

# ofa Bulletin

an Association of Floriculture Professionals

## Holding Bedding Plants: A Few Postproduction Factors to Consider



by James L. "Jamie" Gibson & Shannon Crowley

The appearance of bedding plants during the postproduction stage is important to both the wholesale grower and the retailer. Since the physical appearance of the plants represents the health and market potential of a crop, close monitoring

of many factors should be conducted to ensure maximum revenue. Three main factors that influence crop health are water, light, and temperature. It is rare that bedding plants are held in the perfect setting, i.e. a temperature-controlled environment with high-quality, safe light levels. Water, light, and temperature are all interrelated and directly affect plant quality. If even one factor is deficient/excessive, postproduction longevity is severely reduced. If two or three factors are insufficient/extreme, results can be disastrous.

### Water

Water is essential for growth, and while it must be applied on a regular

basis during production, it can be reduced during the postproduction stage. Dr. Allan Armitage recommends reducing irrigation at the visible bud stage, thus allowing the growing substrate to dry more thoroughly. Extensive irrigation during this stage can cause internode elongation and undesirable stretch, a condition that should be avoided prior to sales. Excessive irrigation can also provide an optimum environment for root rots. Rainy weather patterns in spring can introduce problems in outdoor production areas; therefore open-sided, covered areas are ideal for holding bedding plants. This protection is

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## Let's Grow AIB!



by Delilah Onofrey,  
External Relations Chair  
America In Bloom

Still in the young-plant stage, it will take more growers, retailers, and allied industry members to grow America in Bloom into a thriving national program.

Ready for round three, the third edition of America in Bloom (AIB) is underway with 35 communities from

19 states participating in the national beautification program.

Funded mostly by the green industry, AIB is a national campaign and contest that promotes enhancing communities through beautification. In the friendly competition, communities are matched by population and evaluated on their efforts related to floral displays, urban forestry, landscaped areas, turf and groundcover, tidiness, environmental awareness, heritage conservation, and community involvement.

Volunteer judges will visit the participating communities May through July. Awards will be announced at AIB's third annual awards symposium, which will be hosted by 2003 winner

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## OFA Mission Statement

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

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## Update on Federal Green Industry Research in Ohio

by Charles R. Krause

The Agricultural Research Service (ARS) is the primary in-house research organization of the United States Department of Agriculture. The Ohio component, the Application Technology Research Unit (ATRU) is located in Wooster at the Ohio Agricultural Research and Development Center and at a worksite in Toledo at the University of Toledo. The ATRU's mission is: *to conduct fundamental and developmental research on new and improved technologies to protect floricultural, nursery, landscape, turf, and horticultural crops against damage from diseases, pests, and adverse environmental conditions, while safe-guarding environmental quality, food, and worker safety.* ATRU research must be based on sound science and fit into the ARS National Research Programs ([www.ars.usda.gov](http://www.ars.usda.gov)).

### A Few examples of ATRU Projects

The multi-disciplinary ATRU team has conducted on-site, on-farm research in nurseries and greenhouses to achieve its mission. Initially, canopy penetration studies were conducted in tree nurseries and greenhouses to assess needs of growers using their own spray equipment. Then research was conducted to compare current methods with improved spray equipment developed by ATRU. Long-term relationships through cooperative agreements have been established. Growers have donated the use of their facilities, their employees, and other resources. They have observed, firsthand, the ARS field or greenhouse research as well as laboratory studies. For example, growers have observed the use of a technique called electron beam analysis (EBA), a combination of scanning electron microscopy (SEM) and energy dispersive x-ray analysis (EDXA) as seen in Figure 1. The SEM detects the presence of disease organisms on leaf

surfaces. EDXA chemically identifies and measures pesticide residues. Information from EBA relates to the efficiency of particular spray methods, such as hydraulic, electrostatic, foggers, etc. In one such study, Tappan, Krause, and Powell traced the residue of a chlorothalonil smoke formulation, Exotherm Termil, in a greenhouse (Figure 2) and characterized the actual chlorothalonil crystal (as seen in Figure 3) and demonstrated appropriate coverage.

The objective of any pesticide spray system is to deliver the active ingredient to the target surface of a plant, whether leaf, stem, root, or other sites. ATRU is always trying to answer the question, "What works?" In effect, ATRU seeks to improve the efficacy of disease and insect pest management tools.

ATRU has constructed three research weather stations at nurseries as part of our research program, with online meteorological data available to growers and researchers. For example, the stations have been an important component of a five-year research project on the effect of the types of sprayers on fungicide efficacy to apple scab disease management; assessing water use and quality, nutrition, and tree growth in a pot-in-pot nursery; and researching the life histories of black vine weevils and scarab pests related to their phenology and application of biological and conventional insecticides. Several studies also conducted in production greenhouses have determined best management practices for various commercial spray systems related to coverage and efficacy of fungicides. In addition, these partnerships have increased the growers' awareness of how ARS conducts research. The challenges of field research have resulted in partnerships between federal and state research with green industry partners.



**Figure 1. The USDA, ARS Scanning Electron Microscope at the OSU/OARDC, Wooster, OH.**

### Current ATRU Scientific Staff and Activities

**Research Leader/Research Plant Pathologist – Dr. Charles Krause (Wooster),** [krause.2@osu.edu](mailto:krause.2@osu.edu)

#### Agricultural Engineering Group (Wooster)

- Spray deposition in Taxus and Hemlock canopies with five-port, air-assist sprayer.
- Research Weather Network.
- Application techniques for greenhouse and nursery disease and pest management.
- Water management within pot-in-pot nursery production systems.

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#### Greenhouse Production Research Group (Toledo)

- Bedding plant recovery from water stress.
- Polyacrylamide hydrogel soil amendment on growth, shelf life, root morphology, and disease development with pansies, New Guinea impatiens, and other species.
- The use of soilless media to enhance management of root rot diseases including the use of biological fungicides.

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#### Horticultural Insects Group (Wooster)

- Subsurface application of insecticides for control of white grubs and black vine weevil in field-grown nursery crops in collaboration with the agricultural engineering group.
- Survey for ambrosia, bark, and other wood-boring beetles through trapping.
- Alternatives to insecticide dips for Japanese beetle quarantine procedures in collaboration with Tennessee State University.
- Insecticidal alternatives for control of emerald ash borer (EAB).
- Development of natural enemies for control of white grubs and black vine weevil.

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- Pesticide registration and label expansion for minor crops (ornamental and food use crops).

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#### Plant Pathology Group (Wooster)

- Application technique impact on fungicide effectiveness for apple scab control.



**Figure 2. Chlorothalonil smoke formulation application.**

- Botrytis blight control on Reiger begonias with soil amendments.

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#### The USDA, ARS, ATRU Liaison Committee

To ensure relevance of the Unit's program, the liaison committee of the USDA, ARS, Application Technology Research Unit provides input into research activities based on green industry needs. Two or three liaison committee meetings are held each year to review ATRU progress. This fosters partnerships with major green industry entities and provides further outreach or technology transfer of ATRU findings.

Needless to say, ATRU expresses its appreciation to the faculty and administration of The Ohio State University/OARDC in Columbus and Wooster for their long-term associations with our programs, as well as our appreciation to our new cooperators at the congressionally initiated USDA, ARS, ATRU Greenhouse Production Research Group at the University of Toledo.



**Figure 3. Chlorothalonil crystal viewed with SEM at X 10,000.**

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# Modifying Your Tank Mixes for Maximum Pesticide Performance



by Raymond A. Cloyd

Pest control materials, which include conventional or biorational insecticides and miticides, are still widely used intensively in greenhouse production systems to manage many of the major arthropod pests, including whiteflies, aphids, thrips, spider mites, fungus gnats, and mealybugs. However, very rarely do greenhouse producers deal with only one arthropod pest, especially when multiple crop types are being grown. This results in a complex array of arthropod pests present at one time. As a result, greenhouse producers rely heavily on the use of insecticides and miticides to control these greenhouse pests (Hudson et al. 1996).

However, a current trend that is occurring in the greenhouse industry due to federal rules and regulations, such as the Food Quality Protection Act (FQPA) and voluntary cancellations by manufacturers, is the loss of older, conventional pest control materials that kill a broad range of insect and mite pests (Sray, 1977). The loss of these older pest control materials has led to an increase in the registration of biorational or “reduced-risk” pest control materials including insecticides and miticides. These pest control materials have a narrow range of pest activity and less impact on workers, beneficial insects and mites, and the environment (Lowery and Isman, 1995; Oetting and Latimer, 1995; Parrella et al., 1983). However, to continuously manage the diversity of arthropod pests present in greenhouses, greenhouse producers tank mix several biorational pest control materials in an effort to broaden the activity of the application and reduce labor costs.

Tank mixing occurs when two or more pest control materials are combined into a single spray solution. The benefits of tank mixing include less time-consuming and fewer applications needed, thereby saving labor costs. In addition, tank mixing two or more pest control materials together may result in better kill than if either material was used separately. This is often referred to as synergism (Marer, 1988). Research has demonstrated that tank mixing two different pest control materials may result in greater kill of pests such as thrips (Cloyd, 2001, unpublished data; Table 1) and whiteflies (Brownbridge et al., 2000) than when materials are applied separately. Several examples of tank mixes that may result in synergistic activity are:

1. Azadirachtin (Azatin/Ornazin)  
+ *Beauveria bassiana* (Botanigard)
2. Paraffinic oil (UltraFine Spray Oil)  
+ Abamectin (Avid)
3. Potassium salts of fatty acids  
(Insecticidal Soap)  
+ Imidacloprid (Marathon)

Table 1. Mean percent mortality of Western flower thrips, *Frankliniella occidentalis* (Pergande) when treated with selected biorational pest control materials (Cloyd, unpublished data).

Treatment (active ingredient)	Rate (fl oz per 100 gallons water)	Mean Percent Mortality
Azadirachtin + Abamectin	8.0	54.0 a <sup>z</sup>
Abamectin	8.0	33.7 bc
Azadirachtin	8.0	4.7 d
Spinosad	10.0	43.0 ab
Experimental Compound	6.0	35.7 abc
Experimental Compound	12.0	21.0 cd
Novaluron	3.0	11.2 d
Novaluron	12.0	11.2 d
Untreated control		8.5 d
Water		5.5 d

<sup>z</sup> Means not followed by a common letter are significantly different ( $P \leq 0.05$ ) as determined by Fisher's protected least significant difference (LSD) test.

The reason why these tank mixes are synergistic is primarily because one of the materials (azadirachtin, paraffinic oil, or potassium salts of fatty acids) somehow stresses the insect enough, thus allowing the other material (*Beauveria bassiana*, abamectin, or imidacloprid) to work better. For example, during the warm periods of the year (spring and summer), insects tend to molt (shed old cuticle or skin) so rapidly that the spores of the insect-killing fungus, *Beauveria bassiana* cannot penetrate the insect cuticle and start an infestation. However, the addition of azadirachtin, which is an insect growth regulator, may stress or slow down development enough that the fungal spores are able to penetrate the insect skin, internally enter the insect's body, and eventually kill it (Brownbridge et al., 2000).

It is also probable that a mixture of pest control materials may delay the development of resistance (Immaraju et al., 1990), even more so than rotating pest control materials (Mallet 1989). However, despite the initial benefits of tank mixing, problems may occur when two or more pest control materials are combined. These include antagonism, incompatibility, resistance, and plant sensitivity.

### Antagonism

Antagonism occurs when mixing two or more pest control materials leads to reduced overall effectiveness or kill compared to if the materials were used separately (Lindquist, 2002). Cloyd (2001a) indicated reduced efficacy in controlling Western flower thrips when thiamethoxam (Flagship) was combined with bifenthrin (Talstar) as opposed to when thiamethoxam (Flagship) was used alone (Table 2). In addition to reduced effectiveness, there is the potential for plant injury (phytotoxicity). However, there is minimal information in the literature to support or refute claims of antagonism. In addition, little information is available to greenhouse producers on whether antagonism occurs or how tank mixing impacts the efficacy of biorational pest control materials.

### Incompatibility

Incompatibility occurs when the physical properties of the pest control materials prevent them from mixing properly in a spray solution, which may result in reduced effectiveness or phytotoxicity. Incompatibility may be due to the chemical or physical nature of the pest control materials, impurities in the water, water temperature, or the types of formulations mixed together.

To determine compatibility, greenhouse producers should conduct a *jar test*. This involves collecting a sample of an initial spray mixture (i.e. 1 pint) in an empty glass jar or other container and allowing the solution to sit for approximately 15 minutes. If the materials are incompatible, there will be a noticeable separation or layering, or precipitates such as flakes or crystals will form. However, if the materials are compatible, then the solution will appear homogeneous or look like milk (Cloyd 2001b). Once compatibility has been established, then a spray solution can be prepared.

Pest control material labels will often indicate whether or not there is compatibility with other pest control materials. Several examples are provided below:

1. Distance (Pyriproxyfen)  
*Compatibility:* Distance is compatible with most commonly used insecticides, fungicides, and spray adjuvants used in the production of ornamental plants.
2. Decathlon (Cyfluthrin)  
*Compatibility:* This product has been found to be compatible with all commonly used fungicides, miticides, liquid fertilizers, and other insecticides. Check the physical compatibility using the correct

**Table 2. Mean percent mortality of Western flower thrips, *Frankliniella occidentalis* (Pergande) two days after treatment with selected pest control materials (Cloyd, 2001).**

Treatment (active ingredient)	Rate	Mean Percent Mortality
Thiamethoxam + Potassium salts of fatty acids	0.21 g/16.0 oz water 9.24 ml/16.0 oz water	73.3 a <sup>z</sup>
Thiamethoxam	0.21 g/16.0 oz water	57.9 ab
Potassium salts of fatty acids	9.24 ml/16.0 oz water	36.2 bc
Etoxazole	0.21 g/16.0 oz water	24.3 cd
Thiamethoxam + Bifenthrin	0.21 g/16.0 oz water 0.74 ml/16.0 oz water	15.9 cd
Untreated control		12.7 cd
Fenpyroximate	3.71 ml/16.0 oz water	6.0 d

<sup>z</sup> Means not followed by a common letter are significantly different ( $P \leq 0.05$ ) as determined by Fisher's protected least significant difference (LSD) test.

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proportion of products in a small jar if local experience is unavailable.

### 3. Akari (Fenpyroximate)

*Compatibility:* Akari 5SC is believed to be compatible with most commonly used fungicides, insecticides, micronutrients, growth regulators, and spray adjuvants. It is always a good idea to conduct a tank mix compatibility test.

### 4. Floramite (Bifenazate)

*Compatibility:* To obtain broad-spectrum insect control, Floramite can be tank mixed with other insecticide products. However, due to variations in water quality such as hardness and pH, it is required that users conduct small-scale trials to ensure compatibility.

### Resistance

Resistance is the genetic ability of some individuals in a pest population to survive a pest control material application. In other words, the pest control material no longer effectively kills the target pest. Tank mixing may increase the probability of insect or mite resistance to different pest control materials (Immaraju et al. 1990). It is

possible that exposing a pest population to different pest control materials with different modes of activity may increase selection pressure enough that resistance develops to two different modes of activity at the same time.

What is of primary concern is the degree of resistance, whether it be cross- or multiple-resistance. Cross-resistance occurs when insect or mite populations become resistant to pest control materials in chemical classes with similar modes of activity. Multiple-resistance involves insect and mite populations that develop resistance to pest control materials in chemical classes with different modes of activity. It is important to understand that certain chemical classes have very similar modes of activity. For example, both the organophosphates and carbamates, despite being different chemical classes, have identical modes of activity (acetylcholinesterase inhibitors). Similarly, chlorinated hydrocarbons and pyrethroids have the same mode of activity (affect nerve cell transmission). The modes of activity of the common chemical classes are described in Table 3, and a listing of

pest control materials in each of the common chemical classes is presented in Table 4.

Greenhouse producers should avoid tank mixing pest control materials in the same chemical class, with similar modes of activity, and pest control materials with site-specific (single target site) modes of action. Here are several examples of tank mixes to avoid and why:

1. Acephate (Orthene)  
+ Chlorpyrifos (Duraguard) – Both pest control materials are in the same chemical class, organophosphate, so they have identical modes of activity.
2. Acephate (Orthene)  
+ Methiocarb (Mesurool) – Although both pest control materials are in different chemical classes, organophosphate and carbamate, the modes of activity of these two chemical classes is the same (acetylcholinesterase inhibitors).
3. Bifenthin (Talstar)  
+ Fluvalinate (Mavrik) – Both pest control materials are in the same chemical class, pyrethroid.

**Table 3. Common chemical classes and their mode of activity.**

Chemical class	Mode of Activity
1. Organophosphates and Carbamates	Inhibit the enzyme cholinesterase. This prevents the termination of nerve impulse transmission.
2. Pyrethroids and Chlorinated Hydrocarbons	Destabilize nerve cell membranes. They are primarily active on the sodium channels.
3. Macrocyclic Lactone	Affect gamma-amino butyric acid (GABA)-dependent chloride ion channels which inhibits nerve transmission.
4. Chloronicotinylns	Work on central nervous system, cause overstimulation and blockage of the postsynaptic nicotine acetylcholine receptors.
5. Insect Growth Regulators	Chitin synthesis inhibitors or juvenile hormone mimics. Chitin synthesis inhibitors prevent the formation of chitin, which is an essential component of an insect's exoskeleton. Juvenile hormone mimics cause insects to remain in a young or immature stage.
6. Soaps and Oils	Damage the waxy layer of the exoskeleton of soft-bodied insects, which results in desiccation or the smothering of insects by covering the breathing pores (spiracles).

4. Fenpropathrin (Tame) + Dicofol (Kelthane) – Both pest control materials are in different chemical classes, pyrethroid and chlorinated hydrocarbon; however, the mode of action of these two chemical classes is similar (destabilize nerve cell membranes).
5. Pyridaben (Sanmite) + Fenpyroximate (Akari) – Both pest control materials work on the mitochondrial electron transport system by inhibiting the production of adenosine triphosphate (ATP).

Tank mixing a pest control material with a site-specific mode of activity with a pest control material that has a broad mode of activity such as insect growth regulators, insecticidal soap, horticultural oil, neem extract, and/or beneficial fungi may minimize the potential of pest populations developing resistance.

### Plant Sensitivity

Tank mixing may lead to phytotoxicity, due to the sensitivity of certain plant types and cultivars. It is important that all tank mixes be evaluated for phytotoxicity before an application due to the additive effects of surfactants and wetting agents contained in certain formulations. To avoid phytotoxicity, greenhouse producers should test a tank mix solution on a small sample of plants prior to making an application to an entire crop.

Although there are benefits associated with tank mixing two pest control materials together (i.e. it's less time consuming and fewer applications are required), there are also a number of concerns that greenhouse producers should be aware of including antagonism, incompatibility, resistance, and plant sensitivity.

**Editor's Note:** This information was presented by Dr. Cloyd in a seminar at the 2003 OFA Short Course. The contents of this article were also published in the Proceedings of the 19<sup>th</sup> Annual Conference on Pest Management on Ornamentals (Cloyd, R. A. 2003. Tank Mixing the Right Way, pp. 26-35. In: Proceedings of the 19<sup>th</sup> Annual Conference on Pest Management on Ornamentals, Society of American Florists, Alexandria, VA). The 2004 Conference will be held February 20-22.

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**Table 4. Common chemical classes of insecticides and miticides used in greenhouses. Numbers in parentheses indicate group number (refer to Table 3).**

Organophosphates (1):	acephate (Orthene) chlorpyrifos (Duraguard)
Carbamates (1):	methiocarb (Mesurol)
Pyrethroids (2):	bifenthrin (Talstar/Attain) cyfluthrin (Decathlon) fenpropathrin (Tame) fluvalinate (Mavrik) lambda-cyhalothrin (Scimitar) permethrin (Astro)
Chlorinated Hydrocarbons (2):	dicofol (Kelthane) endosulfan (Endosulfan)
Macrocytic Lactone (3):	abamectin (Avid)
Chloronicotinylns (4):	imidacloprid (Marathon)
Insect Growth Regulators (5):	azadirachtin (Azatin/Ornazin) cyromazine (Citation) diflubenzuron (Adept) etoxazole (TetraSan) kinoprene (Enstar II) novaluron (Pedestal) pyriproxyfen (Distance) tebufenozide (Confirm)
Soaps and Oils (6):	neem oil (Triact) potassium salts of fatty acids (Insecticidal Soap/M-Pede) paraffinic oil (SunSpray UltraFine Oil)

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especially important for plants with large delicate flowers to avoid Botrytis and plant toppling. If excessive leaching occurs, the substrate should be "charged" with fertilizer, creating a nutrient reserve for the plants.

Water quality is another issue that should be addressed by plant producers. A basic water test will provide growers with pH, EC, and alkalinity levels. High alkalinity (>200 ppm) can have a major influence on pH and subsequent micronutrient availability. Growers with high alkalinity who apply less fertilizer (or nitrate-based fertilizers) or more clear

water during the postproduction stage can experience an increase in pH, which ultimately affects the availability of essential nutrients. Plants with advanced iron deficiency (a common symptom associated with high pH) will be hard to sell and may cause entire crops to be discarded. A different scenario relating to water quality can occur with growers who have little alkalinity in their irrigation water. Applying an acid residue fertilizer in the postproduction stage may introduce micronutrient toxicities or certain macronutrient deficiencies. Depending on the alkalinity levels, two fertilizers can serve as the nutrient sources during the postproduction stage. They are 20-10-20, an acid fertilizer for managing high-to-moderate levels of alkalinity, and 15-5-15, a basic fertilizer for low alkalinity water conditions.

### Light

Light is important to plant function, as it is required for photosynthesis. Most bedding plants demand medium to moderately high light levels during production, but once they reach the postproduction stage, levels should be reduced. Avoid holding plants in intense sunlight, and provide shade to plants when temperatures are  $\geq 68^{\circ}\text{F}$ . Shading will reduce the air temperature and decrease water usage by the plant. It has also been recommended to maintain light levels between 250 and 700 footcandles. Shipping carts should be spaced in areas where light will penetrate shelving, and if plants are placed on the top shelf, protection from direct sun should be provided.

### Temperature

Temperature has a large effect on plant quality during the post-

production stage. A key principle to remember is cool temperatures will slow growth and flowering, while warm temperatures will increase the demand for water, along with increasing the rate of flowering and growth. Transpiration increases as the plant takes up more water through the water-conducting tissues. If the temperature is reduced, then respiration decreases, plant metabolism slows, and carbohydrates (sugars) begin to accumulate. The presence and utilization of stored sugars during the postproduction stage can benefit plant quality. It has been suggested to reduce temperatures by 5 to 8°F during the postproduction stage. Lowering temperatures will also enhance tissue color and make flower petals brighter as the natural plant pigments begin to fuse and intensify. If temperatures drop too low, undesired pigmentation will occur. Also, cooler

temperatures combined with humidity may lead to the occurrence of disease.

**Table 1** lists the holding night temperatures for specific bedding plant species.

### Other External Factors That Directly Affect Plant Quality

**Fertilization.** Growers should avoid using a highly concentrated fertilizer before marketing. Applying too high of a rate can cause undesired growth (which will lead to leggy plants) or cause too high of an EC level (which may damage plant roots. Although growth still occurs, nutrients are required only in minimal amounts to keep plants healthy and toned.

A low phosphorus/ammoniacal-nitrogen fertilizer should be used in the postproduction stage. High levels of phosphorus have been shown to increase stem elongation, and ammoniacal-

nitrogen causes lush growth with less flowering. Use fertilizers like 13-2-13, 15-0-15, and 15-5-15 once weekly at N concentrations of 50 to 100 ppm.

**Table 1** contains weekly fertilization concentrations for specific bedding plant species.

**Ventilation.** Ventilation can help to maintain and improve bedding plant quality during the post-production stage. Proper ventilation can help to avoid disease and air pollutant accumulation. Faulty thermostats, leaks, and other factors can contribute to varied temperatures within the same greenhouse. Maintaining airflow can help to overcome or minimize these problems. Horizontal airflow fans (HAF) can help remedy air circulation problems and reduce the incidence of disease.

**Table 1. Holding Protocols for Bedding Plants**

Species	Holding Night Temperature	Fertility (ppm weekly)	Other Comments
Ageratum	50°F	N at 75	Irrigate often to prevent wilting.
Alyssum	50°F	N at 75	Spider mites can be a problem.
Begonia	58°F	N at 75	Do not overwater.
Celosia	58°F	N at 75 to 100	Foliage is very fragile.
Coleus	58°F	N at 75	Irrigate often to prevent wilting.
Cosmos	55°F	N at 75	Do not use B-Nine.
Dahlia	50°F	N at 75	A-Rest is the preferred PGR.
Geranium	40°F	N at 100	Remove dead flowers periodically.
Impatiens	60°F	N at 75	Excessive irrigation causes stretch.
Marigold	50°F	N at 100	Botrytis and spider mites can be a problem.
Petunia	50°F	N at 100	Allow soil to dry slightly.
Salvia	50°F	N at 75 to 100	Very ethylene sensitive.
Snapdragon	50°F	N at 75	Use a substrate that drains well.
Vinca	60°F	N at 75	Do not overwater.
Zinnia	60°F	N at 75	Leaf infections can be a problem.

Adapted from Armitage, A.M. 1993. Bedding plants: prolonging shelf performance. Ball Publishing. Batavia, Ill. pp. 69.

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## Holding Bedding Plants: A Few Postproduction Factors to Consider

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**Figure 1. Bedding plants are susceptible to nutrient deficiencies in the post-production stage. Adopting a post-production fertilization strategy can prevent most problems.**

(Photo: James L. Gibson)

If possible, try not to pack plants too closely and allow air circulation between them. Spacing plants will prevent disease, lower leaf drop, and undesirable stretch. While spacing should correspond to container size, remember that as plants grow, so will their spacing requirements. For general spacing that provides adequate ventilation during postproduction, allow 2 inches between flats, 8-inch centers for a 4-inch pot, 14-inch centers for a 6-inch pot, and 24-inch centers for an 8-inch pot.

**Substrate Selection and Container Size.** Substrate selection and container size are two other factors that greatly influence postproduction quality. A root substrate should be selected that exhibits good aeration, sufficient water-holding capacity, and proper drying time. It is also important that the mix selected retains nutrients necessary for growth. Container size can also be a factor in plant appearance. In a retail setting, the larger the container, the better. Larger containers hold more water, and most bedding plant species will require water less frequently.

**Propagation and Potting Times.** It is crucial that each bedding plant be researched to determine when to



**Figure 2. These two flats of celosia were the same age and had been given the same fertilizer rates. The plants on the right were treated with a PGR. The use of PGRs is beneficial in slowing plant growth and nutrient uptake.**

(Photo: James L. Gibson)

propagate and transplant to ensure an optimum level of growth and appearance at sales time. With most bedding plants, it is important that crop availability coincide with peak sales periods. Late-season production should be kept to a minimum because slow, late-season sales may result in “dumping” the final product.

**Plant Growth Retardants (PGRs).** Treating bedding plants with PGRs during production can certainly benefit the appearance of plants, because PGR applications may result in greener, more compact plants on the sales floor. The use of these chemicals also reduces water demand in postproduction and creates a stronger plant that minimizes the occurrence of damage caused by careless employee or consumer handling. Refer to the *OFA Tips on Regulating Growth of Floriculture Crops* (available at [www.ofa.org](http://www.ofa.org)) for specific rates and chemicals that can be used to hold bedding plants.

**Employee Competence and Education.** Another external factor bedding plant growers face is human error. Communication among employers and employees must be strong to ensure that company goals are being met. It is important that all employees be educated to use the same high level of care and caution when handling bedding plants. Employers must be willing to sacrifice work time for proper training of employees.



**Figure 3. Bedding Plants.**  
(Photo: Brian E. Whipker)

### The Final Word

During postproduction, the delicate nature of bedding plants requires that growers monitor all of the above-mentioned factors. Maintaining or manipulating these factors to sustain quality through the postproduction stage normally equates to success in the retail setting. The winter months of 2004 were quite cold and miserable for most of us. Hopefully, the chill did not extend itself into the beginning of bedding plant shipping season. Please use this information as a guide to extend postproduction quality, and we wish you the best of luck growing.

*Recommendations for the use of products are included in this publication as a convenience to the reader. The use of brand names and any mention or listing of commercial products or services in this publication does not imply endorsement by University of Florida nor discrimination against similar products or services not mentioned.*

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## Let's Grow AIB!

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Indianapolis, October 7 to 9. Definitely attend if you can! It's a great way to learn about AIB and fully appreciate the results.

To date, AIB has reached 82 cities in 28 states, and more than 90 companies and individuals have given money to support the program. Like United Way, AIB relies on financial contributions each year to operate. It's a voluntary effort funded by voluntary dollars without any paid staff. We're grateful OFA provides the office and shares its membership director, Laura Kunkle, to be AIB's administrator as a generous in-kind contribution.

Growers, garden center owners, and allied industry members have played a strong role in registering their communities and supporting their efforts. Examples include:

- Al's Garden Center & Greenhouse – Lake Oswego, Oregon
- Ball Horticultural Co. – Chicago and surrounding suburbs
- Ball Publishing – Batavia, Illinois
- Country Market Nursery – Camp Hill and Hershey, Pennsylvania
- Eagle Creek Garden Center – Burton, Ohio
- Express Seed – Oberlin and Vermillion, Ohio
- H.J. Benken Florist & Greenhouse – Silverton, Ohio
- Homestead Gardens – Annapolis, Maryland
- Kalamazoo Valley Plant Growers – Kalamazoo County, Michigan
- Mahoney's Garden Centers – Winchester, Massachusetts
- Meister Media Worldwide – Westlake and Willoughby, Ohio
- OFA – Indianapolis, Indiana, and Columbus and Washington Court House, Ohio
- Perkins Flowers – Lapeer, Michigan
- Quansett Nurseries – New Bedford, Massachusetts

- Techni-Growers Greenhouses – Warwick, New York
- Yoder Brothers – Barberton, Ohio

The Massachusetts Flower Growers Association has also made a strong effort to register cities in that state and has provided matching dollars to help pay for the entry fee. So far, this has led to five cities participating – Boston, New Bedford, Newburyport, Quincy, and Winchester. Both the flower growers and New England Nurserymen have rallied around AIB by making it the theme of their booths at trade shows like New England Grows.

Local organizations are critical to the growth of AIB and are the future for increasing participation. Their members are also the ones who will benefit directly. The best way to benefit from AIB is to plant it at home.

### AIB's Role Model

AIB is modeled after Canada's Communities In Bloom, which has very strong provincial programs that send strong contenders to the national competition each year. Ideally, AIB would have strong state and regional programs to build the national competition. In April, CIB received the American Horticultural Society's (AHS) Urban Beautification Award given to individuals or institutions that have made significant contributions to urban horticulture.

My mentor, Raymond Carrière, founded CIB in 1995. While 29 communities participated their first year, now nearly 500 participate annually at the provincial and national levels. We hope AIB will be able to achieve the same participation someday! CIB's 10-year anniversary celebration will be this September in Charlottetown, Prince Edward Island.

While CIB's base is strongly municipal, AIB is more from the industry. The rest of this year, AIB will be seeking partnerships with like-minded organizations and getting more involved with the municipal world. Organization examples include Keep America Beautiful, National Arbor Day Foundation's Tree City USA, and



National Historic Trust's Main Street program. We've already begun partnerships with National Gardening Association, National Garden Bureau, and AHS.

Plans are in the works to create more educational tools and networking opportunities. Just like other nonprofit organizations, AIB needs funding to sustain the momentum. No contribution is too small. Every little bit helps!

### What Can You Do?

You can get involved in AIB by:

- Attending the awards symposium in Indianapolis, October 7 to 9.
- Working with municipal officials and civic organizations to register communities in your area for next year's competition.
- Planting the spirit by installing landscape plantings, hanging baskets, and window boxes. Chambers of Commerce are ideal partners for this.
- Giving time or money to the cause. While we have companies that have given thousands of dollars, we also need thousands of individuals to give a little bit. If you believe AIB is good for our industry and for revitalizing communities, consider sending \$100 in as a community friend today. That would be a wonderful vote of confidence. Also consider using AIB as an avenue for cause-related marketing by becoming a steward.

For more information on how you can support AIB, contact AIB's contest administrator Laura Kunkle at 614-487-1117, fax 614-487-1216, or email [Lkunkle@ofa.org](mailto:Lkunkle@ofa.org) or visit AIB's web site, [www.americainbloom.org](http://www.americainbloom.org). Donations may be made to America in Bloom and mailed to: AIB, 2130 Stella Court, Columbus, OH 43215-1033.

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## Let's Grow AIB!

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### America in Bloom Board

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Donna Moramarco – PlantAmerica

Lisa Oliver – Franks Nursery

Don Riddle – Homestead Nursery

Bill Willbrandt – Floriculture Industry  
Research & Scholarship Trust

### AMERICA IN BLOOM CONTESTANTS FOR 2004

#### 5,000 or less population category

Blanchester, Ohio  
Eureka Springs, Arkansas  
Flemington, New Jersey  
Rancho Santa Fe, California  
Sequim, Washington

*Judges: Diane Clasen &  
Richard Ullrich Jr.*

#### 5,001-10,000 population category

Goshen, New York  
Horseheads, New York  
Logan, Ohio  
Milledgeville, Georgia  
Montgomery, Illinois  
Mount Rainier, Maryland  
Oberlin, Ohio  
Vernal, Utah  
Williston, Vermont

*Judges: Bruce Riggs & Evelyn Alemanni*

#### 10,001-15,000 population category

Greenfield, Indiana  
Vermillion, Ohio  
Washington Court House, Ohio

*Judges: Darrell Trout & Loretta Hodyess*

#### 15,001-25,000 population category

Hershey, Pennsylvania  
Mason, Ohio  
Newburyport, Massachusetts

*Judges: Leslie Croyle & Dwight Lund*

#### 25,001-50,000 population category

Bartlett, Tennessee  
Bowling Green, Ohio  
Madison, Alabama  
Northglenn, Colorado  
Sandusky, Ohio

*Judges: Lee Nelson & Bill Hahn*

#### 50,001-100,000 population category

Fayetteville, Arkansas  
New Bedford, Massachusetts  
Quincy, Massachusetts

*Judges: Diana Wiener & Art Ode*

#### 100,001-300,000 population category

Aurora, Illinois  
Des Moines, Iowa  
Kalamazoo County, Michigan  
Naperville, Illinois  
Spokane, Washington

*Judges: Gary Gerlach & Jo Ellen Sharp*

#### University Campus category

Ashland University, Ashland, Ohio  
Utah State University, Logan, Utah

*Judges: Alex Pearl & Gerald Klingaman*

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# Howdy from Texas A&M!



by *Terri W. Starman*

Where shall I start telling y'all about floriculture at Texas A&M? Well first, we are big and hot!!! *How big are we?* Texas A&M is the nation's sixth largest university, with an enrollment of more than 45,000 students. Across the state, the Department of Horticultural Sciences has about 45 faculty members and a supporting staff of more than 35 people. Faculty members specialize in research, teaching and service in all commodity areas of horticulture including floral, nursery, fruit, nut and vegetable crops. Dr. Tim Davis is professor and head of the Department of Horticultural Sciences in College Station and resident director of the Texas A&M Research and Extension Center in Dallas. Undergraduate and graduate student enrollments are more than 150 and 50, respectively. We teach about 30 different courses related to floriculture and ornamental horticulture. We require an on-the-job internship training program of all undergraduate students.

We also have two endowed chairs and one more to come that are related to floriculture. They are the Benz Chair of Floral Design and the Basye Chair in Rose Breeding. The floriculture/ornamental horticulture industry in Texas is extraordinary in its support of our teaching, research, and Extension efforts at Texas A&M. Led by Ellen Ellison of Ellison's Greenhouses in Brenham, Texas, industry members have raised \$500,000 which will be matched by Texas A&M University and its College of Agriculture and Life Sciences to create a \$1 million Endowed Chair in Floriculture/Greenhouse Crops. This endowed chair will strengthen the research and

educational programs that address the needs of the Texas floriculture and ornamental horticulture industries.

*How hot are we?* In College Station, which is located about 90 miles northwest of Houston, the average temperatures from June until August are 73°F night and 94°F day. Not a lot of temperate plants like to flower at those temperatures. But what is blooming and growing at Texas A&M is our floriculture program. And besides those three months in summer, we have wonderful weather the rest of the year. None of those cold, bleak, winter days with low light levels that only an African violet will bloom under for us! We have big skies and good light in Texas, that's for sure. And we have a bright future for the floriculture industry.

## Our Floriculture Research Targets Industry Needs

Because we are so big and hot, much of our research effort is aimed at developing new crops that are adapted to our climate. Texas has a wide range of climates and soil conditions. The Texas Nursery and Landscape Association (TNLA) has divided the state into eight specific plant adaptability areas for the purposes of plant selection. In addition to plant adaptability, other common premises of our many varied research projects are water quality and conservation and development of environmentally sound, sustainable production systems.

## The CEMAP Program

The Coordinated Education and Marketing Assistance Program (CEMAP) is an industry/university cooperative program in which university and industry leaders partner in the identification of superior landscape plants for Texas and their subsequent promotion in the marketplace. The stated purposes of the CEMAP program are to "provide highly effective marketing assistance to growers and retailers, particularly during slower periods of the nursery year" and to "ensure that consumers utilize the very best and most environmentally

responsible plant materials, products, and horticultural techniques."

One of the key points that distinguishes this program from similar plant promotion programs in other states is the coupling of evaluation and selection processes with statewide testing in a state with climate zones as diverse as most nations. CEMAP has assembled the talent and horticultural mentality to discover, modify, and/or create plants which have a characteristic or characteristics that make these plants easy to popularize to the majority of consumers. CEMAP recognizes superior genetics in old and new plant materials, then proliferates these selections and popularizes them, for the first time or again if need be, using all available mass media. One of the key characteristics of this program is the ability of the plant to be mass produced – CEMAP insists on the availability of a substantial (hundreds of thousands) supply of the selected plants before the promotion is undertaken. There is a coordinated marketing effort for each plant that provides producers, wholesalers, and retailers an opportunity to fill the production pipeline in advance of planned promotions. The plants are tailored to Texas and are so well adapted and versatile that the majority of the customers will have a positive experience with the plant.

Researchers in College Station and at the Experiment Stations in Dallas, Overton, and Weslaco are actively engaged in research with floral crops including cut flowers, flowering potted plants, foliage plants, and bedding and garden plants. Here is just a sample of the research that is ongoing.

## Texas A&M Research and Extension Center at College Station

Dr. David H. Byrne works on rose germplasm collection and evaluation. Byrne has gone to China twice to collect both wild and cultivated roses from this species-rich region. Together with Dr. H. Brent Pemberton, he has

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## Howdy from Texas A&M!

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evaluated more than 300 rose accessions in the disease (black spot, cercospora, and powdery mildew) evaluation plots set up in College Station and Overton. Byrne and Pemberton have a regional rose evaluation trial (Texas Super Star program) in which commercial firms can enter roses for evaluation for their disease resistance and other important horticultural traits. They also focus on incorporation of high levels of disease resistance into commercial germplasm, such as the mechanism of resistance displayed by the species *Rosa roxburghii*, which appears immune to the black spot fungus. In cooperation with Dr. Sriyani Rajapakse of Clemson University, Byrne has developed a low density map of the rose genome which is the first step in the identification and isolation of markers that can be used in breeding.

Dr. Fred T. Davies' current floriculture-related research involves assessing the influence of nitrogen fertilization on insect herbivore population dynamics and crop quality using chrysanthemum as a model crop. His team is determining the influence of nitrogen fertilization levels on pest management inputs in greenhouse conditions. They have found cotton aphid and Western flower thrips population growth rates increase exponentially with increasing fertilization rates. Aphids exposed to high fertility regimes depressed plant vegetative and reproductive growth and increased ethylene production in reproductive buds and young leaves, thus influencing plant quality and saleability.

Dr. David William Reed's research in the area of floriculture nutrition is specifically based on water quality and optimum nutrition levels in minimal leach systems (ebb and flood). His efforts are currently focused on identifying the toxicity levels of each of the salts commonly found in irrigation water. He has found that the major salinity effect of irrigation water is primarily due to total salt concentration, and there is a lesser contribution of

individual salt toxicities. He also uses subirrigation to determine the optimum nutrition levels under conditions of zero or minimal leaching. His work has shown these levels are about half (or less) the levels commonly recommended in top-watered constant feed systems.

Dr. Terri W. Starman's research on new floriculture crops is aimed at finding plants adaptable to Texas summers and extending the market into spring and fall. She has been working with timing and scheduling, photoperiod, light intensity, and plant growth regulators on growth and flowering of vegetative annuals. There are so many new vegetative annuals on the market, it can be challenging for a grower trying to get started or just to keep up. Starman's work is aimed at helping growers decide which cultivars to choose for a specific marketing window and which ones to grow in a cool or warm greenhouse. She looks at cultivar selection for new products in small pots, hanging baskets, or container gardens. Her plant growth regulator work includes the use of Florel and growth retardants as foliar sprays, tank mixes, and late-season drenches. Her latest work is on shelf life of vegetative annuals to characterize postharvest disorders and determine differences between cultivars. Her studies include the effects of shipping and nitrogen toning on shelf life. Several chemicals with beneficial effects on postharvest longevity are being evaluated. Starman has expertise in floral design and has used that knowledge to teach growers and students how to combine floral crops into container gardens. Starman also conducts poinsettia trials.

### Texas A&M Research and Extension Center at Dallas

In Dallas, Drs. Wayne Mackay and Tim Davis continue to develop *Lupinus havardii* as cut flowers, along with conducting postharvest vase life research. They recently have developed a breeding line of plants that are ethylene insensitive and have made improvements in vase life of all of the advanced breeding lines, compared to 'Texas Sapphire' and 'Texas Ice' which were released in 1997. Mackay and Dr. Narendra Sankhla have begun to study the factors that limit vase life in *Phlox*

*paniculata* and have developed some treatments to dramatically extend vase life.

Also in Dallas, Dr. Raul Cabrera conducts mineral nutrition and fertilization research in ornamental crops, including cut roses, herbaceous perennials, and container nursery crops. Specific research subjects include nitrogen (N) uptake and N use efficiency in crops, fate of N fertilizers (N balances and leaching losses), use and management of controlled-release fertilizers and liquid feed programs, crop salinity tolerance and management, water quality, and growing media management.

Dr. Cynthia McKenney helped to initiate a breeding project to identify wildflowers with potential for landscape use in demanding environments. Accessions with outstanding attributes were collected, and comparison trials were conducted over several seasons. To date, two applications have been submitted for Plant Variety Protection (PVP), which are *Melampodium leucanthemum* 'Plains' (blackfoot daisy) and *Glandularia bipinnatifida* 'Vibrant' (Verbena). McKenney has been involved in screening hundreds of wildflower accessions for increased branching, compact growth habit, and increased floral density. Other crops currently being investigated are *Calylophus berlandieri pinifolius* (sundrops) and *Salvia farinacea* (mealy sage).

### Texas A&M Research and Extension Center at Overton

Dr. H. Brent Pemberton's research program is designed to serve the greenhouse and nursery industries in northeast Texas. A major project is the East Texas Bedding Plant Greenhouse and Garden Performance Trials. This program features spring and fall trials in cooperation with the Texas A&M Dallas Center and the Dallas Arboretum and Botanical Garden. Pemberton's program also addresses production problems in the areas of height and flowering control of greenhouse bedding plant and potted crops. Another major area of research is with roses. Work with pot roses has focused on postharvest shipping

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problems and the effects of growing environment on postharvest quality. Other work with roses is on field production of garden roses, including disease resistance testing and fungicide efficacy testing. In a joint project with the University of Arizona, recent efforts also include the effects of digging date and cold storage as well as moisture loss during the digging and potting operations on the forcing quality of potted garden roses.

## Texas A&M Research and Extension Center at Weslaco

Dr. Yin-Tung Wang is well recognized for his pioneer research on potted, blooming orchids at the Weslaco Center in the Lower Rio Grande Valley. He began his research on orchids in 1990, before the potted orchids became so popular. Wang primarily works on the phalaenopsis orchids, but also has done research on *Dendrobium*, *Cattleya*, and *Paphiopedilum* (the slipper orchid) species. His work on orchids covers mineral nutrition, water salinity, media selection, flowering physiology, programming flowering, irradiance, temperature effects, postharvest handling, and growth regulation. Wang found that phalaenopsis require light above a certain level to respond to flowering-inducing cool temperatures. This breakthrough knowledge was used to develop a technique for deferring flowering for peak demand periods. His research demonstrated that orchids do not need the high phosphorus that was being recommended. Wang continues to work on flowering physiology and breeding of phalaenopsis to facilitate flowering at high temperatures without the need for air-conditioned greenhouses. He currently studies how cooler days and warmer nights affect growth and flowering. He is also working on finding a solution to correct the leaf mottling on Oncididae orchids.

## Unique Things about Our Department

**Aggie-Horticulture.** Be sure to check it out at <http://aggie-horticulture.tamu.edu/>. Aggie-Horticulture is the crown jewel of the Aggie Horticulture Network – the largest information server containing files related to horticulture teaching, research, Extension, and public service. Operational since October 1994, this server has grown from 10,000 hits per month to its current average of more than 6 million hits per month (high monthly total: 7.5 million hits). It is the home of the popular gardening information site [PLANTanswers](http://PLANTanswers). The network also includes The Horticulture Database Server with more than 30 databases being served, including the Texas Native Trees, Texas Native Shrubs, Ornamental PicturePages, and Aggies for Hire databases. If you are looking for new employees, check out Aggies for Hire. hortIPM provides comprehensive information exclusively about integrated pest management including information pages and a searchable database of IPM control options.

**Our Facilities.** The Department of Horticultural Sciences is located in the Horticulture/Forest Science Building (HFSB) at Texas A&M University. The M. Benz Gallery of Floral Art in the HFSB was created to provide a setting for treasures from the Benz estate. Display cases in this park-like atrium of the Horticulture/Forest Science Building hold exhibits for the pleasure of students and the community at-large. A fine arts collection contains sculpture and bronze vessels, pictorial art portraying the Renaissance period through the Modernists with emphasis on Oriental block prints and Western wildlife, ceramic containers ranging from the earliest Aztec period to the most contemporary, and an extensive array of photography capturing people and places, flowers and plants, art and design on a global scale. Of special interest are the gold orchids cast by the

“lost-wax method” from fresh blossoms in Mr. Benz’ own collection. Since its dedication in April 1986, the M. Benz Gallery of Floral Art has provided an environment in which students of the Benz School and Texas A&M University can experience floral design as the fine art envisioned by M. “Buddy” Benz.

In addition to our building, we have more than 20,000 square feet of greenhouse space dedicated to research and teaching. We have two gardens: The Holistic Garden is adjacent to our building, and the TAMU Horticultural Gardens and Field Laboratory is located about 2 miles away. This 15-acre facility contains 300+ plant specimens in 27 different beds and planting areas. In addition to the gardens, the facility offers a 20,000- square-foot container nursery, 4,000 square feet of covered overwintering structures, and 6,000 square feet of greenhouse area. The Holistic Garden is used year-round for students to work in the gardens. The gardens include a culinary herb garden, vegetable gardens, flower gardens, fruit plantings, butterfly garden, and areas of wildlife habitat. The adaptive garden is being enlarged, and a new childrens’ garden area is being added.

## The Benz School of Floral Design.

For more than 55 years, persons from all walks of life have attended the Benz School of Floral Design because of their interest in the retail florist industry. The school was founded by M. “Buddy” Benz, who developed the theories upon which most education in floral design is based today. When started in 1945, the Benz School was one of the first short courses in the industry. During the spring and summer, the Benz School offers multiple sessions, each with an enrollment of 20 students to guarantee personal instruction. The text for the course is *Flowers: Geometric Form* by M. “Buddy” Benz and James L. “Jim” Johnson. This beautifully revised book,

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# Product Marketing Styles

*Editor's Note: This seminar was originally presented by Gary Doerr at the 1994 International Floriculture Industry Short Course.*

When I was asked by Michelle Gaston to review this article, which was developed from a presentation I made at the OFA Short Course, I knew it was likely I would see “how times have changed.” To my surprise, I found that much of what I wrote 10 years ago is still timely today. I suggested to Michelle that we use the article in a flashback fashion to illustrate that as much as things change, the more they remain the same. I will let you decide if, indeed, the article carries a message relevant to your business activities today.

## The Marketing Model

My introduction to marketing began innocently enough. I clearly remember that Sunday evening when I was watching television and first experienced the marketing dream. I was enamored with the advertisement “See the USA in your Chevrolet.”

The advertisers had me. I fit, or at least my parents fit, the target demographics for Sunday evening television. The advertisers enticed us with sparkling Belvedere, Impala, or Chevy II vehicles, knowing they were just right for us. So what if we were a blue collar, Ford family; they wanted our business. I tried with all my creativity to convince my father to just take a look at a shiny convertible. Sorry; at that time we were a Ford family. Then something happened, because buyers abandoned, in droves, Ford and all the other American auto manufacturers in the late '70s. We didn't stop buying cars; we bought imports by the millions. Chevrolet and General Motors should have been listening to, not singing, “The Heartbeat of America.”

What happened to the auto makers happens routinely in the world marketplace. The marketplace is seldom static; and seemingly inelastic

demands stretch and shrink with irregularity. At least that is my viewpoint as a small businessman who grows perennials for the garden center and landscape markets in the Midwest. The world for many of us gets very small when it comes to our own livelihood. Isn't minor surgery something that happens to someone else? Is the economy good if your business is bad? It is a matter of perspective. And so is marketing.

Even though the world gets smaller when we think of our own businesses, we must get outside that world to really see where we are going. In the '90s, successful marketing models changed and began with the consumer. Consumers could tell us their perceived needs, and their input drove the improvement of many existing products and the creation of new product ideas.

## Push Versus Pull

In our industry, I often wonder how motivated we really are to become consumer- or market-driven. Peppergrove, a company that prides itself on being sensitive to end-users' needs, was exposed as a production-driven operation. Peppergrove was the ultimate “push” marketer. We devised ways to “set the table” so consumers would find our products irresistible. We spent a lot of money upgrading production facilities and researching our growing regimes. We improved perennial plant quality so we could compete with the bedding plant growers whose plants are consistent and blooming. We reasoned that if our quality exceeded that of other growers, we could push our products through the marketplace with relative ease. Our formula was to provide top quality plants and good signage.

We made one critical mistake. We forgot to ask our consumers what quality means to them. When we finally did ask, we were astounded with what we heard. In two focus groups of “gardeners,” we found that their impression of quality was directly

related to the integrity of the retailer. Clean floors, neat displays, properly maintained plants, and knowledgeable help was, by far, a better gauge of plant quality and integrity than a “grower's” interpretation. Sturdy stems, compact plants, and blooms galore were not even mentioned. Overall, we learned we were not “pushing” the items our customers wanted the most.

Since our potential was limited if we relied solely on pushing our product through the marketplace, we have developed pull-through strategies to energize the process. Actually, the growth of the perennial plant industry is directly related to the incredible media exposure it has received. Country and English garden settings frequently adorn the covers of pure garden magazines and home publications. Potential end users see the beauty of these plants in familiar settings and “gotta have” that for themselves. That is pull-through marketing. To be successful, you must recognize the opportunities to use what preselling publications are doing for you and create the proper consumer response. Growers and retailers need to work together to seize the opportunities.

## Strategic Planning

At the same time Peppergrove was motivated to be more market-driven, we also realized we needed to energize our own staff through empowerment. In 1992, we embarked on a strategic planning process that sought to “empower” our staff and drive the decision making to the lowest level possible. Since then, we have tried to limit the rules of operation and work harder to identify the values, ethics, and mores of the organization. Sharing a common “ethos” and mission allows solutions to be developed at the problem site. Involved and committed staff members are more willing to accept change when they have been a part of the process.

Empowerment puts employees closer to the customer and in a


 OFA Marketing

position to make decisions based on values, ethics, company mission, and not always policy. We are changing our management style to be hard on the process and soft on the employees. We have not progressed without growing pains. However, the change in philosophy was, and remains, essential to the transition from production-driven to market-driven.

### Partnering

We had to develop “action plans” to add structure to the strategic planning process. Action plans identify the objective and itemize the tasks necessary to reach the objective. The plan of action also identifies the individual(s) responsible for the task and a date the task is to be accomplished. As a small company, we soon found we could not reach our goals or achieve our mission without the cooperation of vendors, producers, customers, and end users. We began “partnering” with key members of each group. The partnering process focuses on identifying the key participants and finding ways to utilize one another’s strengths for mutual benefits.

### Market Research

I have to be honest; as self-made marketers, the process for us at Peppergrove is rarely a straight line. We have had more failures than successes, but we have always learned something. For example, no matter how good the idea, the staff must be totally committed. Also, a good idea today is not always a good idea forever, and a bad idea may be a great idea the next time.

Probably the single most important lesson we’ve learned is that we must not rely on production to dictate our marketing efforts. We feel in control when we are in command of production. Switching to market-driven means the customer is in charge, and we must rely on their directions for our marketing strategy. As brave entrepreneurs we must accept the challenge ... find out what consumers want and develop the products and services to meet their

needs. Seems easy enough, but who is the customer? The retailer? The landscaper? They are our partners. They work with us, along with the vendors, to make sure we are addressing the right issues and market demands. They are the immediate contact with the end user.

No matter where your company fits in the marketing scheme, you must be able to reach the end user. Progressive growers with a keen eye for marketing have recognized that they must interpret the needs of the end user and retail partner and take an active role in product development. We believe that to reach the end user, we must assist the retailer in clearly defining the needs of the ultimate consumer. Our customer base, which is predominantly independent retailers, does not always have the resources to unilaterally survey the marketplace and determine the target and tactics to capture the gardening business in their community.

In any event, if you are relying on consumers to drive the production process, you need to reach those consumers and clearly define their “perceived” needs. No two consumers are alike, but they can be classified in groups. Two possible groups are gardeners and non-gardeners. Market research can glean valuable information from these groups or others you feel are important. We have used surveys and focus groups to reach the end user. Large samples with statistically dependable results are very expensive. However, you can get more than just anecdotal information from smaller surveys if they are properly designed and carried out.

I suggest you include – but reach beyond – your current customer base. Focus groups can provide valuable information that, when interpreted correctly, can be immensely helpful in directing your marketing strategies and tactics. The clue we heard loud and clear was that no matter how great our plants looked, the consumers’ standard

of quality was directly related to the integrity and service of the retailer. We learned that no matter how hard we pushed, our success would be limited. Focus groups simply provide a basis for product and service development, usually not specific ideas.

Finally, do not discount your own personal experience or that of your “partners.” More often than not, you will find that surveys and focus groups will validate your own experiences. Once in a while you will be handed a gem. Do not ignore it; the revelation might be the one concept that truly offers a competitive edge.

### Target And Tactics

Research – surveys and focus groups – provides a basis for understanding the needs of the customer. Information you gather will help to distinguish the various consumer groups.

Targeting is a conscious effort to zero in on a specific market segment. It is wise to direct your marketing efforts to consumers with similar characteristics, because you cannot be all things to all people. Whether your focus is gardeners or non-gardeners, homeowners or apartment dwellers, males or females, you are in charge. Develop strategies to reach specific groups. Successful marketers target their products and services.

Perennials, which Peppergrove markets and produces, are a good example. The gardening aficionado was the primary customer and purchased mainly through mail-order catalogs. These mail-order firms used magazines like *Horticulture* to reach the end user. By building their mailing lists with names of these true gardeners, they focused direct mailing efforts to the narrow customer base they identified. This group of gardening aficionados could be characterized as quite knowledgeable and well read. As the popularity of perennials grew and the

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## Product Marketing Styles

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market base expanded, there was a greater need to educate the end user.

The expansion of the perennial market began in the Midwest during the '70s and early '80s. Peppergrove identified the need to provide more information to the end user. Our idea and personal experience at the retail level was validated by "hard" research conducted for the Horticulture Research Institute. When we started the nursery in 1983, we made a conscious decision to introduce our color-coded pot system that uses yellow, green, and blue to indicate the perfect planting location. The target is the consumer who needs "at-a-glance" information, and the tactic is the color-coded pot.

In a recent survey conducted on behalf of the Perennial Plant Association, perennial growers were asked what they thought of color-coded containers. Frankly, they did not think much of them. At the same time, the trade publication *American Nurseryman* published market research that clearly identified the need to convey light requirements of the plant to the consumer. Ninety percent of those surveyed rated light requirements as the number one "need to know information" before purchasing. You can see the importance of asking the right group the right question. As growers and retailers, we tend to talk to ourselves.

As our population has matured, gardening has emerged as the nation's number one leisure activity. Older Americans tend to shop for gardening products at the local garden centers, while younger first-time homeowners are frequenting mass merchandisers. Non-gardeners provide the greatest opportunity to increase our industry. I remind you that non-gardeners do buy flowers, plant trees, and grow vegetables, although gardening is not their preferred leisure activity. Younger

shoppers and non-gardeners are just two of the many targets that provide opportunities to expand your business.

Consider some of the established tactics you could use to reach these two large consumer groups. As clothing stores use window displays, display gardens also show the less-knowledgeable customer which combinations of products work well together. Workshops and seminars geared toward the "do it yourself" and less knowledgeable may position you as the place to purchase from. And, clean and neat, well-maintained displays with good signage – coupled with knowledgeable sales staff – go a long way in boosting your customers' perceptions.

Marketing is not magical even though the success or failure of marketing strategies is sometimes bewildering. The Edsel was labeled as a "can't miss" automobile that failed miserably because, as we were later told, it was ahead of its time. Yet the Volkswagen Beetle produced in Germany captured America's fascination only 20 years after the end of World War II.

Our industry grows and sells what many call the most beautiful products in the world. If these plants are so beautiful and irresistible, why don't they sell themselves? The answer is marketing. Who is driving your business? No. Let me word that question another way. Who **should** be driving your business? The customer.

### Thoughts for Today

Not long after this article was published, I became directly involved in the Blooms of Bressingham branding program. My involvement with Blooms of Bressingham directly arose from the strategic planning, partnering, and market research process this article references. I viewed the Blooms of Bressingham branding activity as a pull-through marketing exercise. Since that time I have been repeatedly reminded of the importance of what I term little m-arketing and large M-arketing. In the Blooms

world, little m-arketing is the management of the channel of distribution from breeder to consumer. Much of this activity is below the waterline and out of sight. Large M-arketing is the stuff above the water line that is intentionally visible and promotion related. Both are important, but success is predicated on attending to those little things that most people do not see independently of the larger picture.

You can apply the little m and large M approach to you own business and branding strategies. Yes, your company is a brand. In your world it is the most important asset. It is the little things that most people don't see that build your company's brand. Little things tend toward never being finished. They are ongoing. Repetitive. Doing the little things successfully over and over and over again, if they lead to exceeding your customers' expectations over and over and over again, are the building blocks of a successful business strategy. Understanding and exceeding your customers' expectations, while reminding (large M) them of who you are over and over and over again, leads to a successful branding program.

Of course, you can't exceed your customers' expectations without knowing what they are and how to measure your level of success. And you can't fool your customer for very long. They will figure out quite quickly if you are not what you say you are. They know what you are even if you don't. In this day and age, successful marketing models begin with the consumer. Consumers can tell us their perceived needs, and their input drives the improvement of many existing products and the creation of new product ideas. I think I have heard that somewhere before.

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# Poinsettia Diseases – News and Views

by Charles C. Powell

## Introduction

In this overview of poinsettia diseases and their management, I hope to accomplish two things. I want to pass on a bit of information that may be new to you. This is the “news” part. Do not look for revolutionary items here. There are a lot of little things, however. I also want to give you my guidelines on what I consider to be the best management tips. This is the “views” part. These tips generally come from observations growers and I have made together as I travel.

I have organized the article by disease. That way, you may read it selectively if you wish. Of course, I still would prefer your complete reading so you can get a sense of the inter-relationship of growing factors. As you may know, I am a strong advocate of holistic plant health management. Let's get started!

## Lower Stem Rot at Rooting and Transplanting

Poinsettias are unusually susceptible to lower stem rot as unrooted cuttings or recently transplanted rooted cuttings. Although still widespread, I have seen less of this in recent years. This is due to at least five things.

- 1) Protective fungicides are better now. Furthermore, the right ones are being used in the right ways. Growers are finally realizing that this condition can be caused by either *Rhizoctonia* or *Botrytis*. In other words, there is more than one disease that may have to be managed here.

The thiophanate fungicides (Banrot, 3336, 6672, Fungo, or Systec) are not good against *Botrytis*. I have seen good results with Spectro, Heritage, Medallion, or Chipco 26GT/Sextant.

**News** – The Chipco 26GT formulation is better as a srench now. Sextant is the same active ingredient, but in a flowable formulation.

Most growers are now using an effective yet economical application method when using these products for these diseases. In short, a day or two after sticking an unrooted cutting or transplanting a rooted plant/cutting, apply the fungicides as a srench. Srench directions are generally not spelled out well on labels. Srenches are merely good wetting of the lower part of the cutting, the rooting block (if present), and the upper portion of the growing media if direct sticking or transplanting. Many combine a product for larval control of fungus gnats and shore flies with this initial srench.

**Views** – Get this protection on soon after the lower poinsettia stem contacts a possible source of inoculum. That lower stem is really susceptible when it is still green. You may get by without timely protection in a sanitary rooting block situation, but you likely will have losses in direct stick programs or when transplanting. Transplanting too deeply still causes problems as well.

- 2) Fewer growers are starting with their own stock plants. This means they are buying cuttings, rooted or unrooted, from more specialized poinsettia stock growers. Providers of cuttings are sending out material that is not so “soft.” They are not fertilizing their plants with hot-shot ammonia fertilizers nearly as much as in the past.

**News** – This practice is also greatly reducing the presence of *Erwinia* soft rot of poinsettia cuttings.

**Views** – If you are still growing stock plants, keep them acidic with acid injection of your water and/or with only minimal use of acidifying fertilizers. I will not get into fertilization programs in this article.

- 3) Growers now realize that fungus gnat injury can be very severe during rooting of poinsettias. Wounds made by larvae provide ideal infection sites

for the rotting fungi. Timely protection or preventive programs for the development of larvae are keys to success. The products and their use will be discussed at another time.

- 4) General sanitation is better in most greenhouses now.

**Views** – I believe this awareness is a direct fallout of the scare we had and still have concerning *Ralstonia* wilt on geranium. There is nothing like a lock-down quarantine to wake us up!

- 5) Yes, environmental changes have played a role in improving management of these lower stem rots as well. More precise hydration of unrooted cuttings is easier to do now. Poinsettia cuttings or recent transplants stress easily when they are too wet or too dry. One or two episodes of improper hydration (too wet or too dry) can lead to increased rotting.

**Views** – Growers have the tools to properly manage the water/plant relationships better now. That is not to say they will do it properly. Skill is still needed here!

## Root Rots

There is good news and bad news concerning the situation with root rots on poinsettias. First, the good news. There is much less *Rhizoctonia* around now.

**News** – There are more protective products available now. I mean this in a holistic sense. New fungicides are out, such as Medallion, Chipco 26GT/Sextant, Heritage, or Compass. The new biologicals, such as RootShield, PlantShield, Rhapsody, and Companion are helping, at least for some. However, the old fungicides like Terraclor, 3336, 6672, Fungo, or Systec are also very good for protection against *Rhizoctonia*.

Improved protective products include the growing media in use now. They are really free of inoculums or contain enough beneficials to be making a mark on crop health. Plant

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## Poinsettia Diseases – News and Views

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stresses are being managed better now. This also includes better growing media choices. Sanitation, especially dust control, is improved.

**Views** – I feel that this situation of less Rhizoctonia root rot relates to less Rhizoctonia in the lower stem rot complex that was discussed earlier. Also, growers now are accomplishing reduced plant stress by integrating proper stress controls right into the growing processes. They do this by utilizing new materials, new equipment, and new types of structures.

Now for the root rot bad news. Pythium root rot has been seen more frequently lately on poinsettias. This is due to several things:

- Pythiums that are resistant to Subdue fungicide are increasing in prevalence.

- We have no new chemistries for Pythium.

**News** – Etridiazole, as Terrazole CA, just got registered for Pythium in California!

**Views** – The phosphite products are not that good. Banol is just too expensive to use!

- New strains or species of Pythium may be around. I have seen what I call a hot weather strain that is extremely pathogenic. It can hit crops in the summer.

**Views** – We need research on this point.

- Automated watering of crops as they mature can lead to more disease. Poinsettias use little water as they flower. If they are overwatered during this time by failure to reset your watering programs, the crop will waterlog. This waterlogging favors Pythium.

- Poor sanitation can lead to Pythium problems. Modern technology often seems to be working against us here. Plants growing in any situation where water can flow from one pot to another can spread Pythium. Failure to sanitize floors, benches, water

saucers, or water collectors between crops leads to plant losses from Pythium. Pythium spores last a long time in dried growing media on floors, benches, old pots, or water collectors.

- A subject related to sanitation is Pythium-contaminated irrigation water.

**News** – I have found widespread contamination of recycled irrigation water lately. The worst situation is when flood floors are used. Growers will have to employ effective water sanitation methods. Research is taking place to develop such systems for growers.

**Views** – The use of chlorine as a water additive is dangerous for both the crops and the growers. I am working with many researchers and growers now to develop alternative technologies, especially ones that will work in flood floor growing situations.

Before I leave root rot, some comments concerning the use of biological media additives need to be made. Should they or should they not be used? Well, yes and no. **Views** – It might surprise you to know that I am now advising many growers not to use any media-applied products, biological or conventional, for root rot protection. Such recommendations are given on a case-by-case basis where I am close to the situation in all of its aspects. In other cases, I prescribe biologicals. I rarely prescribe conventional products in a monthly drench program any more.

**News** – Biologicals have improved greatly in recent years. I do not have sufficient experience to comment on all of them. I suspect they all are beneficial if a grower has a history of root problems on poinsettias. I have worked with RootShield as a pre-mix into the potting media. I like this use and have had good results with it. **Views** – This is not to say that RootShield is the only biological you should be using. It is not to say you should abandon your

conventional fungicide approach to protect the roots of poinsettias from rot. I would urge growers to try large tests, with proper untreated controls.

### Powdery Mildew and Scab

Obviously, these are two completely different diseases! Why am I combining them together? **Views** – Most of the management techniques for these diseases are similar. Conditions that give rise to their development are also similar. Where they come from is similar. Here are a few comments to help you understand these diseases.

The pathogens for these diseases are both unwanted hitchhikers on poinsettia plants or cuttings when you get them in. You will not be able to see them for a while. Scab causes ugly leaf spots and stem spots. Powdery mildew gets on leaves and bracts. Scouting and quick management action is needed.

They are cool-weather diseases. However, they are not eradicated by hot weather. They just go into hiding. Throwing out infected plants is needed, because both diseases are difficult to eradicate completely with sprays. Furthermore, they can spread rapidly in splashing water (scab) or in blowing air (powdery mildew).

Once these diseases are seen, throw out infected plants and spot spray affected areas of the crop as soon as possible. **Views** – If you do a good job spot spraying, I do not feel you have to endure the expense of spraying the entire crop.

I prefer to recommend fungicides that will control both diseases. These include Phyton 27, Systhane (now called Eagle), Strike, Heritage, or Compass. **Views** – Those growers using Spectro or Heritage as a transplant sprayer will also be applying a “spray” for these diseases, scab in particular.

### Botrytis Blight

Botrytis blight is different from Botrytis cutting rot. It usually shows up on older plants. The pathogen infects weak tissue, like lower leaves or

maturing bracts. Its management is classic.

Keep water off the plants at night. Water often gets on plants from condensation at the end of the day. Dehumidify the greenhouses at the end of the day. Such a practice is expensive these days. Without computer-driven purge dehumidification, it often becomes too expensive.

With or without computer-controlled greenhouses, install HAF fans and try to get the plants dried off with them and with little venting. Even with purge cycling, keep the HAF fans running to increase the efficiency of the effect.

Spacing the plants does a lot to control Botrytis. It causes the growing media to dry out faster. It also gives the plants more light so the lower leaves do not become so susceptible to Botrytis. Finally, it allows the moving air to wash over the leaves and bracts and pull moisture off of them.

There are not many chemicals that can be applied to maturing poinsettias without leaving too much residue. Decree is great for Botrytis, but should not be used on plants with light-colored bracts. Try using it earlier, because it has a long residual effect. Phyton-27 can be used. Heritage at 1 or 2 ounces per 100 gallons can be used. **Views** – I often

find that spraying a crop is not needed if the environment can be improved a bit. **News** – Exotherm Termil is used by many growers. However, the use of this fungicide on colored bracts is not permitted by the label.

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## Update on Federal Green Industry Research in Ohio

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For further information: visit us on our Web site:

[www2.oardc.ohio-state.edu/atru/](http://www2.oardc.ohio-state.edu/atru/)

Call (330) 263-3676 or visit our booth at the 2004 OFA Short Course.

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## Howdy from Texas A&M!

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considered by many to be the guide to modern floral design, is used by colleges, universities, high schools, and vocational programs.

Jim Johnson has been director, curator, and instructor of the Benz School of Floral Design since 1980. He was personally selected by Benz to serve as the standard-bearer for the school, to further its reputation for fresh ideas and

innovative design, and to maintain the esteem in which the Benz name has been held. He holds the prestigious Benz Chair of Floral Design at Texas A&M, where he is a senior lecturer in the Department of Horticultural Sciences. Johnson also has been a featured designer for the American Institute of Floral Designers (AIFD), and he is the author of five Texas Certified Florist Program courses. At Texas A&M, Johnson directs the program in retail floriculture, including floral design and cooperative education.

I have left out a lot of folks and a lot of information, but I've filled my allotted space. Please visit Aggie-Horticulture, and stop by to see us whenever your travels bring you to Texas.

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# Making Safety Committees Work

by Gary W. Hanson

One of the nine key safety program parameters that have been issued by the Division of Safety & Hygiene, for group-rated companies, is employee involvement and recognition. It is believed that the more involved employees are in the safety program, the more willing they will be to participate in it and follow the guidelines established. I personally believe this. One of the ways to get employees involved is to set up an active safety committee.

I realize many companies have tried this in the past and have not been successful. Often, these simply turn into complaint sessions. The employees come to the meeting with a list of safety-related items that they believe should be corrected. Unfortunately, at the next meeting many of the same items are still on the list.

Many times key management employees are not available for the meetings. After a while, the initial interest and excitement is lost, the committee fades away, and nothing has been achieved.

This happens many times because the real focus of the safety committee is not clearly spelled out beforehand. A safety committee should be developed to help ensure the success of the safety program. **Its role is to promote the company's safety program.** The committee members, both management and employees, need to understand this. The safety committee should be a communication vehicle for employees to use when there are safety concerns, but also a vehicle for management to use to promote safety to their employees.

A good safety committee supported by management can help make a safety program work much better. First, you need the right type of employees. These employees should be interested in safety, get along well with other employees and their supervisors, want to help, have decent communication skills, and be willing to take the time necessary to make the committee work properly.

Management must support the committee by having the necessary management employees available as needed, following up on the ideas and suggestions presented during the safety committee meeting, promoting the committee, and using it to promote the company safety program. The safety committee should be used as a bridge between management and employees.

When setting up the committee, try to keep the committee to a proper working number. A committee that is too big for your operation can be hard to manage and probably will not be productive.

- Set the commitment up front and establish the role and purpose of the committee.
- Start with an agenda of what you want to see the committee help achieve.
- Someone should take notes of meeting results.
- Assign members of the committee to help achieve the list of items on the agenda.
- Post the results of the committee minutes and items that are being worked on.
- Advertise the success of the committee. However, do not allow the committee to become a complaint session – that is not the purpose of the committee.

The safety committee should help with the following:

- New employee safety training. Train the committee members and use them.
- Develop new written safety procedures and policies.
- Counsel employees where necessary on safe work procedures.
- Keep employees apprised of the company's safety performance.
- Promote employee safety suggestions and follow up on these.
- Help conduct accident investigations, both employee injuries and vehicle accidents.
- Report unsafe working conditions and practices as they see them.
- Other activities that will spread the work load of the safety program and utilize your employees.

Effective safety committees supported by management can go a long way to build a joint cooperative safety attitude. Everybody can win, and isn't that what an effective safety program is really trying to achieve?

If you have any questions or need assistance with your safety program, please call American Safety & Health Management Consultants, Inc. at 1-800-356-1274.

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# Principles of Diagnosing Floral Crop Problems

by Stephen A. Carver, OFA staff

Few things can seem as mysterious to some growers as diagnosing and effectively dealing with plant problems as they develop in the greenhouse. Is diagnostics magic, luck, or can growers really learn and employ some basic principles and resources to aid their quest to banish crop ills? The answer, of course, is the last option, with just a little luck (diagnosticians call it “art”) mixed in for good measure. The goal of this article is to remove some of the mystery and puzzlement of diagnostics.

So, how do you become a “grand mage” diagnostician? By memorizing pictures of disease, insect, nutritional deficiencies/excesses, chemical injury, etc. for each crop you grow? While familiarity with potential problems is a distinct aid in problem solving, problem identification based on picture-matching alone can lead you down the wrong road and result in lost time and money. A good diagnostician will use this information in the overall context of the problem. This is especially critical when symptoms are not distinctive, i.e. when they aren't specific enough to definitively identify which of the numerous maladies could be causing them – which will be the case the majority of the time. In some instances, more than one cause may be involved. When this happens, acting on your “first suspect” can lead to ineffective resolution because the primary problem was missed. When you last put a jigsaw puzzle together, did you reach in the box for a piece or two, place them in the middle of the table, and declare “Ah Ha! I've done it, I can see the whole picture now!?” In the same way, diagnostics typically requires the putting together of more than just one or two observations to provide a clear picture of what ails a plant.

One of the greatest aids to a diagnostician is having at least a basic understanding of the range of ways plants respond to a growing environment and cultural conditions, and how

or where pests and pathogens attack plants with the range of symptoms and signs that will result. Whether this knowledge is gained through a formal academic education or more informally through “short courses,” other educational outreach programs, or just by noting “cause and effect” through recording of careful observations, it allows a grower to begin to “think through” observations and put the puzzle pieces together – in short to become a diagnostician. Diagnostics is a lifelong learning process. Because crops, cultural practices, pathogens, and pests change in your greenhouse with time, you will continually find new learning opportunities.

So what questions should a grower ask; what observations should you make? The following list is just a start. You can sort the list in a different order; you may not need to resort to asking all the questions each time. Other times, you will find that this list is not enough, and you need to ask additional questions.

1. What is the overall pattern of injury in the greenhouse? Is it scattered through the house, appearing here and there on various benches in no particular pattern, or are injured plants more localized to a bench or adjacent benches? Is the injury confined to a particular species or cultivar? Are there signs of any other “conditions” that appear to provide a boundary to the damage?
2. What are the symptoms on the individual plants? Does the entire plant look “sick,” or is the injury more restricted to portions of the plant? What is the pattern of damage on the leaves? Do individual leaves appear to wilt, turn yellow or off color, and/or collapse? Are there distinct spots (lesions) that straddle or are confined by major leaf veins? Do the leaves show a general yellowing (chlorosis) or browning (necrosis) along the leaf margins, between the

**Editor's Note:** This is an excerpt from OFA's new edition of *Tips on Managing Floriculture Crop Problems: Pests, Diseases, and Growth Control*, which has just been released. The book contains application rates and updated information about pesticide application, methods of managing crop problems without chemicals, integrated pest and disease management, and the Worker Protection Standard. For more information, contact OFA.

major leaf veins, or along the major leaf veins? Did you look at the tops and bottoms of the leaves for insects or signs of fungal activity? Have you checked the sticky cards for significant numbers of insect pests?

3. What are the crops involved? What do you know about their cultural and environmental requirements? How well do your production regime and facilities meet those needs? As many growers look to the plethora of new vegetative material to help differentiate themselves and improve margins, it is imperative to learn the requirements as well the potential vulnerabilities of these new crops. Are you familiar with signs and symptoms of the common pest, pathogen, or cultural problems of your crops?
4. What do the roots look like? Are root tips white, firm, and intact; or are they off-colored, watery, and break off easily, leaving only a thin white core when they are teased from the rooting medium? Are there signs of root darkening or blackening further back toward the crown? Does the damaged tissue progress from the crown up onto the lower portion of the stem?
5. What is the chemistry (pH, EC, alkalinity, and/or nutrient status) of your water, fertigation solution, growing media? When was the last time that they were measured – you are measuring these on a regular basis, right? Many significant and costly problems can be avoided if you record, review, and act on these readings. What is the nutrient content of injured and nearby healthy leaf tissue?

*Continued on page 24*

## Principles of Diagnosing Floral Crop Problems

*Continued from page 23*

How do you put the puzzle pieces together? Do you remember when you use to put jigsaw puzzles together? How did you start? Did you just jump right in and randomly pick pieces out of the pile and try them to see if they would fit together? I'll bet that you sorted all the border and corner pieces into one pile, and then the rest of the pieces into groups based on similar color patterns. This allowed you to put the easiest pieces together first, defining the boundary of the puzzle, and then look at and focus on the overall pattern of the interior pieces before trying to fit them together.

It is the same principle with diagnostics. What do you do when you walk into a house and notice some plants that have wilted and appear a "duller" green color than the surrounding plants? Do you walk over and lift the pots to see how heavy they are or stick your finger into the media to see if it is dry? After you water the plants, do you check to see if the emitter has been knocked out of the pot or that it might be blocked? Suppose that you walk in the next morning and notice that some of the plants at the other end of the bench are showing a little leaf "wilting" or rather a cupping of the youngest leaves. You walk up and look more closely at one of the plants and find aphids lined up one side of young stems and down the other, just mining the plant for amino acids and excreting honeydew for all they are worth. You are perhaps just a little late picking this one up, as you might have noticed it sooner with a regular walking through the crop. With prompt action, you should still be able to minimize or eliminate the consequences.

What have we done with these two simple examples? In putting the boundary-setting edge pieces together (observing wilt and the aphids), we find that they fill in the interior portion of the puzzle and give us a clear (by all appearances anyway) picture of what is happening in the plant and therefore how to remedy the problem.

Modifying our first example, what if when we check the pot, we found that the media was moist and that the pot had NOT just been watered – what would we do? One thing that we might do is take one of the affected plants, remove the pot, and examine the roots. Suppose, as we looked at the roots and teased a few of them from the media, that we found the roots tips dead. Would you assume that the problem was Pythium and drench the medium, would you send a sample off to a plant diagnostic clinic, or would you pull out that brand new Pythium serological test kit that you just bought and look for the pathogen? Let's suppose you are conscientious and you test for Pythium before treating and that you do find the pathogen; can you be sure that your drench treatment(s) alone is going to be efficacious? It may or it may not be. Why? Because, while Pythium is a "primary" pathogen and can cause significant damage all by itself, even under cultural conditions that are not stressful to the crop host, it (actually, they – there are several species that can be troublesome) is also a fearsome opportunist. If the roots are weakened or declining due to cultural problems (i.e. overwatering or high salts), Pythium propagules that are already in the media can readily colonize.

In this instance, is Pythium the primary problem? No! We need to gather more information (more interior puzzle pieces) to gain a clearer picture of what is going on in the pot. If these pots are growing on a concrete floor, are they on a low spot where the pots sit in some water or fertilizer solution for a while following irrigation or fertigation? What is the time of year? Is the ammonium-to-nitrate ratio suitable with the weather conditions? What is the soluble salt level of the growing media or the fertigation solution? In most cases, the magic of problem solving is little more than looking at the symptoms exhibited by the plant, having at least some understanding of normal plant function and crop peculiarities, and making a systematic collection and evaluation of cultural and environmental parameters.

It doesn't matter whether you are a novice or a notable diagnostician, you will continue to have opportunities to learn and grow from new crop problem situations you encounter. There will be many times that you will need help with either information collection (media, water, and nutrient solution testing; pathogen/pest isolation and identification) or interpretation/evaluation. Where can you go to get that help? There are a number of laboratories, both public and private, that can provide a chemical (nutrient, pH, EC, alkalinity) analysis of media, water, nutrient solutions, and plant samples and help you with their interpretation. There are also labs that will analyze plant samples for potential pathogens. A listing of university-based facilities can be found at [http://www.apsnet.org/directories/univ\\_diagnosticians.asp](http://www.apsnet.org/directories/univ_diagnosticians.asp). Many of the media and fertilizer companies also have testing capabilities.

There are also a number of resources to help you look at the overall picture and put the puzzle together, including:

- university Extension specialists and agents.
- consultants.
- plant suppliers and brokers who have technical support personnel.
- other knowledgeable growers.

In addition, many universities have horticulture/floriculture Web sites that are brimming with resource tools to aid growers on their quest.

Can diagnostics be mysterious and intimidating? Sure; the unknown is always mysterious, and learning anything new can be intimidating. But is it unfathomable? No. By learning to paying attention to what is going on around a crop, gaining an understanding of general plant function and specific crop needs, and learning to systematically gather information when problems develop, you are equipping yourself with the basic skills needed to grow as a diagnostician. Just as important, you will be able to correct problems more quickly, sometimes avoiding them altogether – saving you time and money.

# How to Promote General Promotional Lines

by John Stanley

A lot of money is spent by manufacturers and retailers to promote products in stores, with the goal of increasing sales for that product, category or store.

Before evaluating how we should promote, we need to define what a promotion is. A true promotion has three key elements:

- Extra value to tempt the consumer. This may be a financial temptation or an offer on their next purchase.
- Media promotion to inform the general public that the promotion exists.
- Internal store display material that directs consumers to the product once they are in the store.

## 1. Understand Why Your Customers Would Purchase Promotional Lines

Prior to promoting, you need to fully understand your existing customers. You need to know their N.E.A.D.S:

- N** What products are they buying NOW?
- E** What would they ENJOY about their buying habits to purchase a promotional line?
- A** Why would they ALTER their buying habits to purchase a promotional line?
- D** Who is the real DECISION MAKER when the product is purchased?
- S** Analyse all their needs and wants and make the promotion be their SOLUTION.

## 2. Provide Extra Value

To tempt customers, you need to provide extra value. To achieve this, you need to match their buying motives with the promotional product.

According to one source, there are 26 reasons why people buy – and you need to match as many reasons as possible with your product.

1. To make money.
2. To save money.
3. To save time.
4. To avoid effort.
5. To get more confident.
6. To achieve greater cleanliness.
7. To attain fuller health.
8. To escape physical pain.
9. To gain praise.
10. To be popular.
11. To attract the opposite sex.
12. To conserve possessions.
13. To increase enjoyment.
14. To gratify curiosity.
15. To protect family.
16. To be in style.
17. To have or hold beautiful possessions.
18. To satisfy appetite.
19. To emulate others.
20. To avoid trouble.
21. To avoid criticism.
22. To be individual.
23. To protect reputation.
24. To take advantage of opportunities.
25. To have safety in buying something else.
26. To make work easier.

## 3. Display Products to Their Best Advantage

Your aim is for customers to be directed to promotional products once they are in the store, and therefore the position of these products is critical.

If the aim is to give promotional items high exposure to all your customers, then the following main positions need to be considered:

- near entrances and exits.
- at the top and bottom of escalators in multilevel stores.
- at the ends of runs of shelves or fixtures.
- in front of checkouts.

## 4. Make Sure Internal Display Signage is Next to the Product

Promotional signage should be next to the product and relevant to the product. Signage should only be there for the life of the product. A common mistake is to remove the promotional line and leave the promotional signage. The result of this is a confused customer who cannot relate product and sign together.

## 5. Generate Sales

Promotional products must generate high sales. If they are not generating high sales, their value is very questionable.

## 6. Promote Products to Specific Targeted Customers

Customers can be divided into five groups with different shopping habits, needs, and incentives to buy specific products.

- **Loyals.** These are people who always buy specific product and always from you. Your aim is to reinforce existing habits, not change them. This can be achieved by having promotions that increase the use of the product or by cross selling. For example, if they always use a specific growing media when potting plants, you may recommend a specific fertilizer that goes with that growing media.
- **Competitive Loyals.** These people are loyal to your store, but not loyal to a specific product in a category. This may be due to habit, snobbery, or value. Promotions based on value and that provide impact work very well with this group.
- **Switchers.** These people switch stores and brands to provide variety in their lives. If you can create interesting promotions, these people could well become loyal to your business.
- **Price Buyers.** As this suggests, these shoppers always buy based on price, and they shop around. Promotions aimed at this group have to be based on price. This is only worth doing if the consumer is a heavy user of the

*Continued on page 26*



# Garden Center

## How to Promote General Promotional Lines

Continued from page 25

Market Sectors	Type of Promotions
Current Loyals	Coupons Special Packs Sweepstakes Premiums and Trade Deals
Competitive Loyals	Sampling Contests
Switchers	Coupons Special Packs Contests Premiums
Price Buyers	Coupons Refunds Trade Deals

*Ref Sales Promotion Essentials*

product; otherwise, you could lose valuable gross profit.

- **Nonusers.** These people are nonusers due to price, lack of understanding of value, or lack of need. You will need to make a decision about whether you wish to target this sector for your market.

### 7. Select a Promotion to Match the Customer

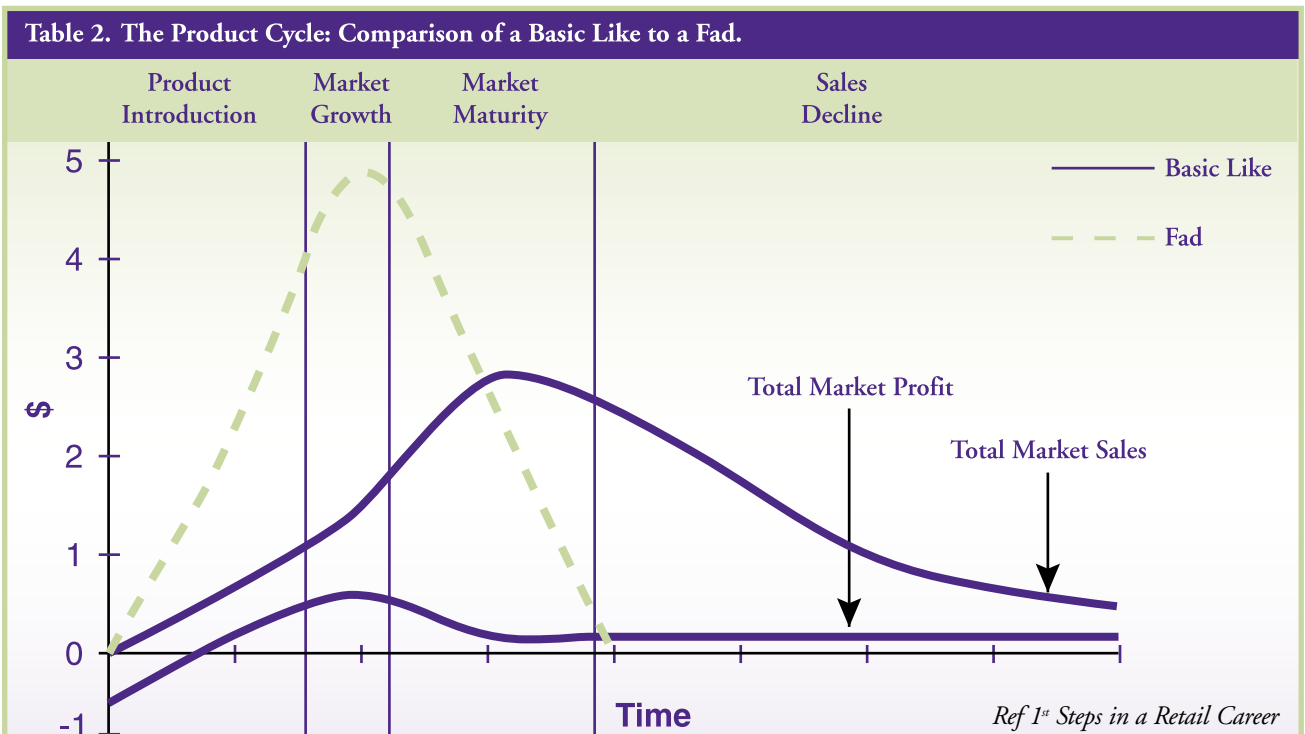
The key to success is to select the proper promotional tool as you see your customer base.

According to Don Schultz, William Robinson and Lisa Peterson, the

promotions in Table 1 work with these four market sectors.

### Management Memo

When promoting products, always consider the product life cycle. The cycle varies depending on whether it is a fad or a basic like. Promotion should take place during the market growth phase (Table 2).



Continued on page 27

# 2004 OFA Short Course

*ofa* News

## 2004 OFA Short Course registration

OFA Short Course registration is open as of April 26. If you have not yet received a program – which includes the registration and hotel reservation forms – please visit our Web site at [www.ofa.org](http://www.ofa.org), or call OFA at 614-487-1117.

## Archie Griffin is 2004 Keynote Speaker

“The 3 D’s of Success” will be presented by Archie Griffin, Ohio State University Alumni Association executive director and two-time Heisman football trophy winner. Griffin’s discussion about desire, dedication, and determination will include stories from his football days and his career experience. The keynote will be held on Sunday, July 11 at 6 p.m., followed by the 75<sup>th</sup> anniversary reception.

## Green Industry Yellow Pages

Visit [www.GIYP.com](http://www.GIYP.com) for a complete list of the exhibitors who will be at the 2004 OFA Short Course trade show. Also, while you’re attending the Short Course, you can stay in touch with your office via the Cyber Café and e-mail kiosk sponsored by GIYP.

## 2004 OFA Short Course 75<sup>th</sup> Anniversary

In July, the OFA Short Course will celebrate 75 years of planting the seeds of knowledge, and you’re invited to join us. Historical items will be featured during the Short Course reception, as well as in decorations throughout the convention center. If you would like to loan OFA any photos, previous Short Course programs, or stories of interest

that could be shared at the event, please contact Mary Jane Weals ([mweals@ofa.org](mailto:mweals@ofa.org)).

Here are some examples of what we’ve found so far (It’s amazing to see some of today’s topics on the agenda “way back when.”).

“Old friends and new – 135 growers from far and near participated in the annual short course held at The Ohio State University, Jan. 10-12. Prof. Laurie and his associates were more than pleased that so many were able to come. During these three days, many needs of ‘Today and Tomorrow’ were discussed. ... A very vital question before the industry is ‘What about Prices?’ Throughout the entire discussion, it was obvious that the wholesaler, the retailer, and the grower recognized its significance and the need for better and closer cooperation.” – March 1944

“Once the war is over, there should be some surprising developments in our field. Many of them will come about



**A victory gardener training class held during February and March 1944. About 80 Columbus garden leaders attended the eight-period training.**



**Christmas wishes for 1943 and a poem accompanied this photo of L.C. (Chad) Chadwick, Alex (Prof) Laurie, and D.C. (Kip) Kiplinger.**

through research going on in other fields, and although the materials and equipment are not available now, the promise is great. New stunts in propagation, gravel culture, sub-irrigation, automatic control in greenhouses, elimination of bugs, and general mechanization ... are in the offing.” – Winter 1945

“The 17<sup>th</sup> annual Ohio Florists Short Course was held here January 7, 8, and 9 under the direction of Prof. Laurie and “Kip” (D.C. Kiplinger). There was a record attendance of 325 representing several states. Emphasis was placed on new developments in the various phases of floriculture and of other industries affecting floriculture... Air transport of flowers will be important in the future.” – Winter Quarter 1946, OSU horticulture newsletter

## How to Promote General Promotional Lines

*Continued from page 26*

John Stanley is a conference speaker and retail consultant with more than 20 years of experience in 15 countries. John Stanley Associates produce an e-newsletter specific to retailing; this

includes innovative ideas and advice to help you grow your profits. If you would like to receive a regular copy, please visit [www.johnstanley.cc](http://www.johnstanley.cc) or email us at [newsletter@johnstanley.cc](mailto:newsletter@johnstanley.cc).

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*ofa*

# Touching Base

by John R. Holmes, IOM, CAE  
OFA Executive Director

The OFA engine is humming along as we busily prepare for our 75<sup>th</sup> Anniversary at the 2004 OFA Short Course. We have several items planned that will celebrate and pay tribute to both OFA's past and future. I hope you will join us for this historic occasion.

Although we spend a majority of our time and resources planning and implementing this signature event, we have also been busy with a variety of other items:

- **Future OFA Short Course Locations** – OFA's contractual commitments to Columbus, Ohio originally expired after 2006. Throughout 2003, the OFA Board, Executive Committee and staff began a site selection process to determine the best fit for our future needs.

After narrowing the highly competitive field to either Columbus, Ohio or Indianapolis, Indiana, the Board decided that remaining in Columbus through 2010 made the best strategic and financial sense. I agreed with this assessment and was both pleased and proud of the process undertaken to make the decision.

Based on the current size of our event, competition for preferred dates, and a limited number of cities able to provide the facilities (both hotel and convention) at a reasonable cost, we remain behind in the process of determining future sites. By late 2005, we will likely need to review our site needs for 2011 and beyond in order to secure our first choice of venue.

- **2003 Financials & Investments** – In an update last fall, I indicated that OFA was poised to overcome several years of net losses and close 2003 in the black. While our annual audit still needs to confirm the estimate, it appears that OFA & OFAS (OFA's wholly-owned, for-profit subsidiary) will combine for a net income of around \$250,000. The majority of this net income is due to decreasing expenses, not increasing revenues. We strive to be good stewards of your dollars and extremely efficient in our expenditures.

Because of our more efficient allocation and development of financial resources, OFA has been able to update its computer hardware, software, and database system to better collect and provide information. We've replaced broken windows and a 30-year-old leaking roof that nearly forced us to open umbrellas when it rained. The monies also help replenish and bolster cash reserves/savings that are underfunded by 65 percent, yet vital to protecting and "self-insuring" OFA from an unforeseen catastrophe.

Additionally, this improved financial footing allows OFA to continue its substantial support of both the Floriculture Industry Research and Scholarship Trust (FIRST) and America in Bloom (AIB) – two charitable organizations with vital roles in floriculture.

Without these resources, OFA cannot preserve, promote and increase its value to the floriculture profession. Despite our "not-for-profit" tax status, OFA, like all entities, must generate net income to remain viable. We're now set on a path that will secure OFA's present and future stability.

- **Focus On Membership & Association** – For years, there has been a lingering question of whether OFA is an "event" (the OFA Short Course) or an "association" with a significant event, but broader purpose. At recent meetings of the OFA Strategic Planning Committee and Board of Directors, both groups reaffirmed that OFA should be a member-focused association.

For me, that affirmation began with our re-branding to "OFA – an Association of Floriculture Professionals." This re-branding retains OFA's past ties to Ohio, but frees us to solicit national interest from all individuals serving the floriculture profession. It's the packaging that draws a customer's attention and eventual purchase.

We are successfully and persistently implementing this new brand identity through all OFA communications (letterhead, Short Course programs, Web site, *Bulletin*, etc.) and the trade press with first-of-their-kind

advertisements touting OFA, not just our event. My hat is off to OFA's Cheryl Cuthbert for her "brand management" of this effort.

Additionally, the OFA Membership Committee is undertaking the important task of reviewing our membership categories and definitions, as well as the dues investment required. The completion of this process should help us to better serve members, manage benefits, and define our "customers" in a way that aids in promoting membership.

In order to maintain the staff's focus on membership efforts, I've appointed Laura Kunkle to serve as OFA's Director – Member Services. Laura has extensive experience with OFA and with managing the America in Bloom (AIB) program. She had already undertaken much of the responsibility due to her former position of Manager – Information Systems, and this appointment now solidifies her role in leading our membership maintenance and development.

I have also appointed Tracy Phillips as OFA's full-time Administrator – Membership & Trade Show Services to formally recognize the excellent work she's been doing as OFA's "front line" on a variety of membership-related activities (i.e. dues generation, responding to initial membership calls, database maintenance, etc.).

Of course, membership is a part of everyone's job here at OFA - whether it's Cheryl's brand and communication management, David Savoia's group benefits (workers' compensation and APPI energy programs) management, Wendy McAtee's oversight of a first-rate trade show, Libby Streamer's event planning, Michelle Gaston's and Steve Carver's development of cutting-edge education, and Mary Jane Weals' support with a variety of projects and years of industry experience. We all impact and make an impression on membership and are all dedicated to building on OFA's efforts to remain member-focused.

These are a few of the items keeping us busy at OFA. I hope that if you have questions or comments, you will feel free to contact me. As always, I appreciate the support!



# Workers' Compensation Program Update – Vote Needed

OFA is being ordered by the Ohio Bureau of Workers' Compensation (BWC) to amend its constitution and bylaws in order to remain in compliance with state laws and regulations. Failure to make these amendments will result in elimination of the OFA-sponsored workers' compensation program, one of our valuable member benefits.

The BWC is mandating that OFA create additional membership categories that clearly identify and determine all program participants. The BWC is making similar demands of other sponsor organizations.

The OFA Constitution & Bylaws Committee, Executive Committee, and Board of Directors (see list of all individuals below) have endorsed the following language and encourage your vote of support. You will receive a ballot for the Worker's Compensation Program issue and new Board members in a separate mailing from OFA.

## Effective June 30, 2004, the OFA Constitution is amended as follows:

Article III - Membership

After "Associate," insert "*Affiliate*,"

## Effective June 30, 2004, the OFA Bylaws are amended as follows:

Article I – Membership

After "Section 4" insert a new Section 5 to read –

*"Section 5 a. Affiliate(A) Members – Affiliate(A) members shall be organizations that are membership*

*associations, such as trade groups, professional associates, or other employer groups that the association accepts as members. This class is non-voting and shall enjoy member benefits as further defined by the OFA Board of Directors.*

*b. Affiliate(B) Members – Affiliate(B) Members are employers who are members of an Affiliate(A) member. This class is non-voting and shall enjoy member benefits as further defined by the OFA Board of Directors."*

Although this change is driven by the OFA Workers' Compensation Program (a program available only to Ohio-based businesses), **a full vote of all active OFA members is required** for adoption. The proposed language should have no impact on other OFA membership categories or benefits.

As stated above, if the revisions are not adopted, the program will be eliminated, resulting in the loss of not only one of OFA's valuable member benefits, but also significant non-dues revenue (\$30,000+ in 2003) used to support a variety of OFA activities and programs that benefit **all** members. Please vote YES when you receive your ballot!

### This amendment is endorsed by:

Bobby Barnitz  
(member-Board of Directors)

Kathleen Benken  
(OFA president,  
member-Constitution & Bylaws)

Barb Bennett  
(member-Board of Directors)

Michael Berns  
(member-Board of Directors)

Joe Boarini  
(immediate past president,  
chair-Constitution & Bylaws)

Dick Bostdorff  
(member-Board of Directors,  
member-Constitution & Bylaws)

Jim Broderick  
(vice president)

Doug Cole  
(treasurer)

Terry Diefenbacher  
(member-Board of Directors)

Jerry Dill  
(member-Board of Directors)

Val Eason  
(member-Board of Directors)

John Herb  
(member-Board of Directors)

Henry Huntington  
(member-Board of Directors)

Justin Marotta  
(past president,  
member-Constitution & Bylaws)

Mike McCabe  
(member-Board of Directors)

Marvin Miller  
(committee liaison,  
member-Board of Directors)

Earl Robinson  
(member-Board of Directors)

Jack Schmidt  
(past president,  
member-Constitution & Bylaws)

Jody Spivey  
(member-Board of Directors)

Bill Swanekamp  
(member-Board of Directors)



## New Administrative Assistant at OFA

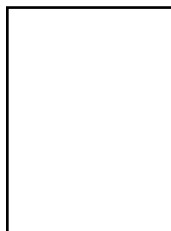
Dorothy (Dottie) Carrick joined the OFA staff in late April as our new administrative assistant and receptionist. She previously worked at Bank One, as well as M&T Mortgage and Coldwell Banker. Dottie is

a graduate of the drama program at the University of Maryland. She also attended the Parsons School of Design in New York City. As the child of an Army officer, Dottie grew up in numerous locations throughout the United States, including Hawaii, and she also lived in Germany. She says she loved living in many different places,

but she's also glad to have settled in Columbus for the past 13 years. Dottie's son John is an investment banker in Los Angeles, California. Dottie's hobbies are sewing and reading, but we've already forewarned her that preparation for the 2004 OFA Short Course will be keeping her very busy in the next three months!

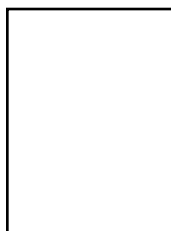
# Nominees for 2004-05 OFA Officers and

## President (up for re-election)



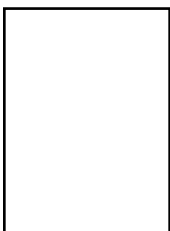
**Kathleen Benken**, Silverton, Ohio, is vice president of H.J. Benken Inc. Benken's is a 60,000-square-foot greenhouse, retail florist, and garden center. Kathy's responsibilities include advertising, signage, all printed materials, newsletter editor, and problem solver. She has attended The Art Academy of Cincinnati, participated in numerous OFA Short Course presentations for more than 20 years, and previously worked for the Cincinnati Horticultural Society. Kathy has been involved with OFA's garden center, publications, and retail florist committees and the Board of Directors, as well as America in Bloom. She is currently serving as the OFA president.

## Vice President (up for re-election)



**Jim Broderick**, Columbus, Ohio is president and owner of Plantland Garden Centers. He is a graduate of Columbus State Community College. He was vice president and production manager for Walter J. Engel Inc. for 28 years. Jim has served on the OFA nominations, trade show, and grower committees. He previously served as the OFA treasurer and as chair of the finance committee. He served on OFF and was a trustee of the OFA medical insurance program. Jim and his wife, Jennifer, have also owned and operated Tropical Foliage Interiors Co. since 1976. Jim is currently serving as the OFA vice president.

## Ohio Grower (one elected)



**Thomas Machamer**, Wooster, Ohio, is president and general manager of Cedar Lane Farm Corp. Cedar Lane is a 300,000-square-foot wholesale greenhouse raising annuals, perennials, garden mums, and poinsettias. Thomas is a graduate of The Ohio State University Agricultural Technical Institute with an associate degree in ornamental horticulture.



**Doug Thorsen**, Delaware, Ohio, is president of Thorsen's Greenhouse LLC. Thorsen's is a wholesale greenhouse selling to florists and garden centers. Doug's responsibilities include overseeing managers and staff, and providing leadership and direction for the company. He attended The Ohio State University and has been working in the greenhouse industry since 1986. Doug is a past president of the Central Ohio Flower Growers Association, and has served on numerous civic boards.

## Garden Center At-Large (one elected)



**Scott Longfellow**, Manchester, Maine, is the president and owner of Longfellow's Greenhouses. The company is a greenhouse and garden center, serving both retail and wholesale markets with 2 acres of growing space. Scott's duties as owner include future planning, working with and supervising department managers, and training staff. He earned an associate degree in plants and soils from the University of Maine. Scott has been a member of OFA for 25+ years, and he also belongs to ANLA, GCA, the Maine State Florist & Grower's Association, and the Maine Landscape & Nursery Association. He has served on the board of directors for the New England Greenhouse Conference and the Ornamental Horticulture Council of Maine. Scott has received the Maine State Florist & Growers' Edward D. Johnson Award for service to the industry.



**Jim Wallitsch**, Louisville, Kentucky, has been owner and president of Wallitsch Nursery and Garden Center Inc. since 1996. Wallitsch Garden Center, established in 1948 by Jim's parents, is a 10-acre retail garden center with greenhouse production of annuals and perennials sold at the store. Jim is a graduate of Bellarmine University with a degree in accounting and business administration. Jim has more than 25 years of experience as a grower and endeavors for excellence in both the quality and selection of plants offered. He leads his staff in realizing his vision of a garden center that is truly a sensory experience and an inspiration to customers. Jim is past president of the Kentucky Greenhouse Association and is currently serving as president of the Kentucky Nursery Landscape Association. He is also a long-time member of OFA and the American Nursery Landscape Association. He promotes the green industry through his involvement in civic and church organizations.

# the Board of Directors

## Ohio Retail Florist (one elected)



**Bill Ardle**, Springfield, Ohio, co-owns Schneider's Florist with his wife Kathy. Schneider's is a traditional retail flower shop serving the local community,

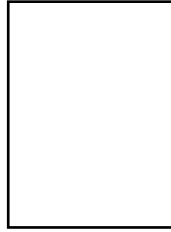
with 13 full- and part-time employees. Bill's responsibilities include paying bills, "non-creative" decision making, various shop duties, and keeping the employees happy. Bill earned a degree in floriculture from The Ohio State University, and then worked as a grower for Ulery Greenhouse and Lakewood Greenhouse before purchasing Schneider's in 1971. He began attending the OFA Short Course as a student, and currently serves on the OFA retail florist committee.



**John Corso**, Sandusky, Ohio, is vice president of retail sales for Corso's Flower and Garden Center. John's responsibilities include overseeing retail

operations and sales in the flower shop and garden center, plus he serves as the company's marketing director and retail buyer. John graduated from The Ohio State University with degree in horticulture/floriculture. John serves as chair of the board for the Erie County Chamber of Commerce, and he is a member of the Sandusky Rotary Club. He is also a previous OFA board member and has served on several OFA committees.

## Grower At-Large (two elected)



**Steven Hershfeld**, Millers, Maryland, is a partner in the Hillcrest Nursery. Hillcrest is a wholesale greenhouse, with 5 acres of herbs, perennials, and seasonal blooming

plants. Steve is the production manager for the herbs and seasonal blooming plants, and he is also responsible for contract sales and new crop development. Steve earned a BS in landscape architecture from West Virginia University. He has worked for Hillcrest since returning from Peace Corp duties in 1976. Steve has been a member of OFA for more than 20 years, and he is a past speaker at the OFA Short Course. He currently serves as president of the Maryland Greenhouse Growers Association, and was the 1998 Maryland Grower of the Year.



**Tina Hood**, Noblesville, Indiana, is owner, secretary, and treasurer of Hood's Gardens Inc. The company is a 150,000-square-foot wholesale grower

serving central Indiana. Tina serves as the general manager, assistant grower, and bookkeeper. Tina graduated from Purdue University with a degree in horticulture business. She was recognized as the 2003 Indiana Grower of the Year, and she is a previous speaker at the OFA Short Course.



**Lloyd Traven**, Kintnersville, Pennsylvania, is general partner of Peace Tree Farm. Peace Tree Farm is a 50,000-square-foot operation that propagates and finishes

herb liners and unusual flowering plants. Lloyd's duties include grower, strategic planning, sales and marketing, technical and information management, and crop planning and scheduling. Lloyd is a graduate of Delaware Valley College of Science and Agriculture and completed graduate coursework at Cornell University. Prior to Peace Tree Farm, Lloyd was an assistant to the president – special projects for Ball Seed Co. He currently serves on the OFA Finance Committee and is a past member of the OFA Grower Short Course and Research committees and the Ohio Floriculture Foundation's board of directors. He is a frequent speaker at the Short Course and other industry events, as well as an author of many books and articles for industry publications. Lloyd also serves on the FIRST Board of Directors and several committees.



**Lisa Wenke Ambrosio**, Kalamazoo, Michigan, is the production manager for Wenke Greenhouses. The company owns more than 40 acres of greenhouses in

Michigan and Georgia and produces bedding plants, perennials, plugs/liners, fall pansies, mums, and poinsettias. Lisa is responsible for production planning and implementation, the prefinished business (plugs/liners), retail, and several human resource and accounting functions. She graduated from Calvin College with a major in business, and she worked for Deluxe Check Printers and Ball Seed Co. before joining the family business. Lisa is a member of the OFA Grower Short Course Committee.

## OFA Web Site is Updated

Check out our new look on the Web! We've updated the OFA Web site ([www.ofa.org](http://www.ofa.org)), added several new features, and made the whole site more user friendly.

## New OFA Tips Book Available

The 2004 edition of *Tips on Managing Floriculture Crop Problems: Pests, Diseases, and Growth Control* is now available through O.F.A. Services. Contact OFA for purchasing information. Visit the OFA Web site ([www.ofa.org](http://www.ofa.org)) for complete descriptions of all OFA Tips publications.

## Recent OFA Outreach Programs

### The Art of Corsages – Hands-On Retail Florist Workshop

OFA recently held three hands-on retail florist corsage workshops at Nordlie Inc. More than 50 designers attended the workshops in Newton Falls, Garfield Heights, and Dayton, Ohio. Instructor Cory Lonsert, AIFD, Arleen's Flowers and Gifts, Bellfontaine, Ohio, demonstrated new tips and techniques for corsage work. Cory showed gluing and decorative wiring techniques to help make corsage work for proms and weddings easier and more profitable. Thanks to Nordlie Inc. who hosted the workshops at all three locations and generously donated the floral design products. Thanks to Smithers-Oasis for donating the Oasis Floral Products.

[www.ofa.org](http://www.ofa.org)



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Address Service Requested

## OFA Event Calendar

July 10-14	OFA Short Course – Columbus, OH
August 12-14	SNA 2004... – Atlanta, GA
September 20-23	International Bedding Plant Production Conference (Ball Publishing/OFA) – Chicago, IL
October	Retail Sales Pro Workshop (with Ian Baldwin) – two locations TBD
October 22-25	OFA Board & Committee Meetings – Cincinnati, OH
October 26	Automation for the Small Grower (OFA/Colorado Greenhouse Growers Assn)

Remember to circulate the *OFA Bulletin* among your staff members. This information is designed to be valuable for all areas of your business.

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