, patios, and holiday.

ANOTHER CONTRACTUAL SERVICE

Lastly, one of the major problems for suburban office parks with water features has been the ever-increasing number of Canadian geese living there. No longer inclined to migrate, they remain year round; and, while we love to see them, property managers are not overly fond of their deposits (need I say more?).

Recently, one answer to the situation has been to have someone with a large dog patrol the area (I've been told border collies are preferred). This induces the geese to move on to someone else's office park. Now, it seems to me that since 'scapers already provide one service to office park buildings, maybe they'd like to add another contractual service, namely the "Goose-Be-Gone" service.

Just an idea or two, and like I said, some common sense and some not. The main thing is to STOP! Stop and look at everything you're doing to generate sales and how you're doing it. Can it be done differently? Better? Can you save time? Money? Just the process of rethinking your own strategies or reading the above ideas will give you even more ideas. Meanwhile, go get 'em!

Barb Helfman is the former owner of Something Different Interior Plantscaping, columnist for Interiorscape magazine, and inventor and president of TOPsiders Inc. She has also been on the OFA Board of Directors and is currently serving on the OFA Interior Plantscape Short Course Planning Committee. The above sales tips are excerpts from Barb Helfman's TOPtactics Sales E-Tips. To receive the bi-monthly Sales E-Tips, register on-line at www.topsidersinc.com or by calling TOPsiders at (800) 533-7661.

OFA

Humidity Management

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Humidity management is an important part of integrated pest management (IPM). By keeping plant surfaces free of water, it is possible to minimize germination and spread of fungal spores. The strategy is effective in

suppressing fungal diseases such as powdery mildew and Botrytis, which are two of the most common diseases in greenhouses. To keep plants dry, environmental control strategies such as drying in a house, warming

plants, moving air, and purging moisture are important.

The least expensive method to reduce disease pressure in a greenhouse is to keep it dry, especially going into nights. Water

puddles on the greenhouse floor, water on leaf and growing media surfaces do evaporate, which adds moisture to greenhouse environments. Evaporation not only makes environment more humid, it also takes away valuable energy that is intended to keep a house warm. Watering just enough to prevent excess water on the floor, and watering early enough to allow plant surfaces to dry up before going into nights are two key energy-efficient approaches to have a drier house.

Additional care is needed to keep plants dry throughout the night when moisture can come from condensate that drips from overhead structures or forms on leaves. To collect the dripping, drainage channels are commonly installed underneath greenhouse gutters. Anti-dripping glazing materials or spray compounds may also be used to drain condensate away.

Condensation could also form on leaf surfaces. It occurs when leaf surface temperature is below dew point. In an environment of 85 percent relative humidity and 60°F, condensate will form on leaf surfaces when leaf temperature is lower than 55°F. At 95 percent relative humidity and 60°F, condensation occurs when leaf temperature is only one degree lower than air temperature. Lower leaf temperature is caused by heat loss to cold clear sky through radiation. To reduce radiation heat losses from leaves, an energy curtain may be used to serve as a barrier between plants and the sky. Another energy-efficient option to keep plant temperature above dew point is to use bottom heat.

Lowering the dew point surrounding plants could also help to reduce the likelihood of condensation on

leaves. The highest relative humidity in a greenhouse is generally found inside plant canopies, where moisture is generated from transpiration and trapped due to insufficient air movement. To control condensation, sufficient air movement is needed to move high humidity air away from the plant canopy. As a rule of thumb, air movement should be great enough to move leaves slightly. Bottom heating works well for condensation control, because it not only keeps plants warmer but it also causes vertical air movement (due to air buoyancy) that moves high local humidity away from plants.

Moisture purging may be needed if high humidity remains a problem despite other efforts. By forcing ventilation, even when air temperature is below normal cooling set point, moisture in the house can be reduced at the cost of additional heating. By cracking open roof vents (if so equipped) or active venting at the lowest level, moisture may be removed as needed. Automated dehumidification is essential for effective, around-the-clock humidity management in greenhouses. Energy efficiency of dehumidification should also be of concern, since additional heating is required to purge moisture. Although there are different dehumidification strategies, it is generally a good practice to have some time delay between heating and venting operations. The energy efficiency of a dehumidification strategy can be greatly improved if good mixing of heat and greenhouse air can be achieved before ventilation. Figure 1 is a convenient reminder of the steps that can be taken to reduce disease pressure in greenhouses.

How low should humidity be controlled in greenhouses to suppress disease pressure?

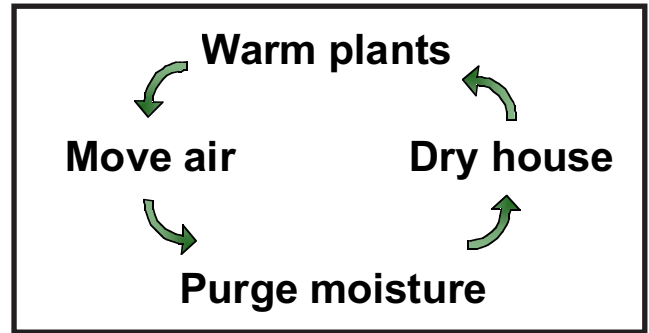


Figure 1. Steps that can be taken to reduce disease pressure in greenhouses.

Before we give a relative humidity threshold, one needs to know that it actually varies with temperature. The level of critical vapor pressure deficit (VPD), on the other hand, is a constant and is a better measure than that of relative humidity alone. For example, researchers recommend a VPD value of greater than 0.2 kPa (kilo Pascal) for plant production. While VPD is a measure of how easy water molecules can move from leaves to ambient air, a larger VPD value is desirable. Just as VPD is an indicator of the combined effect of both temperature and relative humidity, and just as wind chill factor is a unified indicator of the effects of both temperature and wind speed, relative humidity

alone is not a good indicator of disease pressure. Table 1 provides temperature and corresponding humidity set points for disease prevention. The desirable humidity set point varies with temperature. Plants in warmer environment can tolerate higher relative humidity.

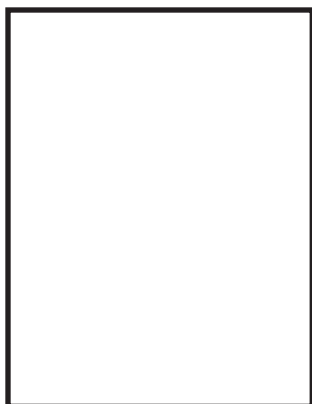
Humidity management is a valuable tool to fight diseases in greenhouses as part of overall IPM. Effective environmental control not only reduces disease pressure and reduce pesticide usage but also offers more greenhouse accessibility since the reentry interval is basically zero. The key to successful disease pressure suppression is to keep the plant canopy dry, especially from dusk to dawn.

Table 1. Corresponding temperature and relative humidity set points for disease prevention.

| Temperature (°F) | Relative Humidity Threshold |
|------------------|-----------------------------|
| 50° | 83% |
| 61° | 89% |
| 68° | 91% |
| 86° | 95% |

OVERWINTERING CONTAINER-GROWN PERENNIALS USING "MINIMUM HEAT" POLYHUT STRUCTURES

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Overwintering is a critical phase of the perennial production schedule at Millcreek Gardens LLC. Our nursery is located near Columbus, Ohio, and we have been growing herbaceous perennials, herbs, and ornamental grasses since 1978. We are known as a "traditional" perennial grower because we transplant and grow most of our crop during the warm summer months, store the plants in "minimum heat" polyhuts during the winter months (overwintering), and sell the plants the following spring.

By growing our perennials in containers using this schedule, we ensure that our plants have a heavy root system, they will be properly stratified to induce blooming, and they will perform and bloom for the retail garden center customer in the following growing season.

Overwintering is often the riskiest part of producing perennials, depending on how much control you have over the winter storage of the plants. As a general guideline, the critical temperature for root damage for most perennials is around 20°F. Most perennial roots could survive a few nights at that minimum temperature; but if the roots are exposed to repeated temperatures this cold, root damage will occur. As a result of this damage, secondary infections could attack the weakened root tissue and cause death. This is especially true since the perennial containers sit on top of the ground and are exposed to the air temperature outside. The key, then, is to protect the roots from these root-killing temperatures.

In my view, overwintering is a process with four goals: 1) allowing the perennial crop to become naturally dormant with minimal cold-related damage, 2) avoiding root-killing temperatures, 3) maintaining the crop in a dormant state over the winter months while performing routine maintenance tasks such as pruning, and 4) bringing the crop out of dormancy as naturally as possible. In USDA Zones 8 or 9, the overwintering process may not be much of a concern. But in areas where the average low temperature is 20°F or lower during winter, it should be a major concern. In central Ohio, we are in USDA Zone 5b, and the average minimum winter temperature is -10 to -20°F, so we must be cautious in how the process is handled so we achieve these four goals and prepare the plants for sale beginning in March.

What is the best way to protect the roots from root-killing temperatures? Overwintering with foam blankets or other

coverings is an easy and inexpensive way to cover up plants for winter. The basic concept is to use the blanket to trap heat that radiates from the earth. The blanket should be covered with a layer of white poly film attached firmly to the ground so the bed is tight. The blanket does a pretty good job of moderating temperatures under the foam in the root zone; and when the temperature drops quickly during the day, the temperature drops much slower under the blanket in the root zone.

Using a structure to overwinter container-grown perennials gives us much more control of the environment in which the crop grows, and gives us a better chance of achieving our four goals of overwintering. Depending on how elaborate the structure is outfitted, you should strive to control most environmental factors during the winter months. We use 20-foot x 120-foot galvanized steel polyhuts as our structures to overwinter all of our perennials and ornamental grasses in containers. After transplanting our perennials during the summer, the plants are moved out to the polyhuts. Since the polyhuts are uncovered during the warm months of the year, the plants are essentially grown outside. Most of our transplanting is completed by late September to allow the plants to grow and mature before cold temperatures arrive in late November. At this stage of the season, our perennial growers keep a close eye on weather patterns to help determine when to begin covering the polyhuts.

After the plants begin to go dormant in the fall, the huts are covered in mid- to late-November with two layers of 4-mil clear co-poly film and are inflated. We use aluminum extrusion to fasten the co-poly film to the polyhut structure, and this allows for very fast and reliable application of the film.

White co-poly film can be used, and it moderates outdoor temperature swings inside the polyhut very nicely in the winter and early spring. On a sunny day in early spring, a polyhut with white film can be 15°F cooler than a polyhut with clear film. If you use clear co-poly film, you must have some sort of ventilation to exhaust heat on a sunny day. We prefer to use clear co-poly film in most cases for several reasons:

1. Most perennials have some foliage during the winter months, so clear co-poly film allows the maximum amount of sunlight exposure to the crop.
2. On a sunny day, the foliage stays drier with clear co-poly, and this helps to minimize foliar diseases.
3. On a sunny day, heat absorbed by the concrete walkways, gravel floors of the polyhuts, and soil in the root zone helps to moderate the temperature drop later in the evening.
4. In spring, the plants break dormancy earlier, allowing us to ship earlier.
5. In spring, the plants will remain shorter and more compact than those in the shaded environment of a polyhut covered with white co-poly, where the perennials tend to stretch.

All of our polyhuts are equipped with 125,000 btu unit heaters that are controlled by a thermostat to come on at about 30°F to maintain temperatures that are well-above root-killing temperatures. We also have shutters and ventilation fans that are set to come on at 45°F to keep the plants cool and dormant. Natural ventilation by the use of roof vents or roll-up sides will save on mechanical ventilation costs.

Advantages to using "minimum heat" polyhut structures to overwinter plants are:

1. You can control the growing environment on a day-to-day basis.
2. It is much easier to monitor and control disease and pest problems.
3. Using structures enables you to access your plants all winter, so you will be able to keep your employees busy all winter with the pruning and other maintenance tasks in the huts.
4. You are always able to reach the plants for early shipments, etc.
5. Polyhuts are very durable, and become a very economical means of overwintering when you spread the costs of construction and operation of the structure over all of the plants in the polyhut over the life of the structure. We expect a useful life of the polyhuts to be 15 to 20 years.
6. Probably most important of all, a grower is able to harvest a high percentage of overwintered perennials. We expect to harvest an average of 95 percent of our perennial crop each spring.

Disadvantages to using a structure to overwinter are:

1. The initial cost of the huts can be very expensive.

Depending on how the hut is equipped, expect to spend a minimum of \$3,000 to \$5,000 for a 20-foot by 96-foot polyhut structure with basic heating and ventilation equipment.

2. You will need to cover and uncover the polyhut each year, which can be a large labor expense. If you use poly film with a one-year life, check with your state recycling program to see if you can recycle the plastic film.

Determining exactly when to uncover in the spring can be tricky because the weather is so variable. We usually begin to turn off heaters and raise the sides of our polyhuts in early March, because the cool night temperatures help to bring the plants out of dormancy more naturally. If a strong cold air mass approaches, we can easily lower the sides of the polyhuts and turn the heaters back on. This is a big advantage, because if plants have begun to force out foliage and there is an unseasonable dip in temperatures, we are able to protect the plants. The polyhuts are uncovered completely by early May.

In conclusion, the use of "minimum heat" polyhuts is an effective and economical means of overwintering herbaceous perennials in containers. By using these structures, a grower can successfully achieve the four goals of overwintering. **OFA**

Going Retail – A Case Study

Though trite, it is a general truism that the business of life is continually changing around about us. Much of our ability to enjoy life and prosper depends on our willingness to step back to reflect and redirect our activities. Only in doing so regularly, can we let go of the comfortable ruts of tradition and convention, which often accompany stagnation and irrelevance, and embrace life's challenge and thereby grow.

The three growers who contributed to this article, Lilly Felder, P.J. Ellison Kalil, and Bart Bernacchi provide

excellent examples of this principle. They each have faced the challenges that medium-sized wholesale growers face, have altered courses, i.e. incorporated retail into their operations, and have grown from this experience.

We asked each to share their experiences: what led to their decision to expand, how they went about the process of expanding into retail, and what they learned in the process. We hope the rest of us will find encouragement and perhaps some direction from their examples.

Angelo Bernacchi Greenhouses

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growing flowers vs. vegetables under glass as well as outdoor production.

By now, we had approximately 200,000 square feet of greenhouse wholesale production. We were having local people stop in for bedding plants and potted poinsettias; however, we were a wholesale operation. We saw retailing as an opportunity that we should pursue.

We constructed a lath house for our first retail area. The following year, a plastic display greenhouse was constructed; and the next year we converted our bench system in one of our production houses (180 feet x 50 feet) to peninsular benches and aisles to accommodate self-service carts. This area was also equipped with automatic shade cloths and retractable sides for the customers' comfort.

After being a wholesale grower, at first glance there seems to be a great deal of space wasted on the benching

Dad started out as a vegetable grower in the early 1920s. From the hotbeds in the spring season he would sell a few tomato plants wrapped in newspapers. We were never in the retail business per se.

In 1948, we constructed three Lord and Burnham 150-foot x 40-foot greenhouses and grew hothouse tomatoes and leaf lettuce while still doing our outdoor vegetable production, selling at the wholesale level.

As time passed, we continued adding greenhouses and growing hothouse tomatoes and lettuce. Eventually we started our first floral crop production. Poinsettia plants were our first floral pot plant, and it was then that we realized it was a bit more profitable



Figure 1. The entrance to the floral and gift shop at Angelo Bernacchi Greenhouses.

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GOING RETAIL – A CASE STUDY

Continued from page 11

system to make it convenient for our customers with shopping carts. From September through February, we use a portion of our retail areas for production and also add temporary additional benching. Going retail gives you a feeling of being more versatile and having a better opportunity for a much better return per square foot. I really do honestly believe that all wholesale growers should be into the retailing of their products for a while to broaden their vision about what their customers really do want and like. Wholesale growers usually grow what they prefer rather than growing for the retail garden center and for the consumer preference. The grower who has a retail outlet is more aware of color trends, varieties, and consumer preferences. Retail customer feedback is a great asset if we pick up on it and use this very important information.

Just remember, if you are thinking of setting up a retail outlet, you must decide if you are going to be open 12 months of the year, nine months of the year, or spring only. This is a very important aspect to consider. We all know overhead continues for 365 days per year, and you must have income to justify your retail.

Another important area not to forget is management and operating the business with a knowledgeable staff. Retail staff is different from wholesale staff. Your retail staff should be “people persons.” We find that the best persons to work in our garden shop, floral shop, and gift shop are people who love both plants and people. Remember, too, that hours are a bit longer in the retail business than in wholesale and most holidays are “work” days.

Our move from wholesale to retail/wholesale was a move over time and definitely different from wholesale only. The first consideration to make is to make sure your location is favorable and accessible by car (0 to 25 miles). Location is not as important today, however, because almost everyone owns an automobile and loves to get in their car and drive for quality plants and shopping experiences.

There are a number of pros and cons to selling retail. Consider what works best for you before you begin retailing, and think through each step carefully.

I suggest making the transition with a minimum three- to five-year plan. Don't jump into it with two feet, but be on the cautious side and move slowly. This will be a continual learning process.

You must also think about your product line. Will you be handling hard goods, fresh flowers, gift items, and/or lawn furniture? We did not jump into retail all at once, such as having complete floral shop services, a gift shop, and a garden center. Instead, we began selling a few potted plants, then bedding plants, and then added floral services, and finally added exclusive gift lines.

If we knew then what we know now, we would have expanded our retail sooner and possibly have multiple locations. It is super to have quality control on all the plant products we sell, since we are growing our own merchandise.

Editor's Note: OFA is pleased to pass along the news that Bart Bernacchi was the recipient of the 2002 Indiana Flower Grower of the Year award. Congratulations Bart!



Figure 2. A converted wholesale house (50 feet x 180 feet) at Angelo Bernacchi Greenhouses.

Ellison's Greenhouses Inc

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Ellison's has been in retail off and on since we started 33 years ago. We began with baskets full of tomatoes, a scale, and a can for money. It still amazes me to this day that we always ended up with more money than we had pounds of tomatoes. What an incredible honor system and statement about our original customer base!

We started our first “manned” retail effort to help move product from the greenhouse at a higher price than what we could wholesale. I still believe to this day that had we stuck with it and remained true to our retail, we would be selling a greater percentage of our product through our retail. Instead we have been in and out of retail, and just in the last five years have truly decided that is where we need to be. So challenge number one is: quite simply, “Get on or off of the pot” – answer the question, to

retail or not to retail and stick with it.

Running a retail operation takes a different skill set than growing great product. Some of the greatest growers I have known do not have the personality to be in retail. That is not a criticism, it is just reality. When you run a retail operation, you must have the right person or people. Since it is a separate business, if you are utilizing your wholesale team to operate it, something is not getting the attention it needs. Most often and in our case, because the retail is a smaller business, it gets less attention with resources, time, and energy. It has been the stepchild. We have changed that, but it took a while and has been costly. So challenge number two is: “Adopt your retail and refuse to make it a stepchild.”

I am excited about our retail and cannot wait to look back five years from now. I regret we took so long to be true to our retail. We have the perfect location, a great tourism base, and a good business plan

developing. I don't know about you, but I love the thought of selling more products to people who love quality and variety more than they do price. I really like the idea of getting paid a fair price for a great product. Maybe, just maybe, that is why we decided to commit

to our retail and so many of you are looking into it. Maybe you, like me, want to be able to give and do more for your company, team, and community. Maybe, just maybe, we know what our product is worth and are finally willing to do what it takes to get that. I hope so.

Hehn's Greenhouses Inc

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Our family has been in the wholesale bedding plant industry for more than 35 years. We have experienced several business changes during this period. A few of these changes have included reviewing and maintaining our customer base, determining which products should be produced in-house, and changes in family ownership.

Many times during this period, we asked ourselves, "Where do we go from here?" Unless your organization is one of the fortunate few where all facets of the business are set up so change is not necessary for survival, I would imagine that this question has been discussed within your company at least once, if not more frequently.

Although economy, weather, and tragedies such as September 11 affect our industry, we have found that our best measuring tool is asking how our efforts and decisions affect us as a family business? Quality of life has become an important mission for our company. We feel that our success should not only be measured by financial security, but also by personal satisfaction and contentment. We have realized that once we have reached that goal, the financial success will follow.

Our business has experienced many levels of growth, success, and failure; some of which happened so quickly that we were unprepared for the stress that came along with the change. After realizing that was not how we wanted to enjoy success, we decided that controlled growth was the best plan for us.

The main focus of our organization had been the wholesale bedding plant market. This aspect has served us well over the years, especially during times when family commitments were high and the luxury of being a wholesale supplier allowed us the free time needed to fulfill those commitments. As our family has matured, our business focus changed. It was time to sit back and review the overall picture of "Where do we go from here?"

The horticultural industry in our area has also changed, grown, and matured. We realized that in order to reach our goal, our focus needed to include retail in the business mix. This change was in response to one of the major challenges we have faced – that of aggressive mass producers and increased demands by the wholesale customer to provide additional service with no price increases.

There were several important factors to be discussed before we made the decision to include retail in



our organization. Some of the most pertinent were: location, personnel, and capital investment.

Location was the first obstacle to overcome. Was our current location suitable for retail? Our 5-acre facility is not located in a high traffic area; therefore, we needed to determine what was more important – a location that would offer high exposure to the retail public, or the convenience of having our product available to the retail consumer at our growing facility? We decided that for us, product availability and quality control were the most important.

Another major factor we considered was the amount of resources required to maintain the wholesale business while expanding into the retail market. Operating a wholesale and retail facility is extremely labor intensive; therefore, the decision was made to be a seasonal retail center rather than one that was open all year. We realized that we needed the "off-season" to take the time to implement major decisions on future production, attend trade shows and educational events, meet with sales reps, and spend the time visiting other garden centers.

One challenge we experienced by not relocating our retail center was to develop effective advertising of our new venture. Advertising in itself can be very costly; however, over the last two years we have found ways to advertise without spending large sums of money. We are using unconventional methods to increase awareness of our

new retail operation by supplying plants to businesses in our area, as well as the township center. We were able to place a sign in the containers we supplied and display color brochures introducing our new retail facility. Although this has proven to be very effective we continue to investigate other opportunities.

Our next step was to determine if we had the right personnel to offer the level of customer service we wanted for our retail center? This can be more important than location. If the consumer is not satisfied with the level of service being offered, location does not matter. We have found that many of our customers truly appreciate the fact that we can offer information that will help them enjoy success with their bedding plant purchases. A knowledgeable and friendly staff is critical.

A good staff will also be helpful when making decisions on future production. They can offer feedback about what the retail consumers are looking for and how successful they were with the product they purchased. The challenge in maintaining a qualified staff is continuing education and training. Monies spent in this effort can be very worthwhile. We have found from personal experience that a satisfied customer who is offered service and knowledge about our products is one of our best forms of advertising. Although time-consuming, we have found that a management presence in the retail center is also critical in determining the effectiveness of our efforts. This presence proved to be a

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GOING RETAIL – A CASE STUDY

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challenge for management to coordinate efforts between the wholesale and retail centers.

The next and probably most difficult of all our decisions was the amount of capital to invest in our retail center. After visiting several successful garden centers and retail operations, we determined that what was important to us was not how we looked on the outside, but what we offered on the inside. Although curb appeal is important, we felt that it was more critical for our retail center to offer a welcoming atmosphere and quality products rather than

just a structural appeal. The product and service offered inside the retail area was our primary concern in assuring the success of the new business.

During our wholesale to wholesale/retail transition, we have learned many things. Probably one of the most important is that each organization has to determine its strengths and weaknesses and build on improving those aspects to gain success. Just as with growing plants, each organization's style can change from location to location. The success of any organization will be determined by how effectively

the company can understand how to best use the tools available. As a family business, we will continue to

review all these factors to ensure our goal of personal contentment and business success.



Figure 3. The retail entrance at Hehn's Greenhouses Inc.

OFA

CUSTOMER RETENTION STARTS ON THE INSIDE

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In an industry as competitive as ours, every cost must be examined for its return on investment (ROI). Carelessness with any aspect of our business will negatively affect profitability. Although business managers and owners watch the details, two areas are often under scrutinized and under managed. They are internal and external customer retention. The costs associated with these areas are often referred to as "hidden costs." Low retention of either customer type can adversely affect your profitability, and even permanently close your doors. Regular monitoring of retention levels, obtaining feedback, listening, and making adjustments are key steps toward building and maintaining a successful company.

GOT CUSTOMERS: NOW WHAT?

Companies put a great deal of emphasis on obtaining new business. Salespeople are hired to prospect, secure the appointment, discover the prospect's needs, make a presentation, close the sale, and follow up (to make sure the product was delivered satisfactorily). They are ideally working on many deals at once, and as one closes, they are already looking for additional opportunities. Meanwhile, the previously sold customers are hopefully receiving the goods and services they require, are being contacted regularly for feedback, are visited periodically for "checkups," and are often reminded how important they are. Or, are they?

This is where a disconnect often occurs. After the customer relationship is established, the communication and contact starts to diminish. Many aspects of the customer service process are neglected. Customers' needs and expectations can change often. If they are not monitored and updated regularly, once-enthusiastic customers can quickly become past customers. Often they will leave with no explanation, and will make a change in service providers without prior notification. The result: profits start to diminish. Don't ever think, "No news is good news." No news could be fatal to your business.

Does the customer **owe** the service provider the courtesy of notification when a mistake has been made, a need overlooked, or when they're feeling neglected? It's great when they do notify you, but why should they need to? Such notification would be a service to you. However, we must always remember that the service provider provides the service. The customer receives the service. Therefore, we must always work toward discovering needs and promptly satisfying them. To take it a step further, the customer's needs should be discovered (and solutions offered) before he or she knows the needs exist.

For example, an interiorscape staff member sees new furnishings being delivered to a customer's office. After making inquiries, he or she discovers the furnishings in several offices are being updated. The staff member also discovers these furnishings will only be used in the offices of corporate officers. This information is shared with the appropriate interiorscape company staff. The client is phoned soon after, and an appointment for a visit is set. During the visit, the client is complimented regarding the new furnishing choices, and a recommendation is made to update the existing plants and planters (in the newly furnished offices) with complimentary planters and plants. The client hadn't previously considered

the need, but loves the idea and appreciates the recommendations. This is proactive customer service management.

IT'S CHEAPER TO KEEP THEM

With proactive customer service, customers' needs and expectations will consistently be met and exceeded. Combine proactive service with continuous monitoring of service quality levels (through customer feedback and quality control evaluations), and customer retention levels will remain high. But, for those of you who think this is too much work and say, "It's easier to go out and get new customers." Think again. The cost of losing and acquiring new customers is more expensive than you think. Let's calculate the potential financial effect of losing one unhappy customer:

| <u>Who</u> | <u>Customer/Potential Customers Lost</u> |
|---|--|
| Unhappy Customer | 1 |
| People the Unhappy Customer Told about Experience | 11 |
| Those who Heard about Experience (each told 5 people) | 55 |
| Total | 67 |

If 25 percent of the 67 decide not to do business with your company = 17 Lost Customers (17 @ \$200/month each of potential sales).

Potential Loss = \$40,800/year (from one unhappy customer) (5 unhappy customers/year = \$204,000 potential lost sales)

Additionally, fewer customers mean less staff is needed. Staff reductions (layoffs) result in unemployment compensation costs. If new customers are acquired, additional staff will again be needed. Previous layoffs may have obtained other employment, and new staff will need training. Staff acquisition and training cost both time and money.

Let's look at the cost of retention versus acquisition:

| <u>Keep a Customer</u> | <u>Acquire a New Customer</u> |
|------------------------|-------------------------------|
| \$19* | 236* |

Cost to Replace Customers Lost in Example Above

17 x \$236 = **\$4,012**
(Replacement cost for 5 unhappy customers/year = \$20,060)

Total Potential Cost of the Loss of 5 Unhappy Customers = \$224,060 *Cost will vary for each company.

As you saw in the example above, nearly a quarter of a million dollars could be lost due to five unhappy customers. Why risk it? Make customer retention a higher priority than customer acquisition. Just as unhappy customers can spread the word, so can happy customers. Referrals are the highest quality business you can get. Customers don't always remember to make referrals, so make sure all staff is trained to ask for them.

INTERNAL CUSTOMERS: A COMPANY'S MESSENGERS

A company's staff spreads the company messages and philosophies inside and outside the organization. Are they always sending the messages and conveying the philosophies that reflect company creeds or mandates? What they see is what they give. Do managers practice what they preach? Company directives, mandates, and creeds must consistently



be reflected in the behaviors of all staff. If XYZ Company says it is a caring, customer-centric organization, this philosophy must start on the inside and reflect outward to customers.

Staff members are the customers of those within the organization who make decisions about benefits, departmental procedures, internal processes, etc. Management sets the organization culture and is responsible for how the organization is viewed by the internal customers. The pulse of internal customers must be monitored just as regularly as that of external customers. The desires, needs, expectations, and opinions of internal customers are vital to an organization's survival. High staff turnover, poor morale, and negative word-of-mouth can all be extremely costly. Unhappy internal customers can also permanently close the doors of an organization.

WHAT TO LOOK FOR WHEN EVALUATING INTERNAL CUSTOMER SERVICE

To be successful, departments within an organization must work cooperatively to accomplish goals. If the organization has set a goal of installing a large job by a specified date and with no cost overruns, all departments must work to accomplish that end. Though this is ideal, many things come into play that can hinder the process and result in frustration for those involved. However, consistent monitoring can often prevent these stumbling blocks.

US VS THEM DEPARTMENTAL MENTALITY

Companies sometimes are faced with departmental warfare. The installations department feels the order department is out to get them. The order department feels the installations department is always asking for too much, too late. The sales department thinks the order department is too demanding and the installations department is too slow. Accounts payable thinks the salespeople are prima donnas and they know nothing about numbers. Everyone is armed with opinions, dislikes, assumptions, and biases. No one is viewing this as a cooperative effort, where everyone can win.

This may be an experience known to some, and it may be a living nightmare to others. What is an organization to do? Evaluate systems and processes within the organization. Do they inhibit staff efforts to work cooperatively? Do they inhibit staff efforts to provide exceptional internal customer service? Also, consider the following:

1. Design internal reward systems to encourage mutual successes.
2. Conduct internal customer surveys at least semi-annually.
3. Work toward a clear understanding of how the actions of individuals/departments directly affect the quality of the service/product received by everyone.
4. Cross-train every staff member for a clearer understanding of workflow and for staff backup.

HOW TO BEGIN IMPROVING INTERNAL CUSTOMER SERVICE

In today's fast-paced world, people spend more time at work than with family. Therefore, an individual's work environment needs to be nurturing, dynamic, and fun. The office can be a place where individuals enjoy themselves and the people

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CUSTOMER RETENTION STARTS ON THE INSIDE

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they work with. It can be an environment where staff can work hard, play hard, and establish meaningful relationships. The high-tech industry became world-renowned for its "work hard, play hard" philosophy. People worked extremely long hours to help build a company and remain part of the dream. They knew that each round of intense work would be rewarded with a celebration. This was an opportunity to let their hair down and relax with those who contributed to meeting the latest goal. Most organizations are built on 99 percent work and 1 percent celebration. I think a 75-25 ratio is far healthier.

Here are a few additional suggestions:

1. Solicit staff input and opinions regularly. Do this through staff meetings, an open door policy, or a suggestion box.
2. Provide internal "safe" avenues for resolution of staff grievances.
3. Department and company goals should be posted for all staff to see. This helps keep everyone focused on expectations and goals.
4. Provide regular staff evaluations, and inform them of individual expectations and rewards.
5. Staff members who are unwilling to embrace your customer-keeping vision should be encouraged to seek opportunities elsewhere.

INTERNAL CUSTOMERS SPEAK YOUR ORGANIZATION'S TRUTH

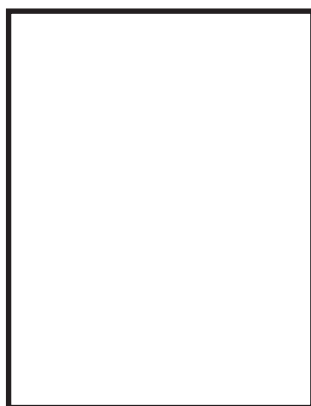
When your staff speaks to the world, make sure they are speaking the truth of your organization. This can only happen when an organization consistently remains nimble, caring, and sensitive to the needs of its staff. Creating a customer-keeping vision for both internal and external customers is paramount. A nurturing, dynamic, and fun working environment will be reflected in a staff's external communications. It will provide staff with examples of caring and enthusiasm they can utilize to keep customers happy and coming back for more. In an organization where individuals cooperatively work to meet the needs of all customers and enjoy the environment and people where they work, customers always win. Customers who feel like winners have no reason to go anywhere else. They've already found the best.

ABOUT THE AUTHOR

Kennette Reed, CLP, is a customer retention specialist, trainer, author, public speaker, and interior landscape consultant. She has authored numerous articles, special reports and books. Subscribe to her FREE newsletter *Customer Connections*, and receive a FREE report, *Delivering Exceptional Customer Service*. Subscribe at: www.topica.com/lists/customerconnections.

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Topflor™: A New Plant Growth Regulator for Height Control of Ornamentals



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SePRO Corporation will soon introduce Topflor™, a growth regulator for use on ornamental plants grown in containers in commercial nurseries, greenhouses, and shadehouses. This past year, SePRO purchased the molecule from Dow AgroSciences as well as all of its formulations, registrations, trade names, and licenses worldwide. The product is new to the greenhouse market in the United States, but has been evaluated and used commercially in Europe on greenhouse crops since the early 1990s.

Prior to the purchase by SePRO, the product was formulated and commercialized in the United States as

Cutless™ for use on turf and as a tree injection material. Cutless has been trialed extensively on crops such as arbuton, butterfly bush, holly, Mexican bush, Russian sage, phlox, and veronica with growth control comparable to Bonzi™ and Sumagic™. Initial trials of Topflor were also conducted in the United States on exacum, chrysanthemum, and poinsettia, although the chemical was not introduced to the U.S. greenhouse market. Topflor has been used commercially in Europe on a number of greenhouse crops such as azalea, chrysanthemum, dianthus, kalanchoe, osteospermum, and streptocarpus.

This past year, SePRO developed a new formulation of Topflor for the U.S. market. The product is a 0.38 percent liquid formulation to allow ease in measuring and mixing for application. In Europe and elsewhere, a more concentrated 1.5 percent liquid Topflor formulation is used. Topflor applications in Europe typically have been made using multiple sprays at low concentrations. Effects of climate and location were shown to influence Topflor efficacy, similar in the way U.S. growers have found those factors to affect the efficacy of Bonzi. Cultivar also played a strong role in efficacy. Development in the

United States needed to address testing the reformulated Topflor under U.S. growing conditions and on cultivars available in North America. Also, drench applications are uncommon in Europe, and much work was needed to establish drench rates for the United States.

Research on greenhouse and nursery ornamentals is currently being conducted at a number of universities including Cornell, Florida, Georgia, Kansas State, North Carolina State (NCSU), Purdue, and Virginia Tech. The goal has been to determine optimal application rates and timing for U.S. production and to determine how the product compares with currently used plant growth regulators (PGRs) for key crops.

Topflor effectively reduces internode elongation through the inhibition of gibberellin (GA) biosynthesis, resulting in a more desirable plant. The active ingredient in Topflor, flurprimidol, is a nitrogen-containing heterocycle compound. Flurprimidol acts as an inhibitor of enzymes, catalyzing the steps in the GA biosynthetic pathway that involve oxidation of *ent*-kaurene to *ent*-kaurenoic acid, a GA precursor. This specific mode of action makes Topflor a "Type 2" PGR, and therefore similar in its mode of action to A-Rest™, Bonzi, and Sumagic.

As with other PGR products with this same mode of action, Topflor may increase the quality of plants, even in the absence of growth reduction. Some of these desirable qualities include darker leaf color, higher chlorophyll content, greater leaf thickness, stronger stems, and decreased water loss.

Topflor will be available upon registration for application as a spray, or drench,

or through chemigation to achieve the desired plant height control. The concentration (in ppm of active ingredient) desired in the final spray or drench solution roughly equates to milliliters of product per gallon of solution. Topflor applied as a foliar spray is absorbed through plant foliage and stems. Additional growth regulation will result from root uptake of Topflor reaching the root media as run-off from foliar treatments or over-spray. Topflor applied as a drench allows treatment accuracy for consistently uniform results. Topflor is readily absorbed by plant roots and translocated to shoot terminals. In fact, initial tissue absorption studies done at NCSU have shown that Topflor is mostly active through the stem and roots. These studies also indicate that Topflor may exhibit more stem activity than Bonzi.

Research studies in the United States and use of the product in Europe show that there are four tiers of factors that influence the effectiveness of Topflor. The greatest influence is determined by crop species. Second-tier influencers include cultivar or variety, chemical concentration, and number of applications. Third-tier factors that influence efficacy include environmental conditions such as temperature, light, and irrigation frequency. Equally

important in influencing height control is the developmental stage of the crop plant. The fourth tier of factors consists of application interval (the time between applications), as well as other environmental or cultural practices such as fertilizer and crop spacing.

Because these factors influence the plant's response to Topflor, they help to determine the amount of product that should be applied to achieve the desired result. For example, growers in warm climates may need to use higher rates and/or more applications compared to those in cooler climates. The Topflor rate and number of applications may also vary depending on the time of year, with higher rates and/or more applications needed during warmer months. Plants that are grown at close spacing or in small pots and using high water and fertility levels may require higher rates of Topflor to achieve the desired response. The effectiveness of a Topflor drench may be reduced in root media that utilizes a high amount of pine bark.

In comparative PGR studies, results generally indicate that Topflor has activity similar to Bonzi. Furthermore, Topflor does not appear to cause flower delay for some crops, even at relatively high application rates.

In spring 2001, preliminary studies using a wide range of Topflor rates applied to nine bedding plants were done at NCSU. Optimum rates varied between crop species and were compared with two standard PGR treatments, usually Bonzi and Sumagic. Trials were repeated in spring 2002, and a second location was added at Purdue University, that expanded to additional cultivars and a 10th crop and more closely defined rate ranges for these key bedding plants. As with other triazole products, Topflor was shown to be extremely active on begonia; and this bedding crop will likely not appear on future versions of the product label. Low rates of Topflor were adequate for vinca, with 2.5 to 5 ppm optimum. Optimum spray rates for Topflor on ageratum, celosia, marigold, and salvia were 40 to 50 ppm, whereas optimum rates for coleus and dusty miller were slightly lower at 20 to 30 ppm. The best Topflor rate for petunia was between 50 and 60 ppm. For impatiens, Topflor sprays greater than 60 ppm may be needed.

A multi-location study of two poinsettia cultivars, 'Orion' (Figure 1) and 'Monet Twilight', was performed in fall 2001 at NCSU, Purdue University, and the University of Florida. Single

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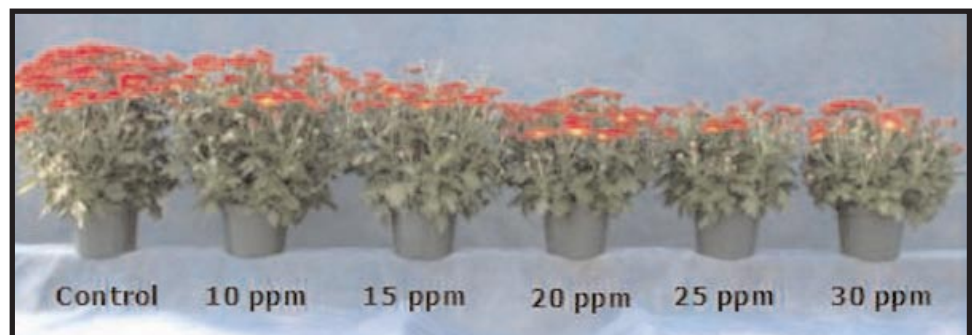


Figure 1. Results of two spray applications of Topflor™, made two weeks apart, on potted chrysanthemum 'Deluth' (Brian Whipker, NCSU).

TOPFLOR™: A NEW PLANT GROWTH REGULATOR FOR HEIGHT CONTROL OF ORNAMENTALS

Continued from page 17

foliar treatments were applied two weeks after pinch. Response varied greatly with cultivar and location. Optimum rates for 'Orion' ranged from 2.5 and 5 ppm in Indiana to 40 ppm in the mid-Atlantic and South. Rates for 'Monet Twilight' were generally optimum at 80 ppm in all locations. Poinsettia studies this fall will investigate optimum spray rates for representative cultivars from the five "PGR response groups" as well as late-season drenches. Additional trials will also examine further the effect on the delay of bract coloration among PGRs.

Research on perennials using the new formulation also began last fall at Virginia Tech University. Crops included monarda, Russian sage, scabiosa, sedum, and two cultivars of tradescantia. Investigators found that all rates of Topflor (15, 30, 45, and 60 ppm) applied to scabiosa 'Pink Mist' reduced height and width when final measurements were taken

three weeks after treatment. The lower rates were comparable to the standards used, Bonzi (30 ppm) and Sumagic (15 ppm).

The two tradescantia cultivars responded differently from each other. For the cultivar 'Red Cloud,' Topflor rates at 60 and 75 ppm were found to be moderately shorter to comparable to B-Nine (5,000 ppm) and B-Nine + Cycocel combination (5,000 + 1,500 ppm), while tradescantia 'Blue Stone' treated with Topflor at those same rates were significantly shorter than the standards. Multiple applications were investigated for Russian sage and sedum 'Autumn Joy.' For Russian sage, a single Topflor application at 45 ppm was comparable to two Topflor applications at 22 ppm and provided good height control. Optimum rates for sedum were higher with one application at 75 ppm or two applications at 37 ppm providing good control. Single applications at



the lower rates mentioned did not provide effective control for the two crops. A single Topflor application at a rate lower than 37 ppm was determined to be a good starting point for *Monarda didyma* 'Jacob Cline.' Research on additional species and application timing is continuing at Virginia Tech.

Dual-location trials with geraniums and New Guinea impatiens were performed this past spring at NCSU and Purdue University. Two geranium cultivars, 'Samba' and 'Noblesse 99,' were found to respond differently and again, the response varied with location. In Indiana, single Topflor sprays of 10 to 20 ppm were found to be optimum, whereas in North Carolina, single Topflor sprays between 20 and 30 ppm were required for optimum control. New Guinea impatiens sprayed with Topflor rates greater than 20 ppm

exhibited excessive control. Optimal Topflor spray rates on New Guinea impatiens were 2.5 to 5 ppm.

Studies performed at NCSU for three consecutive spring and fall seasons have provided optimum Topflor rates for a number of pot crops. Of these, three tuberous dahlia cultivars have been studied and shown to respond well to 1 to 2 mg a.i./pot as a Topflor drench application. Growth of the potted sunflower 'Pacino' was optimized using a 30 to 40 ppm as a Topflor foliar spray or 1 mg a.i./pot as a drench. Pot chrysanthemum 'Yellow Blush,' a naturally shorter cultivar, benefited from a single foliar application at 25 ppm or two sprays at 15 ppm applied two weeks apart (Figure 2). For additional and more in-depth information, a color guide to research results is posted on the NCSU website at www.pgrinfo.com.

To date, 50 studies have been performed with seven cooperators from six universities. Fourteen of these studies were multi-location and represented 30 site trials, bringing the total number of site trials to 66. The studies have involved 96 cultivars of 34 crop species.

The Topflor label submitted to EPA lists a 12-hour reentry interval (REI). Required personal protective equipment (PPE) will include coveralls, chemical-resistant gloves, and shoes plus socks. Registration is pending, and timing of registration will depend on EPA's work plan. OFA

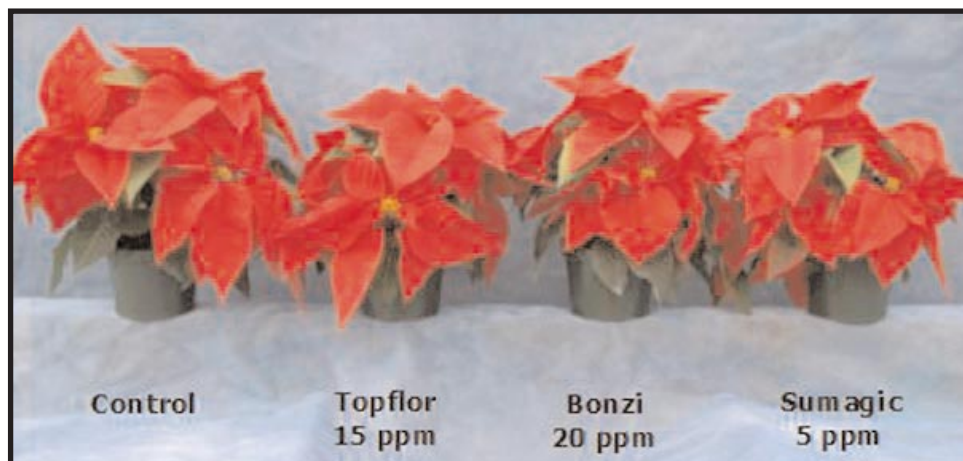


Figure 2. Optimum PGR rates on poinsettia 'Orion' in a fall 2001 trial at NCSU in Raleigh, NC (Brian Whipker, NCSU).

HOW TO MANAGE RELAY MERCHANDISE LAYOUTS

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Merchandising and display can be split into two specific skills areas. Relay management is the skill we use to manage the shelves in our stores. The aim is to set the shelf up so that it is logical in the customers' eyes, yet maximizes the return per linear meter to the retailer.

ENSURE LOGIC DOMINATES

The key to shelf management is to place products in categories that make sense to the customer. The question is, what makes sense? For example, you may place cereals together and grapefruits in the fresh product area. The customer may be purchasing for breakfast, and the placement of cereals with grapefruit could seem, to the customer at least, a logical category arrangement. For this reason, before you set up a category, think like a customer and then develop the category. There are three basic styles of relay management used in retailing.

CONSIDER LIKE-BY-LIKE RELAYS

A like-by-like layout is where the retailer groups products together across the whole block. For example, all the "beef" dog foods from different suppliers are placed next to each other, as are chicken and fish. The advantage of the like-by-like relays for the retailer is it saves time when filling shelves, it looks good, you can lay out the block based on gross profit return, and you have some control over the customer flow. For the consumer the advantage is they can price shop relatively easily, and if you are out of stock they still have a choice of products on hand that are similar. The disadvantages to the retailer are that the customer price shops and also does less browse shopping. The consumer may also find the layout boring and often misses new lines.

CONSIDER A LIKE-BY-LIKE IN A CORPORATE BLOCK

This is where the layout is set out with the manufacturer being set out in a corporate block and then the like-by-like layout is set out as an overlay to the system.

The advantage to the retailer is this system is easy to manage, again looks good, and the retailer can allocate specific space to a manufacturer. This layout is more difficult for the customer to price shop, and therefore the retailer's

image can be upgraded. Consumers are trained into brand shopping which may be convenient for them. The opportunity also exists to highlight products within a brand. The disadvantage is that customers may keep selecting a brand that has a low return to you, and the positioning of manufacturers means some get an excellent placing while other miss out.

CONSIDER CORPORATE COMPANY BLOCKING

This is where the manufacturer lays out the category (often called "book and order" category management). The advantage to the retailer is that the manufacturer will provide the full merchandising kit and the full professional backing of the supplier. The consumer can easily find promotional products and gets a good feeling about the image of the store. The disadvantage is that the retailer relies on the company representative (some are excellent, while others are more variable). The manufacturer or supplier also has the monopoly on the position and, if you are not careful, may overload you with stock. If manufacturers or suppliers are developing your corporate company blocks, you may also find that as a retailer your return is lower.

FOCUS ON ... WHEN LAYING OUT A CATEGORY

- Segmented share of each product within the category
- Trends within the category
- Trends in your local marketplace
- Publicity and promotions for specific products
- What you want to promote

ESTABLISH RULES FOR PRODUCT PRESENTATION

The key to success is to set a standard that you are consistent at achieving. You need to consider standardizing:

- Position of price tickets
- All products face the same way
- All products are clean
- Shelves are clean
- Damaged products are removed immediately
- All products are within date code
- Products are faced correctly
- Products are in the correct position
- No gaps visible along the shelf, especially in the sightline
- No gaps between shelves, especially in the sightline

The above is an article from John Stanley's best selling book *Just About Everything a Retail Manager Needs to Know*.

What Can I Do Today to Help Improve Morale?

- Say thank you
- Be a good listener
- Offer my help to someone in need

Barb Wingfield, Morale Builders, 937-468-2197, barb@moralebuilders.com

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Pride Garden Products, Wayne, Pennsylvania, sponsored the shoulder bags available in the main lobby at the 2002 OFA Short Course. We apologize for not mentioning this our previous thank you to our sponsors.

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OFA GROWER OUTREACH SEMINARS PARTNERING FOR PROFITABILITY

November 6, 2002 – Lansing, Michigan

Offered in conjunction with the Michigan Greenhouse Expo

November 15, 2002 – Richmond, Virginia

At Griffin Greenhouse and Nursery Supplies

OFA's fourth annual regional seminar tour will tackle the topic of profitability in the greenhouse. These all-day seminars will cover in detail three important areas: cost accounting, revenue calculation, and profit determination.

Growers will learn how to use these numbers to determine how to maximize profits in their production facilities. The central question for the day will be "How to determine what crops, sizes, and quality to produce in order to maximize the bottomline."

The speakers will be Jim Faust, Clemson University, and Peter Konjoian, The Ohio State University. Bridget Behe, Michigan State University will assist with the seminar at the Michigan Greenhouse Expo.

Complete details are available through OFA.

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OFA EVENT CALENDAR

NOVEMBER 2002

Grower Workshops – November 6, November 15

JANUARY 2003

Interior Plantscape Pest Control Seminar – January 31

FEBRUARY 2003

OFA Committee Meetings – February 21-22

OFA Board Meeting – February 23

JULY 2003

OFA Short Course – July 12-16

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