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The **Cut Flower**

Q U A R T E R L Y

Association of Specialty Cut Flower Growers Inc.

for growers of field and specialty greenhouse cuts

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The Cut Flower

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FROM *the President*

Dave Dowling

People—and cut flower growers—can be divided into two groups: Optimists and Pessimists. A friend of mine says he isn't a pessimist, he's a realist. Well, in reality, we all have the ability to be Optimists. We all know the 'glass half full/half empty' saying. It's up to you to see the glass as half full. But as cut flower growers, we're dealing with buckets, not glasses. We want to see full buckets at the start of the day, and empty buckets at the end of the day. How you empty those buckets is up to you. We just may need work a little harder or try a couple new ways to do it, but if you work hard, grow a great product and plan ahead, you should be able to have empty buckets at the end of the day.

Finding quality employees and interns is always a challenge. Sometimes we get lucky and out of the blue, the perfect worker knocks on your door looking for a job. But that happens only sometimes. Usually you need to be proactive in your search for good help. When looking for employees, I've had success placing ads on craigslist. (www.craigslist.com) Ads on craigslist are cheap, just \$25 for as many words as you need to use. The more words you use, the more precisely you can focus your pool of job applicants. By including "great summer job for student athletes to keep in shape" in an ad, I was able to choose from a dozen applicants who had the stamina to do the work needed, without wasting my time interviewing all the middle-aged, out-of-shape, "I-always-wanted-to-work-on-a-farm" folks. A dream come true. This spring I used craigslist again to hire three temporary workers just to do the spring cleanup around the farm. They pulled up plastic mulch, cleaned up and mulched



beds, cleared an old fence row, and basically did all the stuff that we were going to do "tomorrow". All with the understanding that they would be working for only a couple weeks. Craigslist is my new recruiter!

Interns are a different situation, but not an impossibility. Over the years I've had seven interns, staying anywhere from three to nine months, with two more interns scheduled for this summer. Interns have lived in the house, a neighbor's basement apartment I rented for them, and even in their own motor homes or campers that they brought to the farm. Resourcefulness may be needed at times when planning for interns. I've had three interns through the Vic & Margaret Ball scholarship with the American Floral Endowment. (www.endowment.org) These students receive a cash scholarship upon completion of their internship term. A nice incentive to keep them focused on

completing their term with you. All the interns I've had have been great. They all were willing to learn, and eager to help whenever needed. When their term is up and they head back to school or home, I wish they could have stayed longer. There's always something more to learn and more work to be done.

Another place to look for workers or interns is the Forum on Local Harvest. (www.localharvest.org) Both of this year's interns came to me through Local Harvest. One had posted a message looking for work on a farm in the Washington, D.C. area, and the other responded to an ad I placed offering a summer internship. And like my ads on craigslist, there weren't a lot of unqualified applicants taking up my time. The people looking on Local Harvest know what they are getting into. This isn't a cushy internship making coffee and filing papers in some law firm. It's real work.

By the time you read this, several of this year's Regional Meetings will have already taken place. I hope everyone is able to attend a Regional Meeting this year. These meetings are where you get answers to those nagging questions that a book or web page just can't explain. Things like how do you pinch this crop, hook up irrigation lines, or clean and store your buckets. Seeing how another grower does things can really help sometimes. It's also a great time to visit with others who have the same passion and drive that you have about growing great cut flowers. Others who don't care if all you want to talk about is cut flowers!

I'm looking forward to seeing many of you on Long Island at the ASCFG National Conference October 5-8.

What's in a Name?

Plant nomenclature is an important communication tool for gardeners and horticulturists, but large-scale changes to major plant groups have even professionals confused — and concerned.

By John Friel

When discussing garden plants, nothing cuts through the clutter like proper usage of the appropriate Latin name. Yet at the same time nothing—not beetles, blights, borers or the U.S. tax code — inspires more anger, dread and confusion among gardeners and even professional horticulturists than Latin names.

Many of us take pride and pleasure in learning, using and occasionally understanding scientific nomenclature, while others literally cover their ears when someone says “*Tradescantia*” or “*Ceratostigma*.” Even *Rosa* is a four-letter word. This is not news; it’s just the status quo.

So why is it that now, more than ever, trying to keep track of plant names often leaves you feeling that everything you know, or think you know, is wrong? There are reasons. You’re not paranoid, and you’re not alone.

Don't Blame Linnaeus

Botanical nomenclature is undergoing perhaps the most radical and sweeping changes since the 18th century heyday of Carolus Linnaeus (1707-1778), the Swedish doctor credited with inventing nomenclature as we know it. Linnaeus popularized a system of binomials — two-part names comprised of a genus name and species name, like *Sempervivum arachnoideum*, hen and chicks, or *Dianthus caryophyllus*, the common carnation — to succinctly categorize plants and animals.

Linnaeus represents a dividing line in the sands of time: The oldest botanical names accepted today are those he coined, like the two examples above, and published in his landmark *Systema Naturae*. His work is like Greenwich, where the day begins; he embodies that theoretical instant when B.C.E. clicked over to A.D.

Linnaeus’s efforts were not limited to plants. He was among the first to group whales with mammals rather than fishes, and, more daringly, humans with apes. These relationships are obvious to us now, but not so in the 1700s. Nor was it obvious, or even acceptable to many, that plants have a sex life. But that scandalous fact, a given today, was precisely the basis for Linnaeus’s classifications: He grouped plants according to the number and arrangement of their stamens, the pollen-bearing male flower parts.

The good doctor seems to have had a sense of humor. He called stamens “husbands,” pistils “wives,” and the flower “the marriage bed.” Not all were amused. “Nothing,” fulminated the Bishop of Carlisle “could equal the gross prurience of Linnaeus’s mind.” A rival botanist, Johann Siegesbeck, decried *Systema Naturae* as “loathsome harlotry!”

History does not record whether Linnaeus parried the Bishop’s thrusts; one did not lightly challenge the Church in those days. He did, however, exact a gleeful vengeance on poor Johann by naming a European weed *Siegesbeckia*, the name it still bears. One should choose one’s enemies as carefully as one’s friends.

Linnaeus did not create his system *ex nihilo*. Known species of plants and animals already had Latin names — some more than one. But no single approach dominated, and it was common for plant names to follow a chaotic “polynomial” scheme. The aforementioned carnation, pre-Linnaeus, was known as *Dianthus floribus solitariis, squamis calycinus subovatus brevissimis, corollis crenatus*. That’s a blend of Greek and Latin describing a “divine flower” with separate (not clustered) blossoms, scaly calyx, and scalloped petal edges. Names were actually narratives, descriptive phrases limning a plant’s characteristics. It may come as a surprise to those who struggle with binomials, but in fact Linnaeus actually made life easier. His great gift to mankind was not Latin names per se but a simplified template for creating new names and organizing existing ones.



Before and long after Linnaeus, scientific names and groupings have been based on observable morphological characteristics — actual, physical traits that can be identified with the naked eye, hand lens or simple microscope. But with the advent of more powerful tools, scientists have shifted their focus from what anyone could see who knew where to look, to what no one can see; from grouping plants by structural similarities, to organizing them by DNA evidence along theoretical evolutionary pathways, family trees if you will, often unprovable even by fossil records.

This brave new world is known variously as cladistic, node-based or phylogenetic nomenclature. “Cladistic” (rhymes with ‘sadistic’, coincidentally) means based on “clades,” or plant groups, not unlike species. “Node-based” uses the analogy of nodes or branching-off points along the limbs of those family trees. “Phylogenetics” is defined as the study of evolutionary relatedness, with the goal of making classification reflect descent. Cladistic plant groups are sometimes depicted as clusters emanating from a theoretical central starting point, a group of unknown organisms called the “ancestral complex.” It’s sort of a Big Bang theory of life forms evolving from a common source.

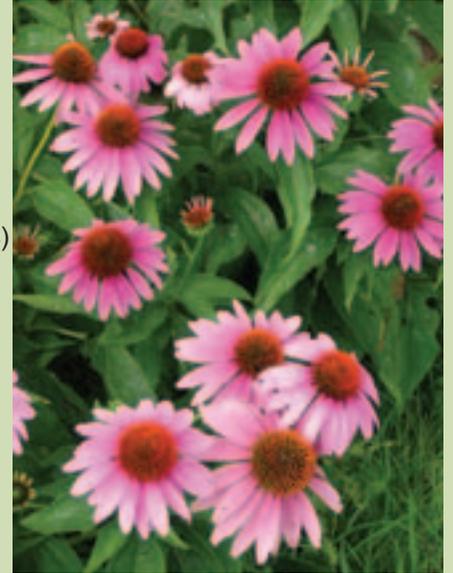
Ellen Wells is an editor with *Green Profit*, a horticultural trade magazine aimed at garden centers and nurseries. Degrees in plant biology and horticultural ecology give her a solid grasp of the scientific basis for plant names. Constant contact with retailers makes her keenly aware of the frustration professionals and gardeners feel when dealing with plant name changes.

“The problem lies with grad students looking for projects,” Wells says. “A professor says, ‘Why don’t you tease out some of these silly Compositae? There are way too many.’ So they get out their DNA testing equipment and the electro scanning micrograph thingamabobs...”

Organization of the Plant Kingdom

As a refresher to those of us whose high school botany class is a distant memory, here’s the organizational breakdown for the plant kingdom, using purple coneflower (*Echinacea purpurea*) as an example.

Kingdom: Plantae (plants)
Subkingdom: Tracheobionta (vascular plants)
Superdivision: Spermatophyta (seed plants)
Division: Magnoliophyta (flowering plants)
Class: Magnoliopsida (dicotyledons)
Subclass: Asteridae
Order: Asterales
Family: Asteraceae (aster family)
Genus: *Echinacea* (coneflowers)
Species: *E. purpurea* (purple coneflower)



The results can bewilder and discourage even seasoned professional horticulturists. When I learn from a reliable source that the taxonomists have changed another genus name, or relocated a whole genus to another family, I pass the information along to professional horticulturists, gardeners, and fellow garden writers in print, in conversations and/or in presentations: They’ve taken most of the members of *Aster* and relabeled them *Symphotrichum* or *Eurybia*; they’ve taken *Dicentra eximia* and renamed it *Lamprocapnos*; they’re even squabbling over such mainstays as *Hosta* and *Hemerocallis*, with dueling theories on which of three families they belong in.

How Name Changes Occur

Invariably someone snaps back, exasperated, “Who are THEY?” Good question. Who, indeed, are these mysterious ivory tower types who deal out new names, like Moses descending from on high with the commandments on stone tablets?

Generally speaking, botanists propose names for new plants, or (more to the point) revisions to names of known plants and circulate their proposals to other

botanists. Next, one of a number of specialist groups operating under the umbrella of the International Society for Horticultural Science (ISHS) review proposed changes. For flowering plants, such tasks fall to the Committee for Spermatophyta. If the argument is found worthy, and if the proposed change is in harmony with the International Code of Botanical Nomenclature, the change is accepted and published and the new name begins a slow journey to the outside world. The eruption of new names for many former asters began with DNA studies in 1994, but didn’t filter down to the industry’s consciousness until about 10 years later. It was promptly dubbed the “Aster Disaster.” A much earlier change in the name of red hot poker or torch lily, from *Tritoma* to *Kniphofia*, was still a hot topic in the 1980s even though botanists actually settled on the latter name before the American Civil War.

A common shorthand for those who try to keep nomenclature straight is to generalize that all taxonomists fall into one of two groups: lumpers, or splitters. Lumpers look for similarities, and when they are in the majority peace reigns in the plant world. Genera like *Chrysanthemum* and *Aster* may swell to epic proportions, with species by the score, but at least we have order.

Splitters seek differences. When they prevail, those massive genera are rapidly plundered and scattered. When the news breaks, the wailing and gnashing of teeth begins among seething plant industry types who see their catalogs, reference books, picture tags, websites and point-of-purchase materials rendered obsolete. That stuff costs money! If perennial growers and horticulture teachers ruled the world, the splitters would be seeking shelter in the Federal Witness Protection program and picking new names for themselves, not for plants.

Like most shorthands, the lumpers/splitters analogy is overly simplistic and even beside the point. It is a scientist's obligation to question the status quo. That may annoy or even infuriate the rest of us, but that's the nature of science: Everything is subject to change; every theory is a string to tug on to see if it breaks. And it is neither fair nor accurate to blame all nomenclature problems on horticultural scientists when a great deal of confusion in plant names originates with the plant industry itself, as companies promote made-up, marketing-friendly brands and trademarks at the expense of existing, accepted taxonomy.

That doesn't let science off the hook. Latin nomenclature is supposed to be our touchstone, a point of reference where scientists, gardeners, and professional plantmongers can find common ground. When changes come so fast and furious that even professionals are dazed and confused, the system stops working. How bad is the situation? It's like this: At the 2008 symposium of the Perennial Plant Association (PPA), in Philadelphia, I participated in a meeting of the association's Nomenclature Committee, a group of self-proclaimed plant nerds who pride themselves on getting names right.

The tone of that meeting could be summed up as more wailing and gnashing of teeth. The consensus was that name changes are too frequent for anyone to keep up with. When THAT group can't stay abreast, *Houstonia*, we have a



WAS: *Aster lateriflorus* 'Lady in Black'
NOW: *Symphytotrichum lateriflorum* 'Lady in Black'
Photo credit: John Friel

problem. The PPA has applied to the ISHS to become the official registrar of cultivar names for genera that are not already overseen by other entities, such as plant societies. For instance, the American Hemerocallis Society keeps track of daylilies and the American Hosta Society monitors introductions in that genus.

Could Hostas and Daylilies Be Next?

Stumping the PPA is bad enough, but consider this: It has been proposed that *Hosta* should move from the lily family (*Liliaceae*), where it has resided for many years, to either its own family, *Hostaceae*, or—and this boggles the mind—to the



Pending reclassification, the genus *Hosta* may end up in a new plant family.

agave family (*Agavaceae*). I asked Kevin P. Walek of the American Hosta Society what family the genus, one of America's best-selling perennials, should be considered part of. His answer was not encouraging: "This is a current argument, better yet an uncharted morass."

It gets worse. *Hemerocallis* is in a similar nomenclatural limbo, yanked by warring factions between *Liliaceae*, *Hemerocallidaceae* and even *Xanthorrhoeaceae*, a race of desert-dwellers. When Walek asked Alan Leslie where daylilies belong, the head of nomenclature at the ISHS replied, "there is no 'correct' answer to this question."

Leslie pinpointed the problem that confronts horticulture at large: "If we adopt too much change too quickly, we are at risk of reducing, not improving, a clear understanding." Which is exactly what the PPA's Nomenclature Committee observed: Too much, too fast. And it's going to get worse before it gets better because taxonomy is presently a sort of construction zone.

Taxonomists and plant societies are in the process of switching — warily — to a new set of plant organizing and naming protocols known as APG II, created by The Angiosperm Phylogeny Group (APG) in 1998 and revised in 2003. Some have embraced it, while others stick with the Cronquist System, published by botanist Arthur Cronquist in 1981. If that's not confusing enough, there is also the Hepburn System, which phonetically converts variety names from Asian characters into pronounceable English but often leaves their meanings on the other side of the ocean.

When there is a large change, like the "Aster disaster" or the dismantling and partial restoration of *Chrysanthemum*, havoc ensues in the plant industry, especially among perennial growers. Other sectors of the plant industry are less concerned by changes. Most nurseries specializing in woody shrubs are conscientious about proper names, but growers of cut flowers and herbs



WAS: *Aloe uvaria*, then *Tritoma uvaria*

NOW: *Kniphofia uvaria*

Notable Name Changes

Old Name

Andropogon scoparius
Asarum shuttleworthii
Chamaecyparis nootkatensis
Cimicifuga spp.
Coleus xhybridus
Leucothoe populifolia
Leucothoe racemosa
Pennisetum setaceum 'Rubrum'
Polygonum spp.
Sophora japonica

New Name

Schizachyrium scoparium
Hexastylis shuttleworthii
Xanthocyparis nootkatensis
Actaea spp.
Solenostemon scutellarioides
Agarista populifolia
Eurobotrys racemosa
Pennisetum xadvena 'Rubrum'
Persicaria spp.
Styphnolobium japonicum

often prefer “common” names (a misnomer if ever there was one), and annual growers have little use for Linnaeus’s system.

In Need of a 21st Century Linnaeus

A passage in *Guide to Standard Floras of the World* by D.G. Frodin explains why Linnaeus was so important, and why his work was eventually accepted even if some very influential people didn’t like it, or him. Frodin writes, “By the 1730s the world of botany was in some disorder, ripe for new proposals in management of its information.”

It seems the stars are aligned for the return of those disordered times. If every actor secretly longs to play Hamlet, and every politician sees the Presidential seal in his future, does every botanist and taxonomist hope to go down in history as the new Linnaeus? We could use one. As legendary Cornell horticulturist Liberty Hyde Bailey observed in *How Plants Get Their Names*, Linnaeus “brought confusion into symmetry.” Would that we had such a man among us. Modern taxonomists seem determined to restore good old-fashioned pre-Linnaean chaos instead.

At the 2002 ISHS Symposium, the assembled scientists heard a presentation from John Valleau of Valleybrook Gardens, a Canadian wholesale perennial grower, outlining the problems that new

names cause growers, retailers, propagators, educators, and others. Valleau issued what seemed like a modest plea: Can horticultural science PLEASE consider the horticultural industry’s needs? The audience listened politely, and went right back to their wrecking ball.

It doesn’t need to be that way. Consider the case of the genus *Chrysanthemum*. When the splitters had their way with that revered genus, starting in 1961, the plants that most people associated with the word suddenly wore other labels, including *Dendranthema*, *Ajania*, and *Tanacetum*. Confusion was the order of the day. Many growers and authors flat-out refused to adopt the new names. Enter Piers Trehane, a Dutch plantsman who compiles the authoritative *Index Hortensis*. In 1995, Trehane proposed conserving *Chrysanthemum* as the genus for the plants most people

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Week	Sun day	Mon day	Tue day	Wednes day	Thurs day	Fri day	Satur day
1	Daffodils				New Yr	2	3
2	Iris,	5	6			9	10
3	Lilies,	12	13				17
4	Narcissi,	19	20				24
5	Tulips	25	26	27		30	31

February 2009							
Week	Sun day	Mon day	Tue day	Wednes day	Thurs day	Fri day	Satur day
6	1	2	3	4	Callas	6	7
7				1	Daffodils	13	♥
8				15	Iris,		
9				22	Lilies,		
				29	Ranunculus,		
					Tulips		28

March 2009							
Week	Sun day	Mon day	Tue day	Wednes day	Thurs day	Fri day	Satur day
10					5	6	Callas
11					12		Daffodils
12					19	20	Iris,
13					26		Lilies,
14							Ranunculus,
							Tulips

April 2009							
Week	Sun day	Mon day	Tue day	Wednes day	Thurs day	Fri day	Satur day
1				1	2	3	Callas
2		5	6		9		Daffodils
3	Easter	13	14	15	16	17	Iris,
4		20	21	22	23		Lilies,
5		27	28	29	30		Ranunculus,
							Tulips

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Chrysanthemum xmorifolium

know by that name, especially the ubiquitous garden mum (*Chrysanthemum xmorifolium*). Over some European taxonomists' protests, by a split vote, the ISHS went along, and the industry heaved a collective sigh of relief.

Another Linnaeus is probably too much to hope for, but we could use more Trehanes — reasonable individuals, capable of compromise, who recognize that names are not merely strings of symbols. When laying out college campuses and public parks, planners often wait to see where people choose to walk, then put sidewalks there. When new approaches will get us where we're going faster, fine. But when older, intuitive paths are already doing the job, why not pave them where they lie?

So if it's crossed your mind that the ivory tower types seem bent on hair-splitting without regard to the practical implications on the rest of the world, it's not just you. Many plant-savvy people have ruefully concluded that the modern taxonomist's guiding principle must be, If it ain't broke, break it.

And if that statement makes my surname eligible to be rendered synonymous with some pestiferous weed, like poor Johann Siegesbeck's, so be it.

Freelancer John Friel, a marketer for a perennial propagator, serves on the Board of the Perennial Plant Association and co-chairs its Nomenclature Committee.

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Resources

The American Horticultural Society A-Z Encyclopedia of Garden Plants

by Christopher Brickell and H. Marc Cathey, editors-in-chief. DK Publishing, New York, New York, 2004.

Guide to Flowering Plant Families, by Wendy B. Zomlefer, University of North Carolina Press, Chapel Hill. 1994.

List of Names of Perennials and **List of Names of Woody Plants**, M.H.A. Hoffman, editor. Applied Plant Research, Boskoop, Netherlands, 2005. (to order either book, visit www.ppo.wur.nl).

Mabberley's Plant-Book: A Portable Dictionary of Plants, Their Classification and Uses by D. J. Mabberley. Cambridge University Press, New York, New York, 2008.

The Plant Locator: Western Region, compiled by Susan Hill and Susan Narizny, Timber Press, Portland, Oregon, 2004.

STEARN'S Dictionary of Plant Names for Gardeners by William T. Stearn. Cassell Publishers, London, England (or Sterling Publishing, New York, New York), 1992.

Sunset Western Garden Book, Kathleen Norris Brenzel, editor, Sunset Publishing, Menlo Park, California. 2007.

Websites

The International Code of Botanical Nomenclature <http://ibot.sav.sk/icbn/main.htm>
Rules for plant nomenclature established by the International Association for Plant Taxonomy.

The International Plant Names Index www.ipni.org
Scientific name search. (a collaboration between [The Royal Botanic Gardens, Kew](#), [The Harvard University Herbaria](#), and the [Australian National Herbarium](#))

International Society for Horticultural Science www.ishs.org
Includes searchable database of plants, listing of International Cultivar Registration Authorities, and information on the International Code of Nomenclature for Cultivated Plants (ICNCP) and The International Code of Botanical Nomenclature (ICBN),

The USDA PLANTS Database <http://plants.usda.gov>
Common and scientific name search for all plants found in the United States. Includes location of plants on state by state basis, photos, information on threatened/endangered status, invasiveness, range, origin and links to other databases.

Missouri Botanical Garden's Kemper Center for Home Gardening Plant Finder www.mobot.org/gardeninghelp/plantfinder/alpha.asp.
Common and scientific name search. Photos, cultural notes, etc.

Oregon State University Department of Horticulture <http://oregonstate.edu/dept/ldplants/index.htm>.
Scientific and common name search. Cultural notes.

Royal Horticultural Society Plant Finder www.rhs.org.uk/rhsplantfinder/plantfinder.asp.
Searchable database provides up-to-date nomenclature for ornamental plants plus nursery sources for plants in the United Kingdom.

University of Connecticut Plant Database by Dr. Mark H. Brand www.hort.uconn.edu/plants/index.html.
Common and scientific name search. Includes photos, cultural notes, and an audio pronunciation feature.

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CULTURE *Profile*

*Stanton Gill, Chuck Schuster,
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and Suzanne Klick*

Production of Tulips as Cut Flowers

Bulb Selection

The major groups of tulip flower types are simple petal, parrot, fringed, double flowering, multi-flowering, and lily flowering. Fringed and parrot tulips are considered distinct flower types. The fringed types have a regular tulip bloom with a fringed edge. Parrot tulips, however, have a deeper cut in the bloom edge and are more ruffled overall. Double flowering tulips have a cluster of multiple petals forming the flower head. Multiflowering tulips have more than one flower per stem. Lily flowering tulips have more pointed petals and usually bloom later than any other type of tulip.

Bulbs are measured by circumference (cm) in a horizontal plane at the middle height of the bulb. The ideal bulb size for tulips is top size 12/+ cm, although some growers use a smaller 11/12 cm size. However, for optimum flower production the 12/+ cm top size is highly recommended because smaller bulbs result in a poorer quality crop with smaller flowers and shorter stems. Bulb orders should be placed with suppliers after Mother's Day, preferably no later than the Fourth of July weekend. Most suppliers provide the tulips in trays of 500 per variety for a 12/+ size and 750 per variety on the 11/12 size bulbs.

Precooling Requirements

It is highly recommended you follow the information provided in the Holland Bulb Forcer's Guide—5th Edition. There are two main types of bulbs, pre-cooled and non-pre-cooled. The Guide defines pre-cooling as “the dry storage of spring flowering bulbs at temperatures between 35-48°F after floral initiation and

development is completed, but prior to planting.” Pre-cooled bulbs need to be planted fairly quickly upon receipt. If pre-cooled tulip bulbs must be stored for a short period, keep them at the temperature specified by the supplier (usually 40-45°F). The second type, non-pre-cooled bulbs, are stored at non-chilling temperatures (typically 63°F) until cooling begins by the final forcer. Non-pre-cooled tulip bulbs can be potted and stored in a dark, cool (33-40°F) barn or shed for 12-14 weeks. Monitor the stacked crates often to prevent the shoots from growing into the crate above.

Production Methods

Greenhouse—Hydroponic in Crates

Reusable water trays are placed in tulip bulb shipping crates. The trays float in a liner inserted in the bulb crates. Two kinds of water trays are commonly used—the egg crate type and the prong type. The prong-type water trays are able to accommodate bulbs of various sizes, whereas the egg crate type comes in two different sizes to hold a particular size bulb.

Pre-cooled bulbs are required for greenhouse forcing. Pre-cooled bulbs are planted into the hydroponic trays and typically placed back into a cooler at about 40°F for 1-3 weeks depending on cultivar and time of year. This temperature allows for some rooting to take place before the bulbs are placed in the greenhouse for forcing. The tulips can then be grown in a cool (40°F night) or warm (55°F night) greenhouse. The warmer the greenhouse, the faster the bulbs will bloom.

Level benches are needed so that the water level is the same for the entire crop. Water is added to the trays so that the



'Flaming Parrot' - CNB - Holland

level of the water just touches the bottom of the bulbs to initiate root growth. Some bulb suppliers recommend removing the paper skin from the base of the bulb to allow faster root growth, being careful not to damage the root area.

The water in the trays should be changed several times during the growing cycle, either by overflowing the crates when watering or completely changing the water. Be aware that dumping excess water on the greenhouse floor increases the humidity in the greenhouse, thereby increasing the chance of Botrytis problems.

Greenhouse—Soilless Substrate in Crates

The shorter tulip bulb crates are more suitable for growing tulips than the taller lily bulb crates. Place a sheet of newspaper in the bottom of the crate to prevent the substrate from falling out the bottom. Fill the crate with about three inches of moistened substrate. Tulips produce roots at the base of the bulb, so the amount of substrate under the bulb is more important than the depth the bulb is planted. Arrange the bulbs on the substrate in ten rows of six bulbs, or sixty bulbs per crate. The number per crate can vary by bulb size, with as many as 100-105 11/12 cm bulbs being used in some cases. Cover the bulbs with 2-3 inches of substrate and then water well. Tips of the bulbs should still be visible after watering the substrate.

If the bulbs previously received their entire precooling period, forcing may begin by moving the crates into a cool (40°F night) or warm (55°F night) greenhouse, or holding in a cool area several weeks to grow roots. If coolers are available, bulbs are planted then cooled at 40°F (or below to reduce shoot growth) for a total duration of 12-16+ weeks depending on the cultivar and time of year. After cooling, forcing may begin. Protect the bulbs from freezing. Keep the substrate moist at all times, while being careful to keep the foliage as dry as possible when watering.

Greenhouse—Raised Beds

An indoor raised bed can be constructed using pressure treated wood to create six-inch high sides. When constructing raised beds in a high tunnel or greenhouse, consider the space between the beds for maneuvering equipment. Raised beds are useful for tulip production because they help improve drainage and prevent disease problems caused by root rots. Do not replant in beds that have had tulips in the past unless able to steam sterilize the substrate at 160–180°F for 30 minutes. During the heat of the summer when a greenhouse is not in use, plastic covers can be used to solarize (using the sun to heat the soil) the beds for 4-6 weeks.

Growing tulips in raised beds is very similar to greenhouse production of tulips in crates of soilless substrate. Programmed bulbs are used and planted in steam-sterilized soil. Keep the beds well watered and the greenhouse nighttime temperatures between 40 and 55°F. The warmer the house is kept, the shorter the crop time, but the higher the heating cost.

Field Production

It is easier to plant tulips by digging a trench than it is to plant individual bulbs. To form a trench, cultivate the planting area 12 inches deep and shovel the soil to one side. In field production, tulip bulbs can be planted up to eight inches deep. The deeper the bulb is, the longer the stem will be when pulled at harvesting. If a deeper trench is needed, cultivate the area again and remove more soil. Place the

bulbs in the bottom of the trench 6-8 inches deep, leaving about as much space between each bulb as the size of the bulb itself. Cover with soil, being careful not to overturn the bulbs in the process. The loosened soil can be used to create a raised bed over the tulip bulbs. Water the bed well. A pre-emergent herbicide can also be applied at this time to prevent winter and early spring weed germination.

Low tunnels can be constructed over field-grown tulips in early February to force the bulbs into flower in late March, three to four weeks before other field tulips. For information on how to construct a low tunnel, contact the University of Maryland Cooperative Extension or visit the Pennsylvania State University's Center for Plasticulture website at <http://plasticulture.cas.psu.edu/>.

Low tunnels will also help to protect early crops from deer. Later crops can be protected by placing posts along the sides of the bed and using row cover vertically along each side of the row. Rope zigzagged down the row will support the row cover above the tulips. If the row cover rubs the flowers, the buds will be damaged.

Fertilization

Proper fertilization for tulips used as cut flowers is important. Tulips are not considered high feeders, and the bulbs themselves store many nutrients for the plants' initial growth. Excessive fertilization can lead to reduced plant height, which may affect marketability. The use of slow or controlled release fertilizers is not recommended as the plant will be harvested before most of the nutrients are released. For field production, use 1.5 pounds of nitrogen per 1,000 square feet at planting, making sure not to allow the fertilizer to come in contact with the bulbs.

After bulb emergence in the spring, the application of one pound of actual nitrogen per 1,000 square feet (1.6 oz per 100 sq ft) of row is recommended. The substrate



Egg crate type water tray and liner - Suzanne Klick



Field production of tulips- bulbs placed in trench- Dave Dowling

should have a pH of 6.2 to 6.8 for the greatest nutrient availability and plant growth. Adjust phosphorus and potassium to the optimum range based on soil tests.

In greenhouse and high tunnel production fertilization should begin after shoot emergence. When the shoots are 2 to 2.5 inches tall use a fertilizer with a 2:1 ratio of calcium nitrate to potassium nitrate after amending the substrate for phosphorus and potassium. Weekly application of this ratio can be used, or a fertilizer injector can be utilized to supply 200 to 250 ppm of N on a constant basis using a well-balanced fertilizer (either 2:1:1 or 3:1:1 nitrogen to phosphorus to potassium ratio) that includes a small amount of phosphorus and potassium. With a soluble salt meter, use the 1:2 dilution method to monitor the electrical conductivity. Acceptable readings should be between 1 and 1.5 mS/cm (mmhos/cm).

Harvesting and Postharvest Handling

Tulips are harvested when petals show color, but are not completely colored or open. When harvesting, tulips can be cut or pulled. Crate-grown tulip stems are cut at harvest time. Tulips grown in the field are pulled at harvesting to increase the stem length. If the soil is soft, the bulb usually comes up when the stem is pulled. When pulling tulips, grasp the stem at the soil line and pull straight up. The stem should snap off at the bulb, producing a longer stem. The used tulip bulbs should be discarded after harvest. This pulling method removes the used bulbs from the bed, making bed preparation for the next cut flower species easier. Rotating tulips

Continued on page 42

A New “Look” at Flower Fragrance

David G. Clark

Since ancient times, floral fragrance has had a prominent influence on societal customs, and much value has been placed on fragrant flowers and fragrances derived from them. As technology has advanced, we have been able to analyze the chemical compositions of different flowers' scents and copy them for use in consumer products, from perfumes to detergents and cleaning products to aromatherapy items. We now know that many of the compounds found in floral fragrances have positive effects on human behavior, and medical research groups around the world are actively trying to understand this phenomenon as a means to develop tools for enhancing human well-being.

As professionals in the floriculture industry, we all know where to get great-smelling roses, lilacs, gardenias, snapdragons, geraniums, petunias and others if we want them. But at the consumer level, fragrance is harder to find in plants that have received a lot of attention from breeders. Fragrance has historically not been the focus of ornamental plant breeding programs, and flowers have lost their characteristic fragrance as breeders now concentrate primarily on factors such as flower color and longevity, plant growth habit and disease resistance. In fruit and vegetable industries, a similar phenomenon has been observed with selection for taste characters. Selection for yield-enhancing traits along with visual and postharvest characteristics have displaced selection for the qualitative traits needed for production of taste compounds, thus resulting in tomatoes that look good and store well but don't taste very good.

In defense of these breeders, this is probably not something we can fault them for: Production of plants often drives their selection criteria, and fragrance has always been considered a niche characteristic in most plants. To add to that situation, many breeders do not have fancy analytical techniques and costly equipment available to them to help analyze complex fragrance mixtures like we do in the ivory tower of academia; they just have their noses. If we consider the wide differences in human sensitivity to fragrance, all it would take is a few breeders lacking a sense of smell to completely lose fragrance genes for any species they might have bred over just a few generations of selection. Just a few days with a common cold or nasal infection while making selections could easily lead to a breeder losing fragrance traits. So here's the big question: How do we get the fragrance back in our flowers?

Problems With Fragrance?

When talking to industry professionals about fragrance, it is often brought up that fragrance is negatively associated with flowers' vase life; that is, good-smelling flowers don't last very long. There is a long history of thought on this subject — and much discussion about fragrant roses with poor vase life can be found across the Internet — but there is not much scientific proof that this phenomenon actually exists. After investigating vase life of fragrant and non-fragrant cut roses in our lab more closely, it appears that this concept may be a little more complicated. We have observed poor and excellent vase life in both fragrant and non-fragrant



roses. More importantly, we have observed closer associations of poor vase life with a rose flower's ability to make and/or sense ethylene. We also have data to suggest that flowers with high respiration rates are more likely to develop faster and have poor vase life than flowers with lower respiration rates, regardless of their fragrance production.

Because ethylene synthesis and perception, as well as respiration rates, are known to be controlled by genes responsible for processes other than fragrance biosynthesis, it is likely that fragrant roses with good shelf life can become industry standards if breeders know what they are looking for and have a means to select for it. Fortunately, breeders at David Austin Roses and Meiland are currently focusing on selecting new fragrant rose varieties with superior vase life, and they are making excellent progress. The fact that they are making pointed hybridizations and selections for fragrance and postharvest traits with continued success is proof that the negative relationship between fragrance and vase life was probably a myth all along.

Unfortunately, there is minimal publicly available marketing research data that investigates the value added by making new flower varieties with

enhanced fragrance. So a significant new question for our industry is, “How valuable is fragrance?” Because it is harder to place a value on human emotions than it is on a box of cut roses or rooted cuttings, perhaps now is the time to step back and take a different perspective on how we capture the value of fragrance.

Bring in the Psychologists!

In the past few years, several excellent psychologists have become interested in the influences of flowers on human well-being. Common sense has driven the basic hypothesis that humans like flowers, but some intriguing research done by psychologists Drs. Nancy Etcoff (Harvard University) and Jeanette Haviland-Jones (Rutgers University), and behavioral scientist Dr. Roger Ulrich (Texas A&M University) has led to new discoveries that get closer to measuring the impact that flowers have on human emotions, well-being and productivity.

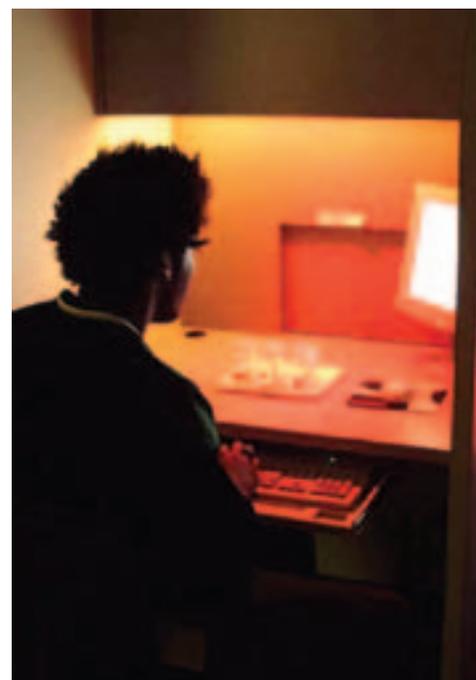
Work in Dr. Etcoff’s group at Harvard has shown that flowers feed compassion, chase away anxieties and create positive feelings at home, and provide a boost of energy and enthusiasm at work. Dr. Etcoff believes that putting flowers where groups of people converge, especially in the mornings, is more likely to transfer positive feelings and create what she calls a “mood contagion” that spreads positive emotion through the group for the rest of the day. To support this idea, research in Dr. Ulrich’s group at Texas A&M showed that workers had better ideas and were more creative problem solvers when they worked in environments with flowers and plants. Measured employee performance increased up to 15 percent, so this study suggests that a company’s small investment in flowers could lead to a greatly enhanced bottom line. I’m surprised I haven’t seen this idea marketed and advertised at the consumer level in our industry. Corporate America could probably use a few flowers to cheer them up and make a little more money these days!

More extensive work investigating the effects of flowers on human behavior in recent years in Dr. Haviland-Jones’ group at Rutgers has shown that scented flowers have an immediate impact on happiness and are a “positive emotion inducer.” Her group has shown that even a single flower given to a test subject can create long-term positive effects on mood. In senior citizens, flowers decrease depression, refresh recent memory and encourage companionship. Researchers have gone further to show that people who give flowers to others are perceived as being happier, smarter, more capable and more courageous. In a world where first impressions are very important, it makes me wonder why we don’t all have flowers in our hands when we meet with important people! Unfortunately, there is little existing theory in any scientific discipline that can explain why flowers make people feel good, but with scientific interest on the rise, I expect the gains in this area to be rapid over the next few years.

Bring in the Biochemists and Molecular Biologists!

In the past decade, our understanding of the biochemistry and physiology of floral scent has progressed rapidly. Floral scent is a highly variable, complex mixture of low-molecular-weight, volatile organic compounds that attracts insect and animal pollinators. Hundreds, perhaps thousands, of different volatile compounds are emitted from flowers in varying levels and mixtures. In many species, including antirrhinum, petunia and rose, petals are the primary site of floral scent emission with fragrance compounds emitted from the petal’s epidermal layers. Fragrance is a dynamic characteristic, with quantitative and qualitative changes occurring during flower development, in response to pollination, through day-night cycles, and in response to the environment.

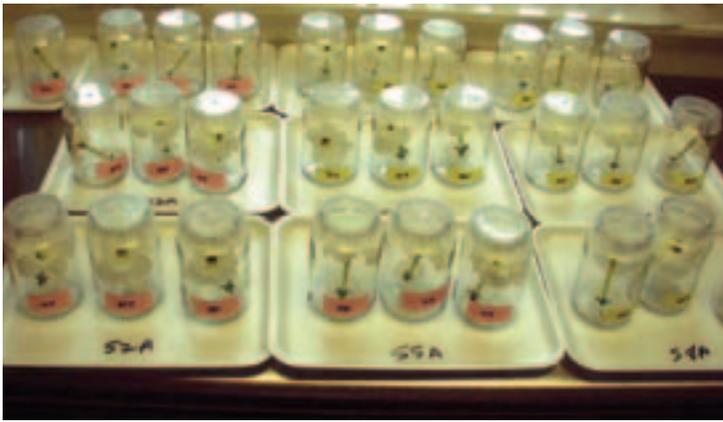
Foundational research in the labs of Eran Pichersky (University of Michigan) and Natalia Dudareva (Purdue University) has led to the discovery of biosynthetic pathways for many important floral scent



compounds. Since their early work in snapdragon and clarkia, work in this field has been expanded with other groups like ours at the University of Florida working on petunia to determine which genes are responsible for controlling how plants make chemicals like rose oil (2-phenylethanol), clove oil (eugenol/isoegenol) and many others. While there are obvious benefits to studying floral scent in multiple plant species, petunia has emerged as a key model system for studying floral scent. In recent years, the fragrance profile has become well characterized, and many of the genes responsible for petunia fragrance have been isolated. To date, the floral fragrance of petunia has been modified both by changing the expression levels of endogenous genes, thereby altering ratios of volatiles naturally produced in petunia, and by introducing novel biosynthetic pathways.

Ultimately, it is unlikely that biotechnologists will be introducing new genetically engineered fragrant flowers to

Everyone Come Together Now!



the market. However, we now know the DNA sequence of many of the important genes controlling fragrance, and we know how to use them as molecular markers to assist breeders in quickly identifying plants of all species containing genes important for fragrance. When combined with new analytical tools for measuring floral fragrance, it is now possible for breeders to focus on fragrance like they never have before.

I may not be a clinical psychologist, but it is clear to me that regardless of age or gender, flowers — especially fragrant ones — have a positive influence on human well-being. The big question to me as a biologist now is why flowers make people feel good. It's a complicated question. Dr. Haviland-Jones hypothesized that cultivated flowers exploit an evolutionary niche because they have evolved to induce positive emotions in humans.

From what I know about genetics and plant breeding, it is clear to me that we can now go further in bringing desirable fragrance back into plants if we join forces with diverse groups of scientists, and at the University of Florida, we are doing just that. Plant geneticists and biochemists can produce new fragrant plants with a variety of appealing aromas, and we think psychologists and food scientists should be able to use these plants as tools to determine which components of fragrance have the most important influences on human behavior. Using consumer panels, we will determine which fragrances humans like best. Once we have that information, we will then dissect and identify the chemical components of good and bad aromas made by the flowers. Then, molecular genetic markers can be developed for the most important genes controlling synthesis of good fragrance chemicals. These markers can ultimately be used by breeders in combination with modern biochemistry techniques for analysis of the fragrance chemicals to make efficient advances in their selections for fragrant new varieties without having to rely on their noses.

Yes, it should be possible to bring the fragrance back into your flowers, and if we do it correctly this time, we should be able to show that we can make people feel better with them as well! Once we produce the new varieties, industry professionals should have no problem finding a way to market the effects of fragrance on human well-being and capture more value from fragrant flowers.

Just a note to all the flower breeders out there: The genes controlling fragrance are available in almost all plant species if you go back to their native origins. Don't wait for the data to come in before you start taking a little time to stop and smell your breeding stocks — you might find something out there that makes you (and your boss) smile!

David G. Clark is a professor in the department of environmental horticulture at the University of Florida. Contact him at geranium@ufl.edu

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Why, then comes in the sweet o' the year;
For the red blood reigns in the winter's pale.
- William Shakespeare



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SMALL Things Considered

Gay Smith

Considering Supermarkets?

The ASCFG Bulletin Board has recently seen a spate of questions and ideas concerning the particulars of selling to, and preparing flowers for, grocery store and supermarket customers. I'd like to share some of my experiences from the past 20 years working with and selling to grocery stores and supermarkets, including ideas on winning (and keeping) this customer base. A good starting point may be asking some basic questions: Why do you want to sell to grocery stores and supermarkets? What do you expect from them? What do they expect from you?

Why do You Want This Customer Base?

Two compelling reasons to sell this group are the high customer traffic supermarkets offer, and the fact that flower purchasing behavior continues to shift from traditional retail shops to supermarkets, farmers' markets and box warehouses.

What Do They Expect?

Before approaching any grocery stores in your area, dig deep to learn as much as possible about what they currently do. This information helps you better align your offering to fit their system. Read through their websites, visit stores, peruse the floral department—get a feel for their programs and what products and services they offer. If it is a simple corner grocery, what describes the typical clientele? Tailor your product and price points to fit that profile. How will the product be displayed? Will it be up front? Outside? In shade or sun? Will it

get pushed into a cooler at night?

In Holland, gas stations offer displays of hand-tied bouquets. Often, a purchase at a corner grocery or gas station is a last-minute hostess or sweetheart gift so packaging is important. Want to strengthen your value proposition as a vendor? Offer a solution or solve a customer's problem. One Bulletin Board user mentioned Blumebboxes as a way she solves her customers' problem of keeping bouquets fresh and gift worthy. Her solution is cardboard vases (with a waterproof insert)—stable, no tipping, no leaking. Check out the site for more info www.blumebbox.com.

What Can You Expect?

Grocery and supermarkets give you the advantage of writing fewer and larger invoices. Check on the paper flow—do they work with purchase order numbers? How frequently will you be paid? What is required to get on the “approved vendor list”? Expect this customer group to require confirmation of receipt at each store drop. Do not rely on receiving or a floral clerk to get your delivery slip and/or invoice into the system. Get a signature and date from the person checking in the product and then walk the paperwork into the accounting office.

Although these stores have high traffic, do not expect much flexibility on the quantities they will accept. Don't wait until you have a glut of product to inform them you'd like to run a “special”. Instead, start with a seasonal production plan to communicate what flowers you're offering, approximate amounts available per week and color assortments. Update

the plan on a weekly basis because missing a week wrecks your credibility and results in the loss of your display spot. Finally, ask about insurance liability. Supermarkets often require vendors to carry liability insurance in case Johnny eats the lisianthus.

Know your customer. In stores that already offer cuts, flower sales fall into three basic categories: roses, mixed bouquets and consumer bunches. Of 100% total flower sales, roses usually gobble up about 40-45% sales, mixed bouquets comprise 25-30% and consumer bunches make up +/- 20-25%. Look at retail prices, divide in half to get an idea of the store purchasing price (including box, pack and freight). Note stem counts so you can determine your profitability. Your buyer will expect every bouquet to contain the same quantity of stems at a specific price point. Usually, there are between four to six price levels for bouquets (\$4.99—\$19.00). Ask which price level(s) move fastest. You want to know the “trigger prices”—the price points at which customers impulsively buy without hesitation. Usually \$5.99 is a strong trigger price. Check prices of consumer bunches, too. “Consumer bunch” is a generic term referring to like products in stem counts lower than a standard grower bunch. For example, a standard grower stem count on lilies, iris, spray roses or snaps is 10 stems. A consumer bunch will have anywhere from 2, 3, 5 or 7 stems, depending on what price point is being met. Notice if consumer bunches comprise all like product or if they contain like product plus filler and greens. You may see an opportunity there with your product line.

Do Some Legwork

Introduce yourself as a local grower and ask the clerk questions. Ask how often the store receives floral products and on what days. Find out if bunches arrive pre-priced. Look for UPC codes and a “display until” date. This information is critical, because it’s very likely that the store will expect you to provide those same services. Making mistakes on these details costs you time, lost sales and penalties. You want to negotiate a program outlining all the expectations. Check out the produce side to see if there is an emphasis on locally-grown product. What kind of signage is used? Flowers are such an impulse item, signage and location is crucial.

You can get lots of information from a clerk, but she is generally not the buyer. Floral purchasing, like so many retail venues, has shifted almost entirely away from local and regional buying offices to corporate buying. Regional tastes and demographic considerations have been scrapped to cut costs and improve efficiencies.

What does all this mean to you? Actually, it is good news. The high traffic flow at grocery stores and supermarkets provides great exposure to sell products. Consumer interest in locally-grown products continues to boom and although you may not have the infrastructure in place to sell to a national chain with hundreds of locations, your product has great appeal to stores that support local vendors, emphasize the importance of community, and value sustainability. Of course, these stores must compete by following the tenets of any smart business offering highly perishable, luxury items: consistency, high quality, visual appeal and fair pricing.

Before approaching any potential customer, establish a strong business identity, choose a logo and tell your story. What is it that makes your product appealing? What identifies it? Get your name and/or logo on everything from the sleeve, box, bucket, or stem. You are pursuing grocery stores because they offer an advantage of consumer exposure



to your flowers, so make sure consumers can identify your product and recognize it at a glance. When developing your story, include information about your location. How are you part of their community? Pam and Frank Arnosky gave a compelling talk at an ASCFG conference some years back describing how they developed brand awareness for their products that fueled customer interest and drove sales. Telling customers that their flowers were grown only miles away, and having their kids help haul them into the store helped create an enchanting story of its own.

If you are approaching an independent, consider offering a “flower catch’ to pull people into the store. One of the best I saw was a sidewalk sign with “If today is your birthday, come in for your free flower.” or “If your name is _____, come in for a free flower”. This



kind of gimmick attracts interest, people start looking to see if it is their “day” and become aware that the store carries flowers. The Bulletin Board had several great posts about ways to pull people to your stall at a farmers’ market.

Finally, develop a good protocol for postharvest handling to ensure consistent, top quality. Any kind of stress robs the end user of long vase life. Grocery stores and supermarkets are not very forgiving. Keep in mind that flowers need to go into a clean solution as soon as possible after harvest to reduce stress. Research shows that pre-chilled (<40F) solutions move faster into the stems of most flower types. Always add some kind of germicide to keep bacteria in check. I recommend slow-release chlorine so the effect lasts for 2-4 days. If you are using a commercial hydration solution (like Chrysal Professional #1 or Floralife Hydra Flor), measure to get the dose right. Correct dosage gives maximum results. For ethylene-sensitive blooms, the first drink must contain STS. Don’t hesitate to email me if you want additional information on whether STS is registered for use in your state or maybe you just need an ethylene-sensitive flower list.

Treating flowers in pollution-free solutions as a first drink gives best results, but just as important is reducing the temperature. Get the field heat out of bunches as soon as possible after harvest. Place flowers in cold storage between 34-40F. Temperature stress plays a huge factor on vase life. Every 10° increase in temperature can shorten vase life by more than half a day. Many supermarkets will not accept dry-packed flowers if they are not cooled to 40F or lower. Once the blooms have been hydrated and cooled, fill display buckets with a low-sugar flower food. Blooms need a carbo-boost to maximize vase life in the consumers’ home! Happy selling!

Gay Smith is the Technical Consulting Manager for Chrysal USA. Contact her at gaysmith@earthlink.net

Petal Drop in Sunflowers: Varietal Differences

The sunflower is an attractive ornamental plant that continues to gain popularity in the cut flower industry. Despite its popularity as a cut flower, a growing complaint among sunflower growers is that some of the varieties used as cut flowers easily lose their petals, which ruins their appearance and destroys their market value. Most of the dark-colored varieties like ‘Procut Bicolor’, ‘Chianti’ and ‘Moulin Rouge’ look attractive in bouquets, but they are hardly grown because of the petal abscission problem. They are delicate and hard to handle, and even when properly handled, may still lose their petals within one day of the flower opening and the petals

flattening out. There has been no systematic study of this problem although sunflower breeders have been actively selecting for lines that are less susceptible to this disorder.

In the summer of 2006, we began to look for ways we can characterize and measure the problem of early petal drop in some sunflowers, and perhaps find ways to avoid it. If we can find ways of effectively reducing the petal abscission problem and increase vase life of some of the dark-colored varieties, then we might be able to persuade consumers to buy more of these varieties and increase sunflower sales overall.

Our results from previous experiments enabled us to classify sunflower varieties into categories based on their susceptibility to petal abscission. We used a petal break strength meter to measure petal drop. It records the force (in newtons) that it takes to detach a petal from the receptacle of a flower. Flowers were harvested when they just opened, within 2 hours of petals unfolding. Flowers were laid on the weighing platform of a scale, weighed down with an 8.5 lb weight, and an alligator clip attached to a petal. The clip was attached to a drill press working in reverse (arbor press). As the clip with the petal attached was pulled slowly up, the scale, attached to a computer, recorded the force exerted as the petal separated from the head. Four petals were pulled on opposite sides of the flower, and the average force per flower head was then calculated. In this trial, 17 varieties were measured and each variety had 5 replicates.

A statistical analysis of petal detachment force of 17 sunflower varieties enabled us to classify sunflower varieties into 3 major groups. The susceptible varieties with pulling force ranging from 0.90 to 1.27 newtons include ‘Strawberry Blonde’, ‘Moulin Rouge’, ‘Cherry Rose’ and ‘Procut Bicolor’. The moderately susceptible varieties with pulling force ranging from 1.37 to 1.91 newtons include ‘Procut Peach Blush’, ‘Procut White Lite’, ‘Sun4U Bicolor’, ‘Procut Red Lemon Bicolor’, ‘Orange King’, ‘Procut Apricot Lite’ and ‘Sunrich Orange’. The resistant varieties with pulling force ranging from 2.04 to 2.45 newtons include ‘Procut Early Orange’, ‘Premier Lemon’, ‘Procut Yellow Lite’, ‘Procut Yellow’ and ‘Procut Lemon’. Most of the susceptible varieties however, had dark-colored petals.

Table 1: Pair-wise comparison of petal detachment force of sunflower varieties, arranged in decreasing order. The higher the number, the harder it is to pull out the petals.

Pair-wise Comparison of Petal Detachment Force of Sunflower Varieties								
Varieties*	Results							Detachment force, newtons
Procut Lemon	A							2.45
Procut Yellow	A							2.42
Procut Yellow Lite	A							2.37
Premier Lemon	A	B						2.33
Procut Early Orange	A	B	C					2.21
Tosca	A	B	C	D				2.04
Sunrich Orange	A	B	C	D				1.91
Procut Apricot Lite	A	B	C	D	E			1.84
Orange King	A	B	C	D	E	F		1.79
Procut Red Lemon Bicolor	A	B	C	D	E	F	G	1.64
Sun4U Bicolor		B	C	D	E	F	G	1.49
Procut White Lite			C	D	E	F	G	1.45
Procut Peach Blush			C	D	E	F	G	1.37
Procut Bicolor				D	E	F	G	1.27
Cherry Rose					E	F	G	0.99
Moulin Rouge						F	G	0.97
Strawberry Blonde							G	0.90

*Varieties not connected by the same letter are significantly different

The petal break strength meter provides an accurate, reproducible way of measuring the susceptibility to petal drop. A faster way is just to brush against the flower head near the base of the petal, but this method is easily biased. Given the differences we observed in petal drop tendency among varieties, is there a relationship between that characteristic and vase life? We will be testing that relationship in experiments this summer. Also underway is a search for chemicals that could slow petal loss of susceptible varieties, either as a vase solution or a dip. Stay tuned!



Fig 1: The petal break strength meter: pulling on the petal while the flower is pinned to a weighing scale measures the weight which is recorded

*Chris Wien is Professor of Horticulture at Cornell University. Contact him at hcw2@cornell.edu
Joyous Tata is a graduate student at Cornell, contact her at slt34@cornell.edu*



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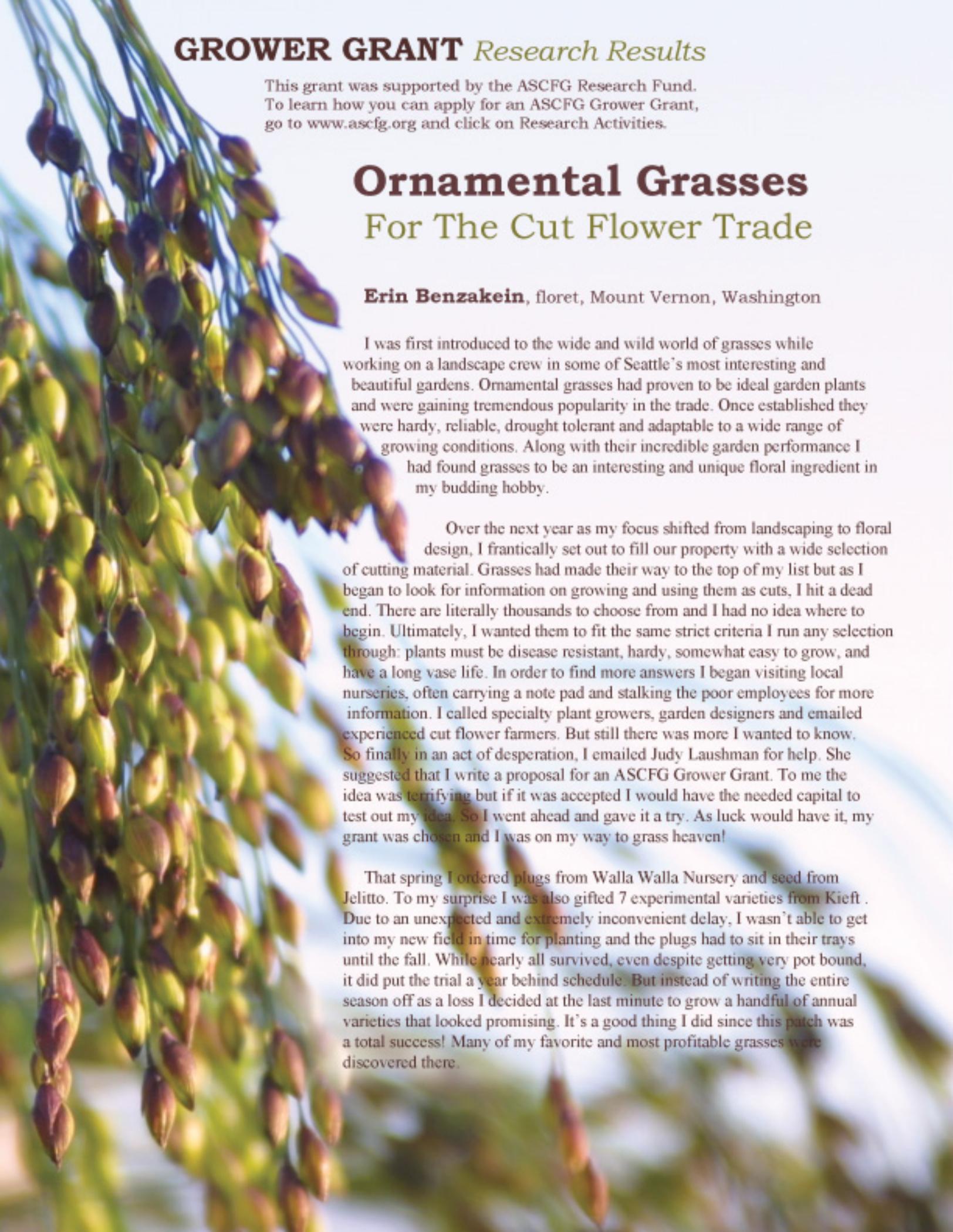
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A close-up photograph of ornamental grass seed heads, showing the intricate structure of the panicle with its numerous spikelets. The seed heads are in various stages of maturity, with some appearing green and others more brownish. The background is a soft, out-of-focus blue sky.

GROWER GRANT *Research Results*

This grant was supported by the ASCFG Research Fund. To learn how you can apply for an ASCFG Grower Grant, go to www.ascfg.org and click on Research Activities.

Ornamental Grasses *For The Cut Flower Trade*

Erin Benzakein, floret, Mount Vernon, Washington

I was first introduced to the wide and wild world of grasses while working on a landscape crew in some of Seattle's most interesting and beautiful gardens. Ornamental grasses had proven to be ideal garden plants and were gaining tremendous popularity in the trade. Once established they were hardy, reliable, drought tolerant and adaptable to a wide range of growing conditions. Along with their incredible garden performance I had found grasses to be an interesting and unique floral ingredient in my budding hobby.

Over the next year as my focus shifted from landscaping to floral design, I frantically set out to fill our property with a wide selection of cutting material. Grasses had made their way to the top of my list but as I began to look for information on growing and using them as cuts, I hit a dead end. There are literally thousands to choose from and I had no idea where to begin. Ultimately, I wanted them to fit the same strict criteria I run any selection through: plants must be disease resistant, hardy, somewhat easy to grow, and have a long vase life. In order to find more answers I began visiting local nurseries, often carrying a note pad and stalking the poor employees for more information. I called specialty plant growers, garden designers and emailed experienced cut flower farmers. But still there was more I wanted to know. So finally in an act of desperation, I emailed Judy Laushman for help. She suggested that I write a proposal for an ASCFG Grower Grant. To me the idea was terrifying but if it was accepted I would have the needed capital to test out my idea. So I went ahead and gave it a try. As luck would have it, my grant was chosen and I was on my way to grass heaven!

That spring I ordered plugs from Walla Walla Nursery and seed from Jelitto. To my surprise I was also gifted 7 experimental varieties from Kieft. Due to an unexpected and extremely inconvenient delay, I wasn't able to get into my new field in time for planting and the plugs had to sit in their trays until the fall. While nearly all survived, even despite getting very pot bound, it did put the trial a year behind schedule. But instead of writing the entire season off as a loss I decided at the last minute to grow a handful of annual varieties that looked promising. It's a good thing I did since this patch was a total success! Many of my favorite and most profitable grasses were discovered there.

My farm is located in Washington State, zone 6, on very fertile but sandy soil. I planted the perennials varieties 12-18" apart in double rows, through landscape fabric with one line of drip per row. The soil was lightly amended with compost and a balanced organic fertilizer prior to planting. I mulched the young plants heavily with a composted horse manure/sawdust mix to discourage weeds and help retain moisture. The annual varieties were planted with the same amendments minus the mulch, on a 9 x 9" spacing through landscape fabric, with 3 lines of drip per bed. All of the plants took off quickly and thrived under this simple treatment.

It immediately became clear that varieties with larger and more pronounced seed heads were the most useable and were better received by designers. While many of the perennials were stunning in the landscape, when cut and bunched they only looked slightly different than pasture grass. I also found that the annual grasses sold much better than the perennial ones. This is probably due to the fact that they typically have a more pronounced bloom.

I work with a small wholesaler who was generous enough to let me tuck buckets of samples on her truck throughout the season for designers to give feedback on. While many florists thought the grasses were beautiful, they were not able to incorporate them into their designs until early fall. This unfortunately was not something that had occurred to me early on when selecting varieties. I had planned carefully to have a constant supply of material throughout the season. It was very frustrating to realize that I had a huge patch of grasses and nowhere for them to go for much of the summer! Luckily I was able to incorporate a lot of the material into mixed grocery store bouquets, but had to be careful of not getting too heavy handed with the grass which caused the bouquets to end up looking "weedy".

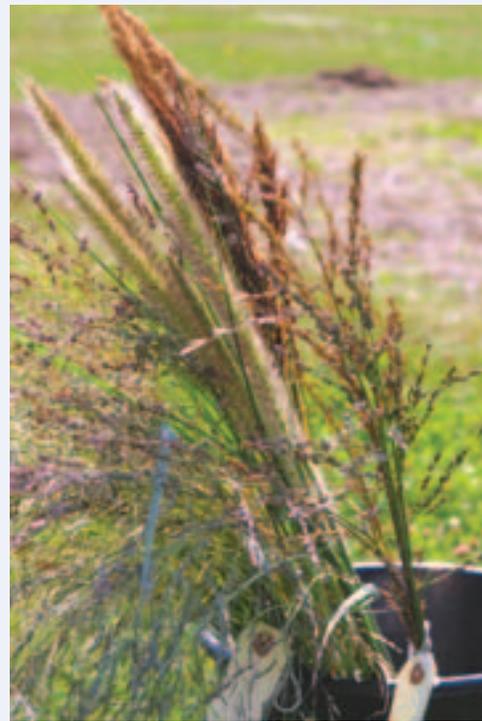
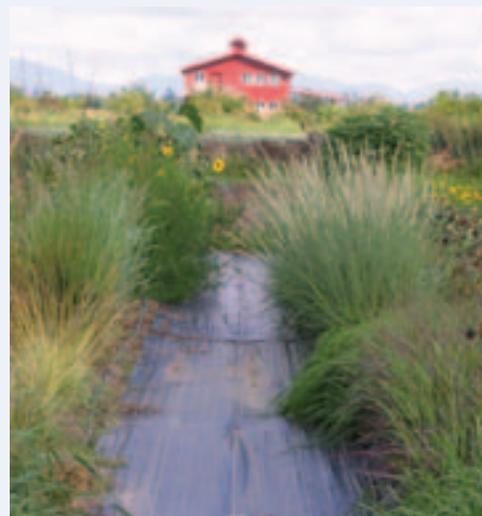
In the spring and early summer I did have designers loving and repeat requesting *Stipa gigantea*, *Achnatherum calamagrostis*, *Briza media* and oats.

These sparkly ingredients worked wonderfully in their arrangements. It seemed that the real lull in interest was just during the midsummer.

Originally I had planned to collect detailed vase life information on each variety but soon found that all of the grasses held great if just cut at the proper stage. For me this was right as the heads were emerging from the sheaf, or after the blooms had emerged and shed their little seed casings. If I cut in between these two stages I had to clean each bloom by hand which wasn't hard, just a bit time consuming.

Due to crop failures at the nursery from which I received plugs, and the stress on remaining plants that had to sit around all summer, I missed out on one of the most important group of grasses, miscanthus. Of all the perennial grasses, these are definitely some of the most useful! They are tough, bloom late in the season, are usable through Thanksgiving, and can be sold dried. At a local nursery during the summer I also saw a young designer incorporating the foliage of the variegated forms (*Miscanthus sinensis* 'Strictus', 'Zebrinus' and 'Cabaret') into large-scale arrangements with incredible success. When I inquired about their vase life he said "The leaves would hold well over a week with only the tips drying out a little as they aged". The bouquet I saw was on week two and the drying was barely noticeable. Being able to use the foliage as well as the blooms makes this group extremely useful indeed!

After growing and evaluating over 36 varieties of ornamental grasses, both annual and perennial, I must admit, I've totally fallen in love with them! Not only are they easy to grow, adaptable to a wide range of climates and drought tolerant, grasses offer a unique new ingredient in the floral lineup. Any diverse flower farm should consider having at least a small patch of these beauties somewhere on the property. For growers with little capital or room for permanent crops there are many useful and interesting annual grasses available too.



Annuals

***Briza maxima*, quaking grass**

I love this grass. It's early to bloom, easy to grow and so unusual. Wonderful in small spring bouquets! Long lasting and the designers love it.

***Eragrostis tef*, lovegrass 'Ruby Silk'**

It's understandable why this grass has a following. It's easy to grow, easy to harvest and sells well.

***Eleusine*, cat's claw**

Highly productive, extremely easy to grow and long lasting. Unique blooms that are great bouquet filler.

***Lagurus ovatus*, bunny tails**

A darling little grass that was beautiful in wedding work. I did find it difficult to pick and ended up abandoning the planting early on. Could be useful for growers who do a lot of event work or small bouquets.

Panicum violaceum

A wonderful, highly productive, long-lasting and easy-to-grow grass. Can be succession sown for extended harvest. I did three planting last season but will increase to 5 for a longer harvest window. The heads resemble miniature drooping, blackish-green sorghum. Great in bouquets.

***Panicum* 'Frosted Explosion'**

This was the most productive and profitable grass in the trial. Easy to grow and even easier to sell! We sowed two crops 3 weeks apart and then were able to harvest from a patch of last year's volunteers, giving us a full summer of bloom. From a 60 ft. x 4 ft. row we harvested 740 bunches and made \$1,850. Retail customers and designers loved it. Next year I will try sowing 5 times to extend production through the fall. Direct-seeded plants were slightly taller than transplants. Self-seeds freely.

***Pennisetum villosum*, 'Feathertop'**

Very easy to grow and blooms heavily the first year from seed. Wonderful in

Setaria 'Exp. 'Green Summit'
Setaria 'Exp. 'Red Jewel'



bouquets and event work, very romantic. Needs to be picked early when heads are just emerging from the sheaf or after the seed cases have shed. Bloomed all summer and into the fall. Well received by designers and retail customers.

Phalaris canariensis

A beautiful and delicate little grass. Did much better when direct sown, plants were at least 12" taller. A pain to pick and not very useful in bouquets. I used it in a lot of wedding work, though, with great results. Perfect in boutonnieres and corsages.

***Setaria* 'Exp. Green Summit'**

(Kieft) Massive green millet. Drooping heads that look somewhat similar to green tails amaranth. Blooms all at once so for extended harvest, succession planting is a must. We have jokingly named it 'grinch fingers'. A conversation piece to say the least!

Panicum violaceum



***Setaria italica* 'Exp. Red Jewel'**

(Kieft) An easy-to-grow and extremely productive millet. Blooms start out green with a hint of reddish brown and darken with age. I was able to harvest from one planting for more than 6 weeks.

Setaria viridis

(Kieft) The most productive millet I've grown yet. Delicate, small green heads on long thin stems that just keep coming and coming! A pain to pick since it's small and takes it a long time to get a decent-sized bunch. Beware, it self-seeds prolifically.

Perennials

Achnatherum calamagrostis

The longest blooming grass in the trial, spring through late summer. Stems are the perfect size for bouquets. Extremely productive, easy to grow and beautiful. Designers loved it.

***Briza media*, small quaking grass**

One of my favorites. Blooms early and is a real showstopper! Easy to grow, easy to harvest, long lasting and loved by designers.

Phalaris canariensis (L to R)
Pennisetum villo 'Feathertop'
Laurus ovatus



Calamagrostis acutiflora
'Karl Foerster'

Produces huge clumps of foliage that explode into bloom early/mid-summer. My plants had only one flush of bloom. I didn't like this grass for arranging at all. The blackish-purple wands bleached out quickly to a golden wheat color, which was beautiful but would have been much more useful in the fall. It resembled dead meadow grass. Not a hit with designers.

Carex pendula

I was introduced to this treasure at Jello Mold Farm. Plants prefer part shade and bloom early in the season. Huge, 4-foot arching stems that are incredible in arrangements! I would assume designers would love this for spring event work, I know I did. Self-seeds freely.

***Chasmanthium latifolium*,**
northern sea oats

One of my favorites! Wonderful for late season bouquets. Long window of harvest since you can cut at many stages of maturity. Designers loved it.

Cyperus glaber

A wonderful grass I was introduced to at Choice Bulb Farms. Very productive, great vase life and can be cut over a long season. Perfect for bouquet work when cut young. If stems are left to mature they triple in size. A favorite of market customers and designers. It has very sharp stems so wear gloves when harvesting!

Deschampsia caespitosa

A wonderful grass that unfortunately bloomed only for a short time in midsummer. Very delicate two-foot wands of simmering gold. Perfect for bouquets and bridal work. Easy to grow although I lost half the plants to rot during an extremely cold and wet spring.

Eragrostis elliotti

Extremely productive plants the first year from seed. Blooms are gun metal grey and very unusual. Rain easily knocks it to the ground so I would recommend netting or staking this variety. Tough as nails and very easy to grow. Would be great for designers needing something 'metallic'.

The Cut Flower Quarterly



Achnatherum calamagrostis



Melica altissima 'Atropurpurea'



Pennisetum villosum, 'Feathertop'

Eragrostis spectabilis

None of mine flowered, may need warmer conditions.

Melica altissima
'Atropurpurea', Siberian melick.

Incredible texture and nearly black colored wands. Must be picked early otherwise seed drops. Easy to grow from seed. A favorite with designers.

Melica nutans

The earliest grass in the trial to flower. Must be picked as soon as it's ready or seeds will begin to drop. The stems look like a delicate string of beads dangling on a curvy wand. Very sweet! 16" tall and flowers for only about 2 weeks.

***Miscanthus sinensis* 'Gracillimus'**
and 'Strictus'

All trial plants died.

***Molina caerulea* 'Variegata'**

Half the plants died the first year. Very ugly yellow stems with brown heads. Unusable for bouquets and I didn't even bother to show it to the designers. This variety is headed for the compost pile!

***Molina* 'Skyracer'**

Huge (5-6 ft.) beautiful blooms, perfect for bouquets and event work. Green stems with dark purple seeds that mature to a deep chocolate brown.

***Panicum virgatum* 'Dallas Blues'**

Healthy, productive and easy to grow. The most versatile of the perennial panicums. A must grow! Pure silver blooms.

***Panicum virgatum* 'Heavy Metal'**

Healthy, productive and easy to grow. Nice blooms, strong stems, another must grow! Seed heads start out green with a hint or purple and as they open darken to purple. Great in late summer bouquets.

***Panicum virgatum* 'Shenandoah'**

Extremely easy to grow, very productive and beautiful. Tall, sturdy spikes with tiny burgundy seed pods. Great in late summer bouquets.



Stipa tenuissima, Mexican feather grass



Pennisetum alopecuroides

Plants didn't bloom until late into the second year. Stems too short, ugly flower heads, damaged by rain easily. Better as a landscape plant.

Pennisetum 'Exp. White'

(Kieft) A fantastic addition to late summer/early fall bouquets. Cut when the heads are just emerging from the sheaf for best bloom quality. Highly productive and useable the first year from seed. They resemble a miniature, delicate, white cattail.

***Schizachyrium scoparium*,
little bluestem**

All trial plants died.

Sorghastrum nutans 'Indian Steel'

Beautiful, tall, steel-colored stems topped with shimmering brown blooms. Perfect color for early fall and great in bouquets.

***Sporodolus heterolepsis*,
prairie dropseed**

I love this grass! Deep red stems that appear black. Very delicate but holds up well in the rain. Great in bridal and event work that needs a metallic effect.

Stipa gigantea

The most showstopping blooms in the trial. Huge 4-5' stems topped with golden needle-like explosions. Great in large spring arrangements. They reminded me of glitter. A must grow!

***Stipa tenuissima*,
Mexican feather grass**

This grass is unique. It can really bring fall bouquets to life! Stems catch the slightest breeze, creating a magical effect. It got mixed reactions from designers, they either hated or loved it. Useful from early September to Thanksgiving. Can also be dried.



A wide range of high quality plants is available from:

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| Walla Walla Nursery Co. | www.northwestornamentalgrasses.com
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(for growers in the Midwest and East) |
| North Creek Nursery | www.northcreeknurseries.com
(for growers in Midwest and East) |

Seed sources: Jelitto, Kieft, Ivy Garth, Geo Seed and Gloeckner.

IPM Update

Stanton Gill

Marmorated Stink Bugs - Increasing in Many States

One more stinking bug is increasing its population in many East Coast, West Coast and Midwest states—the brown marmorated stink bug, *Halyomorpha halys*. This bug is another gift from China/Korea/Japan area. As if you didn't have enough new bugs in your life, thanks to the worldwide trade and the transporting of bugs, we have one more to keep an eye on. This bug was first reported in Allentown, Pennsylvania in 2001. Since this first sighting it has invaded New Jersey, Delaware, Maryland, the District of Columbia, New York, Ohio, and Massachusetts. It has also been found in Oregon and California.

Why Are We Concerned?

Good question. It is just another true bug and we have plenty of native species of true bugs. Exotic species such as the marmorated stink bug are especially bad because we do not have their natural enemies around to keep populations in check. The damage they cause is inflicted by its sucking mouthpart used to pierce the host plant when it feeds. Where this occurs on foliage or fruit, a small necrotic area forms. Feeding on apples and peaches causes tissue damage, resulting in distorted fruit that just does not look appealing. Unfortunately, it also feeds on plants such as raspberries and blackberries, causing fruit to abort or be misshapen.

With the current economy, many people are including fruit trees in their landscapes and will likely encounter this new pest. In New Jersey this bug is causing damage in orchards and is reportedly feeding on ornamental plants and even vegetables. I know lots of people are planning on planting vegetable

gardens this year and this bug is reported to feed on asparagus, green beans and peppers. In the ornamental landscape this bug has been found feeding on crabapples, maple, basswood, sweet gum, redbud, American holly, pyracantha, viburnum, rose and persimmon.

It has not yet been reported on cut flowers. It has been found damaging peppers and legumes such as soybeans. We are interested whether it will damage ornamental peppers, or feed on legumes such as baptisia, both grown by cut flower growers. We would be interested to know if you detect this bug damaging any of your cut flower species this year. Please contact me (see email address below).

A Highly Mobile Bug

Since this bug was first found in Pennsylvania it has managed to spread itself across the United States very rapidly. In February of 2009 one was found hitchhiking a ride in a mobile home in Florida. It is now established there and we will see what damage it causes in this tropical area. The insect is mobile in the growing season and can easily and rapidly switch host plants. It has been reported to begin on early-spring-ripening fruit, move to foliage-feeding on other plants, and end up damaging late-season fruits, vegetables or ornamental plants.

When the brown marmorated stink bug feeds on beans it cause the seeds within the pod to malform or not form at



all. On fruit crops the feeding causes small necrotic spots. If peaches or plums are damaged early in the season it causes distorted growth of the fruit called cat-facing. Fruit damaged later in the season has lesions that look like water-soaked spots on the surface. If they are crushed they have a distinct, slightly minty-foul odor that is difficult to get off your hands. The taste is awful if you handle a bug and get this flavor in your mouth. Leaf feeding is characterized by light-colored stippling or lesions. The lesions sometimes coalesce and turn brown over time.

This bug has an additional “bonus” feature—it overwinters as an adult insect, usually in people's houses or offices. In the fall, seek shelter sites to spend the winter. The bugs are harmless to humans and will not bite people but they become a nuisance. In spring they will migrate outdoors to mate and lay eggs.

Recognizing the Insect

The brown marmorated stink bug looks much like any other stink bug, with a typical shield shape. The size is usually about 1/2-5/8" long and 3/8-1/2" wide across the broad part of the shield. The body color is a mottled gray to brown. The distinct characteristics of marmorated stink bug that separate it from other stink bugs is the presence of alternating light and dark banding on the exposed side of the abdomen when viewed from above.

If you look at the antennae you'll see alternating light and dark bands on the last two segments. The eyes are dark red and the legs are brown with a light white banding. Females lay clusters of barrel-like eggs on leaf surfaces. The young nymphs are yellow to brown with black and red markings. As nymphs mature the banded antennae and legs seen in adults is evident.

A Bug's Life (Cycle)

The brown marmorated stink bug emerges from overwintering sites such as houses and offices in April through May and feeds on developing fruit or leaves in spring. Males and females mate, and egg laying starts in May about 2 weeks after mating. Females lay eggs in clusters of 25-30. Eggs can be found from May through August, usually on the undersides of leaves. One female can lay several hundred eggs in her lifetime. The nymphs pass through 5 instars with each stage lasting 5-7 days. The summer generation adults start to show up in late July and will present through the fall in the landscape. There is one generation per year here in Maryland.

Tracking and Control

We are interested in tracking where this bug shows up in the United States and what new plants it is reported damaging. Contact a local Extension office if you think you have marmorated stink bugs. You can also report them at a Rutgers university website <https://njaes.Rutgers.edu/stinkbug/report.asp>.

Systemic insecticides such as acephate (Orthene) or imidacloprid should provide control of feeding nymphs or adults on foliage. Evaluate whether the population is high enough to warrant treatment. Synthetic pyrethroids such as bifenthrin (Talstar) or permethrin (Astro) should provide control of the nymphs and adults.

*Stanton Gill is Regional Specialist
in IPM for the Greenhouses and Nurseries,
University of Maryland Cooperative Extension,
and Professor with Montgomery College,
Landscape Technology Program.
Contact Stanton at sgill@umd.edu*



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RESEARCH Update

Megan Bame

Funding for this column is provided by the ASCFG Research Committee

Nitrogen Uptake from Foliar-sprayed Urea on Hydrangeas

Researchers at Mississippi State University understood that perennial plants, including *Hydrangea macrophylla*, can store nitrogen acquired in the fall, and remobilize the stored nitrogen for new growth the next spring. However, nitrogen applications to the soil late in the season had been shown previously to promote continued growth and cause a delay in dormancy and cold acclimation. This experiment focused on the foliar application of urea. Other studies suggested hydrangea leaves rapidly absorb a majority of the urea from a foliar spray application, even during leaf senescence, translocating the absorbed nitrogen from the leaves into storage tissues. Using 'Berlin' hydrangea, this research aimed to determine the duration of nitrogen uptake and translocation from the urea spray, and consider what affect nitrogen status of the plant had on foliar nitrogen uptake.

Hydrangeas were grown under 40% shade in Mississippi. Starting in early July, plants were divided into five treatment groups. The treatments were one of five concentrations of nitrogen (0, 5, 10, 15, or 20 mM from ammonium nitrate) applied twice per week for 10 weeks via drip irrigation. In late October, plants were sprayed with 3% urea to the point of runoff. Plants were sampled before the urea application and 2, 5, 10 and 15 days after the spray treatment.

Analysis of nitrogen content in the hydrangea plants suggests that the hydrangea leaves rapidly absorb nitrogen from urea during the first two days after spray application. At five days after application, there was no significant additional nitrogen uptake. The hydrangea leaves exported between 50% and 77% of the absorbed nitrogen 15 days after the spray depending on the plants' nitrogen

content from previous fertigation treatments. The data indicate that hydrangea with lower nitrogen content can absorb and export more nitrogen, based on unit leaf area, than those plants with higher nitrogen levels from fertigation treatments.

In conclusion, the nitrogen uptake by hydrangea that have been sprayed with urea will not be detrimentally affected by rain or overhead irrigation five days after application.

Guihong, B. and C.F. Seagel. 2008. Nitrogen Uptake and Mobilization by Hydrangea Leaves from Foliar-sprayed Urea in Fall Depend on Plant Nitrogen Status. HortScience 43(7) pp. 2151-2154.

IPM in High Tunnels

Pest and disease pressures exist for crops grown in high tunnels, but they can be addressed with an integrated pest management approach. HortTechnology contributors from Colorado and Wyoming addressed similarities and differences of high tunnel IPM compared to IPM for greenhouse and field production.

Several general guidelines address preventative measures specific to high tunnel production.

- The soil of transplants brought into the high tunnel should be pest and disease free.
- Practice appropriate crop rotation to minimize buildup of soilborne pathogens.
- Practice soil solarization to eliminate soilborne pathogens that may have infested the soil.
- Use a ground-to-ground mesh screen to keep out many insect and mite pests.

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While preventative measures are a major aspect of an IPM program, growers must be prepared to address pest and disease issues when they arise. The following are insect and disease-specific approaches suitable for application in a high tunnel setting.

- Fungus gnat and shore fly: These are often introduced from transplants grown in a greenhouse where the media was infested. The predatory mite *Hypoaspis miles* is a recommended biological control for management of fungus gnat and shore fly.

- Western flower thrips: Not only do thrips cause aesthetic damage to flowers and foliage, they are also a vector for tomato spotted wilt virus and impatiens necrotic spot virus. Exclusion screening, reflective mulches and the predatory bug, *Orius* spp. are recommended for thrips management. A natural population of *Orius* spp. can be attracted by sunflowers.

- Caterpillars: Regular monitoring should catch caterpillar damage early. Screening and use of pesticides or biological controls are the suggested methods for caterpillar management. Insecticidal soaps, *Bacillus thuringiensis* and parasitic wasps, such as *Trichogramma* spp. and *Cotesia* spp., are some examples.

- Aphids: Aphids can also vector viruses. The primary approach for pest management is screening, soaps, oils, neem-based insecticides and biologicals, such as ladybird beetles, green lacewing or the predatory midge *Aphidoletes*.

Two-spotted spider mite: Spider mites thrive in warm, dry environments (> 80 degrees F, < 50% R.H.). Raising the humidity, which can be accomplished through irrigation management, or the introduction of a predatory mite (*Amblyseius californicus* does well in a hot, dry environment) are two methods to address spider mites.

- Powdery mildew: This fungal disease requires a dry leaf surface and a high relative humidity. Increased air circulation with horizontal air flow fans is one of the traditional greenhouse management strategies that may be difficult to

accomplish in a high tunnel that would not typically have electricity. Plant spacing, roll-up sides, and open ends are energy-alternatives to improving air circulation. Biofungicides including *Ampelomyces quisqualis* and *Bacillus subtilis* could be applied as well as neem-based or bicarbonate pesticides for control of powdery mildew.

IPM involves pest prevention through cultural methods and exclusion methods. Once a pest or disease problem is discovered in a high tunnel proper management must be employed. Biological control organisms can be a first defense followed by the appropriate pesticides for the crop and the market.

Pottorff, L.P., and K.L. Panter. 2009. Integrated Pest Management and Biological Control in High Tunnel Production. HortTechnology 19(1) pp. 61-65.

Producing Cut Flowers in High Tunnels

High tunnels are generally defined as simple frame structures usually covered by a single layer of clear polyethylene used to produce crops, such as cut flowers, in the ground. There are several advantages to high tunnel cut flower production as well as a few challenges. Chris Wien recently presented an assessment of cut flower production in high tunnels in *HortTechnology*, including a crop schedule scenario.



Advantages of high tunnel cut flower production:

- Provides protection against low temperatures, allowing for season extension by way of earlier planting and longer harvest period.
- Allows plants to grow taller due to the protected, calm environment.
- Improves flower quality due to protection from rain and subsequent disfiguring diseases.
- May allow for year-round production in southern climates.

Challenges of high tunnel cut flower production:

- Requires acute awareness of flower triggers such as temperature and daylength.
- Must manually operate ventilation in a way that avoids supercooling or overheating.
- May need to install a windbreak to allow sufficient air exchange without excessive air movement in the tunnel that can result in shorter stems.
- Requires more strategic management of crop space relative to crop value, i.e., a willingness to remove one crop before it has been completely harvested to make room for a more valuable crop.

Considering the season extension high tunnels offer, Wien suggested a possible cropping scenario including commonly grown cut flowers. The first crops of the season might include tulip, ranunculus and anemone followed by snapdragons, stock, sunflowers and godetia. Lisianthus, trachelium, celosia and amaranth could be grown during the main, warm season, and for the fall, sunflowers, small-fruited varieties of pepper and grass species should suit the market well.

Wien concludes that the advantages seem to outweigh the disadvantages especially considering the wide range of flower species that can be grown in high tunnels. But he does warn that it will be an important task to observe the affects of tunnel-modified temperatures and daylengths on plant performance to optimize production.

Wien, H.C., 2009. *Floral Crop Production in High Tunnels*. HortTechnology 19(1) pp. 56-60.

New Introduction: 'Mimi' Sweet Pea

Sweet pea is a popular forced cut flower in Japan, marketed from November to April. In fact, in 2004, the value of sweet pea cut flower production in Japan was \$27 million (USD). The introduction of the new cultivar, 'Mimi', represents a 145% increase in marketable flowers compared to the pink cultivar currently favored ('Super Rose').

Lathyrus odoratus L. 'Mimi' was developed at the Miyazaki Agricultural Research Institute by first crossing 'Stella' and 'Early Salmon Pink' in 1998. Pedigree selection occurred over six generations. Forcing sweet peas requires vernalizing the germinated seeds in cold storage for 4 weeks at 2C (35.6F). Seeds were transplanted in early September at intrarow spacing of 12 cm (4.7 in) and between row spacing of 100 cm (39.3 in). A minimum temperature of 5C (41F) was maintained through the growing season until the end of March.

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The average flower diameter of 'Mimi' is 5.8 cm (2.3 in), with 3.8 flowers per inflorescence. According to the Royal Horticultural Color Chart, the flower color is strong pink, and this sweet pea has a moderate fragrance.

Flower budding of the vernalized plants occurred in mid-October while the first fully opened bloom wasn't observed until mid-November. The budding of non-vernalized plants occurred in late March, making the natural flowering type, spring. Forced plants produced 35.7 flowers per plant of which 29.9 were marketable.

Akashi, R., 2008. 'Mimi' Sweet Pea for Forcing Culture. *HortScience* 43(7) pp. 2238-2239.

*Megan Bame is a freelance writer in Salisbury, North Carolina.
 Contact her at meganbame@yahoo.com*

GROWER Profile

Megan Bame

Josie Crowson

Josie's Fresh Flowers, Nacogdoches, Texas

It's not uncommon to talk with a cut flower grower who's enjoying a second career. Their stories often begin with a green thumb and a love of gardening that, given the time and space, blooms into a business. It's pretty unusual to find someone who considered herself a "brown thumb" in a previous life, but who has found new pleasure and business success in the flower field. Josie Crowson is one of those rarities.

Josie's original career path followed her PhD in economics. She lived in Northern Virginia, and worked in an office for Freddie Mac dealing with interest rate risk management. She wasn't a gardener, discouraged by her "talent" for killing the most foolproof potted plants. In 1997, Josie and her significant other, George, moved to Texas to get away from the snow and be closer to family. They first thought they would settle in Austin, but wisely, George thought the landscape was too dry. They headed east of Austin and bought a farm in the town of Nacogdoches, where the land seemed more lush, even resembling the landscapes of Northern Virginia.

Despite the brown thumb, Josie now had land for farming and time to devote to it. Rather than dive in head first and risk more traumatic experiences with plant death, she sought to educate herself. Nacogdoches is home to Stephen F. Austin State University, which happens to include a horticulture program. Josie didn't need a degree, but she needed an avenue to learn, so she audited a class about landscape plants. She then



began volunteering in the horticulture department to learn more and eventually got involved with a technician who was working on research for a cut flower grant.

She tagged along to the ASCFG's 2002 Regional Meeting in Louisiana and talked to several growers. There seemed to be a recurring theme among the growers she talked with about the prospects of starting a cut flower business. The mantra was, "I'm not making a lot of money, but I love what I'm doing." And with the knowledge she had gained and realistic expectations, she grew a small plot of "test flowers" and gave them away to local nursing homes while she proved to herself it must have just been some dirt covering up her green thumb.

In 2003 she grew a quarter-acre of flowers and sold them to florists. It was 2007 before a real farmers' market was established in the town. The market is open on Saturdays year-round and has garnered enthusiastic support from the town of 30,000 folks who have pledged their support of local businesses. There are two cut flower vendors at the market including Josie.

From florists to farmers' market and beyond, her business has evolved from a single market to a diversified market. She continues midweek deliveries to florists, primarily in the larger town of Tyler. Josie doesn't fancy herself much of an arranger. She doesn't do weddings, but will design simple bouquets by request, usually for a shower, birthday, or special occasion.

As Josie described in her first South-Central Regional Report in the Winter issue of the Quarterly, bucket subscriptions are one of her favorite marketing outlets. Customers pay up-front for a certain number of weeks to receive a bucket of fresh flowers. Josie offers a price incentive with a lower per-week-cost for up to 10 weeks (Four weeks cost \$26 per week, while ten weeks cost \$21 per week). The bucket subscription program has been the focus of her advertising this year as well. She included a flyer in the Chamber of Commerce mailing for a cost of \$100 and got \$300 in orders for vase subscriptions the next day. She also placed a rather pricey advertisement in the local, glossy publication, Charm. She's hopeful it will hit her target audience, since it seems that "every woman in this town and the next town read that magazine." In retrospect, though, it was a gentleman who placed the subscription orders resulting from the Chamber flyer, as gifts for his Valentines.

Florist deliveries are made on Wednesdays, subscriptions are delivered on Fridays and Josie attends the farmers' market on Saturday, but there are two more, rather unique weekly sales avenue Josie's found. She provides the flowers for the dining room at the local hotel/convention center on a weekly basis and on Mondays, she drops off several bunches to a local beauty shop, priced and ready to sale. It beautifies the salon and provides Josie with some additional retail space.

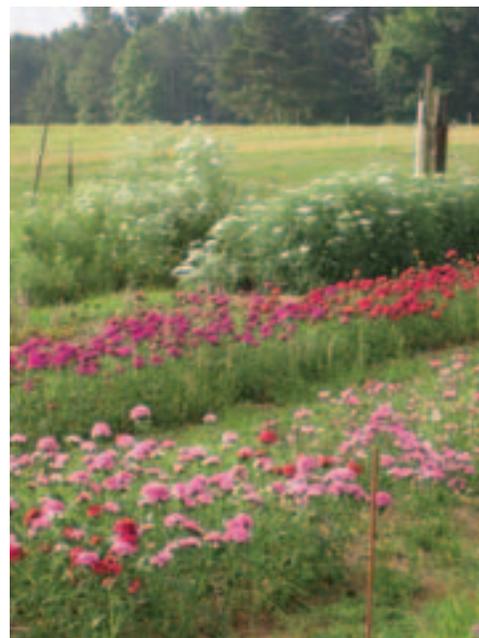
As a post-retirement job, Josie doesn't want the business to grow to the point that she becomes more of a manager than a "do-er." While George helps with tilling and construction (he built her greenhouse, cooler, and has become an expert at moving the deer fence to expand Josie's field plot), he's more interested in fixing and flying his airplane than planting or harvesting flowers. For field help, Josie has an ample supply of college students eager to learn and work outdoors. She expects to hire two or three part-time workers for the summer.

She has a small greenhouse (12 ft. x 24 ft.) that is used for starting plugs and growing lilies. Josie is up to one acre of field production. She has no plans for growth beyond that space, but is tweaking production within the acre. For example, last year they erected a shade structure to create a space more appropriate for growing hydrangeas and other shade perennials. She also has perennials such as echinacea, baptisia, rudbeckia, asclepias, grasses, phlox and achillea in the field. She's purchased many of the perennials from the plant sales at the University arboretum. Her primary annuals include lilies, delphinium, snapdragons, sweet williams, lisianthus, sunflowers and zinnias.

Josie finds that aside from not having a horticultural background, the greatest challenge in growing is to plan so that she can match supply and demand through the season. She's advertised that the bucket subscriptions will be available the first of April, but is worried that, depending on the number of subscribers, the flowers may be stretched too thin. On the seasonal flip-side, demand continues after production peaks and fizzles in August, so she's started experimenting with which flowers dry well. Since the market continues into the holidays, she's toying with the idea of buying a wreath maker and developing another market avenue.

Learning the basics about soils, seed germination, pest control, irrigation, harvest techniques, and postharvest care is quite a task, much less pulling it all together to build a successful business utilizing unique marketing approaches for a specialty product. From office-bound economist to fresh flower farmer, Josie's green thumb know-how has been put on prominent display for the folks of Nacogdoches to enjoy.

*Megan Bame is a
freelance writer in
Salisbury, North Carolina.
Contact her at
meganbame@yahoo.com*



BACK to Basics

Charlie Hall

2009: Year of the Recovery?

The big question I've been asked in the past couple of months: "Will 2009 bring a U.S. economic recovery?" My answer: "Yes, assuming no more unpleasant surprises are lurking." Most economists, myself included, think the recovery will start in the second half of the year. And the first half will be tough, with the economy contracting 4 percent in the first quarter, following a 5 percent decline in the fourth quarter of 2008.

Even assuming recovery is in store for late 2009, most growers are still heading into a spring loaded with uncertainty. How will retailers react to the less-than-stellar holiday sales season? What will be their mindset going into spring? Let's examine these questions by looking at some of the issues affecting some of the major customers of big growers: box stores.

The Present Predicament

The economy has forced consumers to adjust their spending habits and stay closer to home for leisure activities, but "nesting" was in play well before the current crisis took center stage, and box stores have cashed in on the trend: Traditionally, the neighborhood box store has been the place consumers go to pick up the things consumers need to complete home and landscape maintenance and repair projects. That's unlikely to change, even in these tough times.

The initial box store success formula was based on a "bigger is better" philosophy. Building big stores and promoting big-ticket items added up to big profits. This worked well for almost 30 years. However, in the past two years, these chains have made some dramatic changes. They are experimenting again with smaller store formats, closing



unprofitable operations, selling off unprofitable divisions (e.g., HD Supply) and lowering prices.

While home improvement centers and lumber/building material outlets that depend heavily on servicing small contractors have seen sales dip, many have forged ahead by expanding the consumer side of their business. Because of the unprecedented downturn in the economy, 2008 industry sales figures have been adjusted to reflect a 1.9 percent decline in sales for the home improvement market. In 2009, with anticipated improvements in the housing market, the industry is projected to grow at a modest rate of 3.5 percent.

The credit crunch has taken a toll on the private-label credit cards issued by box stores. Customers have cooled on the idea of using credit cards to finance high-end items for home and landscape remodeling

projects. For example, about 30 percent of Home Depot's sales are charged by customers using its credit card. The company reports that new accounts are down, as well as the number of transactions. Because fewer homeowners can tap into home equity lines of credit, financial resources are even more limited for landscape improvement projects.

Although home center retailers were able to maintain customer counts, the average transaction declined from \$45 to \$35 last year. The slowdown in home building and remodeling forced home center retailers to go after more consumer business, which led to fewer big-ticket sales. Another key factor in bottom-line performance was the significant increase in payroll, occupancy and other operating expenses for the typical home center from the previous year.

Home center retailers actually increased their advertising expenditures slightly last year to 1.3 percent of sales, but inventory turns, sales to inventory, and sales per square foot all declined for the typical home center, but not by an alarming rate. Employee productivity ratios decreased as well, which reflects the fact that retailers were not responding to soft sales by reducing their head count.

Limiting Factors

The biggest forces holding shoppers back in 2009 will continue to be worries about home values and job security, as well as expensive fuel, despite recent price declines. With fewer large-ticket sales, smaller maintenance and repair projects have become attractive to the big boxes.

Consumer income and spending are both down, and it seems logical that the former would lead to the latter. But it's not

that simple. The drop in consumer spending has been disproportionate to the drop in disposable income. Keep in mind that when people lose jobs, their spending typically falls by a smaller percentage than their income drops. They use savings or credit to smooth their earnings. From this fact, you might expect that the change in spending would be smaller than the change in disposable income. But recent data clearly show that not only is this not the case, but the exact opposite is true. So what's going on?

The reason is that the recent decline in spending is due to non-income factors, primarily weak consumer attitudes and expectations. The consumer confidence and sentiment surveys show plenty of doom and gloom caused by the fundamentals of rising unemployment, fear among people with jobs that they may lose their jobs, and the financial crisis headlines in the mainstream media.

How to Overcome

In spite of this, however, the long-term outlook for consumer spending is positive. This may seem surprising to you, but follow my logic: People are currently spending less than normal, certainly less than justified given their actual incomes. Even if unemployment goes to 8 percent, we'll still have 92 percent of the workforce earning a wage. The money not being spent now will eventually burn holes in people's pockets, if historical behavior holds true. It will probably take a few more months of spending declines for this to take effect, so the economy will likely hit its low point this spring.

What does all of this mean for growers? The tougher selling environment at the retail level this spring translates into a need to develop more intensive and collaborative relationships with your customers in meeting the needs of the end consumer — particularly in terms of their value proposition. During the downturn in 2008, growers that worked proactively with retailers (usually pay by scan sales) more closely to provide landscape solutions for consumers were the most successful.

The recent industry webinar, "It's a Great Time to Be in Business," featured lots of great ideas. Not necessarily new ideas, just reminders of things you should have been doing all along, such as providing extraordinary service. It is going to take a lot more effort to fill orders, and the best service provider will take home the prize. One of the best take-home messages I got from the webinar was, "These are the times during which great companies are made." Companies that make changes to survive in this economy will grow stronger while others who do things the same way because that's how it's always been done will lose the battle — and most likely be shutting their doors.

Charlie Hall is Ellison Chair in International Floriculture in Texas A&M University's department of horticulture.

Contact him at charliehall@tamu.edu

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Perennial Plugs

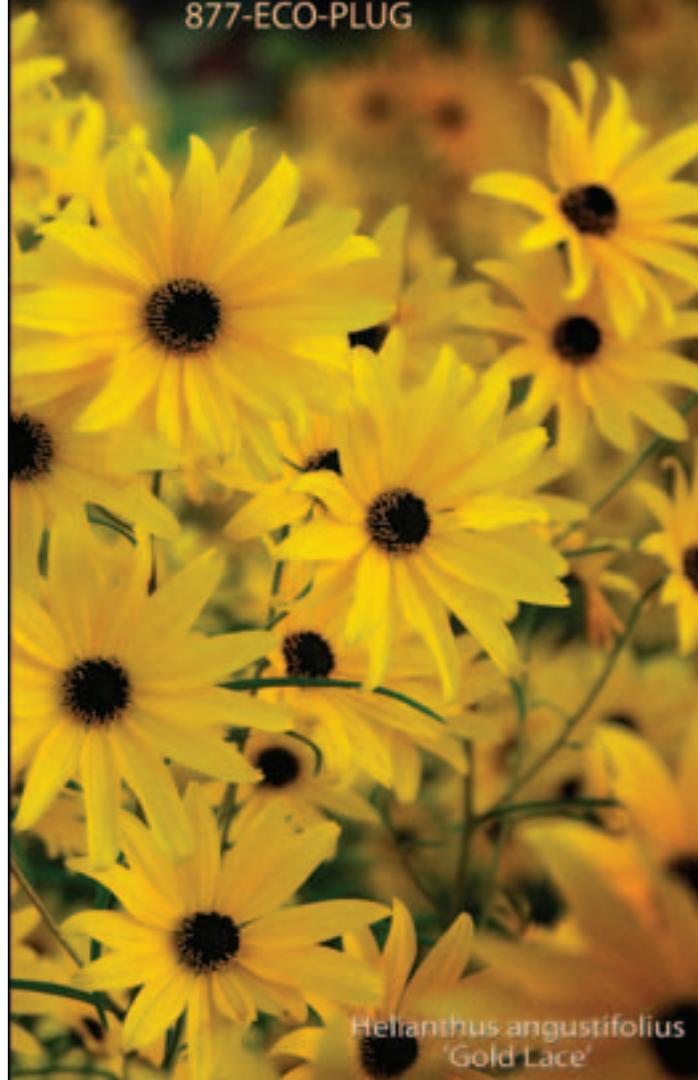
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REGIONAL *Reports*



NORTHEAST
Polly Hutchison
Robin Hollow Farm

Everything is blooming most recklessly; if it were voices instead of colors, there would be an unbelievable shrieking into the heart of the night. ~ Rainer Maria Rilke, "Letters of Rainer Maria Rilke"

It would be lovely to just grow the flowers, to work in that cacophony of color happily from dawn to dusk. The flowers are so beautiful, so well grown and harvested and cared for that they should sell themselves! It would be nice, but the reality is that as business people we have a lot of hats to wear. In a recession, the marketing hat needs to be on firmly as we look for every opportunity.

But we sell more than just flowers. We sell color and scent and joy. We sell celebrations of special events, recovery from illness, hope and peace. Our customers come to us for more than the flowers. The flowers are the products, but the emotion is what they are really buying.

I have been reading Michael Gerber's book The E-Myth Revisited on the recommendation of a farmer friend of mine. This concept of selling more than your product is the biggest thing I have gotten from it so far. This is the real reason that folks like Joe Caputi talk about having a consistent brand image and a "look" for your farm. People want their emotional needs filled, and if they can see that your outfit will provide that consistently, and well, then they'll be loyal customers.

It is harder for those of us who sell seasonally to keep that consistent presence. A member in my Region spoke to me about that spring effect whereby customers say "I should have called you!" about their wedding or other event when they see the beautiful June flowers. They didn't have her in mind when they booked that florist in January.

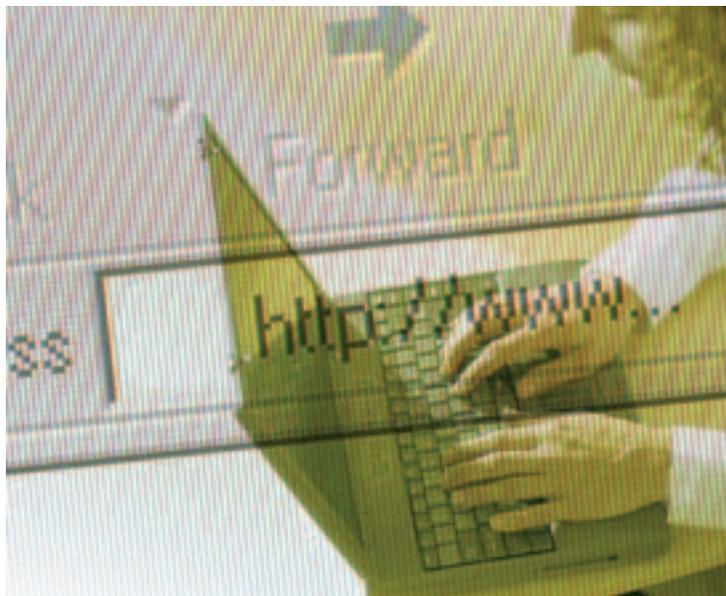
Have a plan in mind for how to reach those customers year-round to remind them of how much they love to buy from you. I heartily recommend a website – I have had seven or eight brides call (and most have booked) with me this winter because they "found me online" They want local, but they use the vast outer-cyberspace to find it. If nothing else, sign up for a listing on LocalHarvest.org or a more regional farmer listing, or both. A list of names and emails is incredibly valuable as well. They want to hear from you if they sign up!

I know most of you are doing some of the above, or even more, or perhaps you have a new and different marketing idea. One of the many great things about this association is our ability to share marketing tips and plans across zones and regions. We'll be focusing on marketing more than ever at the National Conference, although we'll still have lots of great flower growing information and research.

National Conference, here we come! YOU need to be there. We have a great site, a great lineup of speakers, and a great date: October 6-8, 2009, with the Growers' School on October 5. It is within an easy drive of much of the Northeast Region (except for our beloved Mainers and Canadians) and you can fly right into Islip if you're too far to drive. Registration rates remain same as they have for the *fourth consecutive year*, thanks to a huge amount of work by Judy

and Linda to keep costs down and a huge amount of volunteer work. This year our florist favorite and Long Island native Neil Caggiano will direct the Design Competition, and his lovely wife and national-award-winning educator and AIFD member Carol Caggiano will be featured in our new Event Design and Marketing sessions. That's right, a whole day of working on the nuts and bolts of customer communication, contracts, marketing and sharing of information about how to get and keep clients, and how to make money on weddings and other events. You NEED to be there.

The next *Quarterly* will give you the complete rundown, but for now, happy spring, happy marketing, and save those dates!





MID-ATLANTIC

Andrea Gagnon

LynnVale Studios

This past January I went on a trip. I didn't need any luggage, though I brought plenty of baggage. I didn't need a map, in fact I was confident I could make my own. I didn't even need transportation, it was all in my head. Worry and panic replaced reason and logic. I convinced myself that to make money this year in a down market I needed to expand into vegetable production. My logic? Bringing more "non-luxury" items to market would increase sales, help me diversify my agriculture portfolio and thus reduce overall risk. More is more, right?

As I would do with any trip, I looked for the best deals and consulted with experts, flower growers who'd been there and done that. Most were encouraging, some were cautionary and I listened as they all said "It looks like rain, be prepared," as I ran headlong into research without an umbrella. I swam in facts and figures like I would in the most exotic and elaborate resort pool. All too often I found myself floundering in the deep end, barely above water, debating over heirloom tomatoes varieties and coordinating succession planting schedules. My business survival instinct was powerful, adrenaline kept me afloat. Yet in that large ocean of unknowns, my confident strokes began to slow, my legs began to tire and I sent up a flare.

My rescue boat arrived oddly enough in the form of the television show "Kitchen Nightmares". World-renowned chef and restaurant owner Gordon Ramsay visits drastically failing restaurants around the globe, and works side by side with their owners and staff collectively to confront their egos and in some cases apathy toward owning and operating a successful business. It would be a pretty boring show if all Chef Ramsay did was "throw money at the problem", and wave his hands shouting "Fire the chef!". He confronts the most stubborn owners and employees around. At best they are obstinate, resistant, and rude. At worst they are openly disrespectful, lazy, arrogant. In all cases they are deluded. Their belief that they are "doing the right thing" despite obvious financial failure is so powerful they are unable or unwilling to change.

I realize what motivated my desire to expand into vegetables was not a calculated test into a new market from a strong flower base, it was a whole new market base altogether. Actually, it was horticultural gambling. If I had known my little head trip was to Vegas, I would have taken in a few shows.

His goal is simple: to create common ground from which all can contribute, be held accountable and grow. To do this he imposes order out of chaos using two methods. First they clean up the physical mess. Second, he defines a new simplified menu that can be prepared and served by all at the highest level.

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Essentially, if you are going to sell mashed potatoes, make them the most amazing mashed potatoes there are. This process allows all who may have removed themselves mentally from the previous “chaotic negative environment” to rejoin it on a base level. In the end, with few exceptions the team is empowered, proud and profoundly thankful to Chef Ramsay for his help.

Personally, this show is at times particularly painful for me to watch. I can identify with the power of personal beliefs and the fear and uncertainty of change. Professionally, it’s been an unbelievable learning experience.

So I’ve returned, a little jet-lagged and waterlogged, to our core beliefs. If we focus on growing the best possible flowers & refocus our energies on marketing our flowers and design services to the best of our abilities we will succeed. We’ll make order out of chaos, we’ll simplify our menu, we’ll find, fertilize and protect our common ground. And maybe we’ll grow 10 tomato plants rather than 100.

And we invite to join us for the re-launch of our “restaurant”, make your reservations now for the Mid-Atlantic Regional Meeting on April 27th. We look forward to serving you.



SOUTHEAST

Susan Wright

Shady Grove Gardens & Nursery

Everyone is thinking about the economy. We’re no different. My only advice: If you can save time you’re saving money. Most of us who love flowers and work for ourselves don’t enjoy rushing around or analyzing things. But it seems to be what it takes to stay in any small business today. Always be looking for a better, more efficient way to do things. Our new motto is not so much do-it-yourself but if it takes longer to explain it than to do it yourself...well, you should be doing it yourself. We’re moving helpers to only simple, labor-intensive tasks such as washing buckets, mowing and, I hope, cutting.

For my part of the business I’m looking forward to a new warm water outside faucet. It should save me a lot of time watering the seedlings. I grow all my own transplants without a heated greenhouse. Crazy, it is. But I have a heat mat and now, yeah! heat cables. After we dig up all the rocks in the yard and lay a water line to our potting shed and a hydrant; I’m looking forward to no more days of dragging warm water out of the house to water thousands of seedling. Oh, I can’t wait. But my real point here is not to spend money in this economy but rather

solve some of those simple problems that will save you money in the long run.

I recently had the chance to speak to the Virginia Cut Flower Growers about various marketing opportunities. This is old news for anyone who has been growing flowers for awhile. But for newer growers or those considering different markets here are a few thoughts to consider.

How does your current product mix fit with this new market? What are the startup requirements? For example: sleeves are generally needed to sell to grocery stores.

Farmers’ markets: Are an easy way to start, with instant gratification, but they offer low potential income, lots of competition and weather-related concerns. You must work every Saturday all season. If you

have kids this may not be for you.

You-pick flowers: This can work in the right location with excellent succession planting but requires liability insurance, regular hours, and a ‘people person’. They make it hard to take advance orders for other markets.

Regular florist: These can offer a big pay-off eventually, with regular weekday deliveries. But florists aren’t doing well these days and rural florists are very traditional. You may spend a lot of time growing and cutting flowers only to be rejected.

Event florist: This is a fast-growing niche for us. Most event florists work out of their homes. Mine come to us. These are fun - but a bit scattered - folks you can develop great relationships with. They are looking for unique items and you are it. Alas, they rarely tell you more than a few days ahead what they need. They cut out the middlemen and always seem to call just a few hours before they need something.

Wholesale florist: Let’s be real, these guys are in trouble too. If you are big enough or you want to grow just a few crops in large quantities this is the place for you. Make sure you get paid in a timely fashion. This is a good option for growers who don’t want to deal with the public.

Shipping: There are all kinds of options here, seek out one that works for you. Ship to wholesalers, retailers or individuals. Just remember there are startup costs: advertising and packaging to name two. If you are web savvy this may be the place for you.

Weddings and wedding design: This is somewhat recession proof. However I’m finding more and more cheap brides. They will take up your time because most 20-year-olds don’t know flowers. So my challenge is to remain a quality option while offering value. Perceived value is what it’s all about. Read the online bridal forums. Many brides are using silk or ‘sticks’, we’re in for a long bumpy ride.

Do-it-yourself weddings: Let’s face it: most people don’t have much money to get married. But they will still get married. You may try to focus on these brides by selling flowers directly

to them, either by the bucketful or by the bunch. Make sure to set your prices ahead of time. Knowing exactly what you will have when will pay off handsomely. The downside is that it's a bit hard to get established if you don't already have a network of contacts or a farmers' market following.

CSA's: These are all the rage in the vegetable world. I believe flower growers are next. Offer perceived value or convenience. I'm finding many older market goers don't like the crowded Saturday market. You do have to be an experienced enough grower to provide a great-looking bouquet every week. But you get your money ahead of time. A great plus these days.

An offshoot of CSA's are subscription and delivery services. This works for growers who don't mind driving around a day or two each week. Think about businesses, doctors and B & B's. Keep in mind gas prices could change at any moment when setting your flower and delivery prices.

Add this to all your personal and financial considerations when choosing the best markets for your flowers. Perhaps we will consider those next time. The ASCFG flickr.com group is up and running. Call or e-mail Judy to get an invite. We decided not to send out a mass invite from flickr.com. It's simple, just follow the setup steps to join, then add photos or video for other ASCFG members to view. Have fun out there.



with our five large hoopouses and one small 'insulated' ends.

We begin in late January by sowing seeds in flats using our basement grow room. We have 7 shelving racks with 4 ft fluorescent lights. Each rack holds from 20 to 24 flats. We start with eucalyptus (an annual for us), stock, snaps, dianthus and bupleurum. We start around forty thousand plants in our grow room, starting from seeds and bumping them up to 72 cell flats before we move them out to the small hoopouse, all done by hand. Some of our more 'fickle' plants are brought in from other suppliers, such as lisianthus, delphinium, campanula, some snaps and wonderful tissue culture statice.

Lilies are one of our biggest crops. We start crating lilies the end of January and keep them in our walk-in cooler for a couple weeks and then out to our small hoopouse. (We usually bring in circa 16,000 bulbs for the season, approximately 1000 every two weeks.)

All hoopouses are closed mid-February and the watering begins on fall-planted tulips and delphinium, hydrangeas, second-year lilies, and peonies. Our frost-free date is around May 10, so you can see that this gives us quite a jump on the season. We have two rows of peonies in the hoopouse and they usually are ready for that early market. A large grower stopped by our booth the first market day last year and asked how we got peonies blooming that early. I told him that we went out every morning and put little sweaters on them. (Of course it was water and heat.)

The first of March we start transplanting into the hoopouses: stock, delphinium, snaps, lisianthus, bells, bupleurum, dianthus and campanula. Mid to late March, we plant some glads, tuberose in crates and then later, follow the stock with more tuberose. We will also direct seed some sunflowers.

We fill at least one hoopouse with stock. Most of our Des Moines Market customers did not know what stock was. It is one of their favorite flowers now! The florists we sell to love it as well. Stock is a great seller and it smell great. It is hard to beat peonies, stock and tulips at a first market. Customers wonder if they were really grown in IOWA!

Another great money-maker are those early peonies for Mother's Day and weddings. Our field peonies come on a couple weeks after the hoopouse ones.

Then there is the breathtaking 'Blue Guardian' delphinium. The florists, as well as the market customers, literally stop in their tracks when they see the iridescent blue hues of these gorgeous flowers. We get top dollar for its beauty and freshness. The early delphinium also has a great shelf life, as it likes cool weather.



MIDWEST

Quinton Tschetter
Tschetter's Flowers

Extending the season is crucial to Tschetter's Flowers and to many other growers as well. In the Midwest states, many growers including us, are seasonal. Heating hoopouses in our region is a huge expense. This past winter even southern Iowa had brutal weather. Most January days, the actual temperature was not above zero and one week we experienced -40 degrees actual temperature.

The negative impact of not growing year-round is all of those great holidays with no flowers to sell. On the positive side, that is the time of year that we regroup, relax and vacation, especially to California in January!

Our goal is to have flowers in early April, for Easter, Mother's Day and in mass for our first Des Moines Farmer's Market, which is May 2nd this year. That is a big challenge but we usually meet those early demands by extending our season

Our hoophouse lisianthus starts to bloom around July 4th, the ‘Limelight’ hydrangeas in mid-July and of course the hoophouse lilies start to bloom earlier. Having the first stock, lilies and peonies is a great advantage for us at the market.

The hoophouses help us extend the fall season as well. Fall lilies, sunflowers, zinnias, flowering kale, beautiful dried hydrangeas and tuberose can be supplied almost to the end of the October market.

If you don’t have hoophouses, I would encourage you to consider the purchase and use for extending the season and for improved quality. We have found that Farmtek has been our best source in our area. They would be worth investigating. Karen has been a great help to us in deciding what we should use. Feel free to call me if you have questions about hoophouses...or any other aspect of growing flowers.

Have a great growing season and experience. I am in the process of planning our Regional Meeting for July 6th. If you have any suggestions for topics, personnel or concerns that we can address at the meeting, feel free to call or email me (641) 660-9765 or qct@mahaska.org, subject ASCFG.



SOUTH-CENTRAL

Josie Crowson

Josie’s Fresh Flowers

Becoming a cut flower grower does something weird to your perspective. Instead of just appreciating the beauty of the plants in a nursery or arboretum, you find yourself viewing every plant through the lens of “Would that make a good cut?”

I get to see a lot of new varieties when I help with watering at the Stephen F. Austin State University (SFASU) Mast Arboretum once every month or so, and I’m always on the lookout for new cut possibilities. The last time I watered, I spotted a gorgeous bronze foliage plant in the greenhouse that was totally new to me. Its nametag said “phormium.” I came home & did a little internet research on phormium. I found a San Diego grower (Foxtail Farms) specializing in phormium, and discovered that this plant comes in an unbelievably wide range of colors (wine red, green with cream stripe, lime green with salmon stripe, green with dark purple, and many more). The pictures had me drooling, so I called the owner, Russ McMillan. Russ said that recently a California flower grower had asked about using this plant as a cut, so he went to the San Diego cut flower market and found that some



cut flower growers were indeed selling it that way. That prompted Russ to experiment with some foliage and he found that it lasted over a week in plain water.

This conversation piqued my interest and, as luck would have it, a few days later I visited my daughter in San Diego. On the way to her house from the airport, I asked, “Kate, have you ever heard of phormium?” “Oh, yes,” she said, “I have some in my yard!” Well, what I found was that everyone in San Diego seems to have phormium in their yard, and I think it is used in landscaping every commercial building there as well. Everywhere I looked was some variety of phormium. So now I have ordered a few plants to try. I don’t know how they will like the heat and humidity of East Texas, but maybe with a little pampering they will survive. Whether they work or not, it’s lots of fun to try new plants as cuts, and to experiment with plants that come from other regions of the country.

This is not the first time the SFASU Mast Arboretum has led me to try some new plant as a cut. Dawn Stover, who has been the research associate there for 10 years, is not only an expert on annuals, perennials and tropicals, but has a deep interest in cut flowers and is an excellent floral designer herself. She has brought a number of plants to my attention as possible cuts. Some of these have been great successes— *Hibiscus acetosella* (maple-leaf hibiscus) for foliage, *Justicia betonica* (white shrimp plant) which looks beautiful with lisianthus, and *Miscanthus sinensis* (super stripe maiden grass) to name a few.

Dawn also conducts two enormous plant sales each year. These sales emphasize new and unusual plants that do well in the East Texas environment, and they have become among the most popular Nacogdoches events. Hundreds of people line up with their wagons before the 9 a.m. opening, and at the signal, run for the plants they want. It looks like the great land rush! I always find cut flower possibilities at these sales, and come home with my Yukon loaded with plants.

In addition to new cut flower ideas, the horticulture department staff has helped me in many other ways—identifying plants, bugs, and diseases; finding sources for particular plants; and providing general horticultural information. The floral design class also buys some of my flowers. If you have an arboretum or a college with a horticulture department nearby, I encourage you to latch onto this great resource. Get to know the staff, do a little volunteering, offer to give a lecture on cut flowers. The connection can yield tremendous dividends for your business.

If you attend our South-Central Regional Meeting this year, you will get to know Dawn Stover and some other members of the horticulture department at SFASU. In response to suggestions from a number of members, the theme of this meeting will be

“New Ideas for Cut Flowers & Foliage.” We will have the meeting in Nacogdoches, Texas on Monday, July 6. That morning we will tour my farm and then go to the SFASU Mast Arboretum for Dawn Stover’s special guided tour, which will emphasize unusual flowers and foliage for cuts. We will go indoors out of the heat for lunch and an afternoon session of sharing new cut flower ideas. Dawn will be the lead speaker in this discussion, but we want everyone to bring their latest cut flower discoveries. Although not on the agenda, visits to the other SFASU gardens—the Pineywoods Native Plant Center and the Ruby M. Mize Azalea Garden (the largest azalea garden in Texas)—are well worth your time, so I hope you can stay another day in Nacogdoches. You might also enjoy visiting the shops along the brick streets in the “Oldest Town in Texas.” By the time you read this, you should have received more detailed information about our meeting and about Nacogdoches. I hope to see you here on July 6!



WEST

Brenda Smith

Smith & Smith Farms

Between this writing and the *Quarterly* being delivered to your door we will have had a successful West Region meeting during the Spring Trials. This was the second year we planned a meeting at the annual open house of the seed companies located near the Salinas area. It’s already looking like we are attracting a bigger crowd and I am confident that attendance will grow each year. This will be my last year as Regional Director, and I am excited about the person who has tentatively agreed to taking over the reins in the West but since it is not a firm commitment at this time, I will have to leave you in suspense until the next issue or we can post this exciting news on the bulletin board. I know that our industry friends in California will continue to be supportive of the ASCFG and we can continue to have an annual gathering during the Spring Trials, a terrific opportunity for not only the West Region members but the entire membership of the ASCFG.

Our strategic planning session was held during the Spring board meeting early in February. This was the culmination of what we had set in motion during the National Conference in Portland, when we asked members to complete a survey about the ASCFG and planning for the next 20 years of the organization. We followed up in December with an online survey to get a larger cross section of our membership in December. I am truly grateful to everyone who thoughtfully provided their input as we continue to grow this special organization into the future.

One aspect of our membership I have always been fascinated with is the varied skills and experiences the membership draws from. Flower farmers are so versatile and we found out that once again when Tom Gleason, an ASCFG



Tom Gleason guides the Board through a long-term planning session.

member from Heron’s Rest Farm in Shanghai, West Virginia, offered his services as an experienced facilitator for the board’s strategic planning session.

With the utmost professionalism, Tom guided the ASCFG board members in an intense full day of strategic planning. We ended up with a wealth of information and with clarity on some of the intrinsic aspects that make the ASCFG the unique organization it is. I am hoping that you will begin to see the offshoots (using a floral term loosely here) of this session within the year. I was particularly gratified that we put down on paper what makes the ASCFG a special organization and how we want to enhance those qualities and traits through the development of future programs of the ASCFG. I feel it is important to not to forget your roots (there I go again) as we plan forward.

One fact that came out in the surveys and this meeting is how much people value face-to-face get-togethers. As much as we rely on and use technology, it was clear that we should not lose our opportunities to meet up with each other in person. Another aspect I thought important was that the organization is seen as one with quality members and products, and programs with a high degree of professionalism.

And certainly not finally, because there is a wealth of good information I hope can be summarized for the membership, but finally for this column, was the degree of passion that flower growers have for what they do and how that is reflected throughout the organization. A unique characteristic of the ASCFG that seems to be born of this passion is the spirit of openness and sharing exhibited individually by members that becomes translated directly to an overall characteristic of the organization.

As I finish up this column, I realize there is so much more to say and communicate to you all about this planning we have taken on this past year. I believe you will be reading or hearing much more about this work.

As you do your work this season remember, ASCFG members are: educated, specialized, innovative, ingenious, hard working, adaptable, sustainable, connected, respected, quality minded, passionate, generous, concerned, flexible, aware, imaginative, optimistic, committed, fun, *and* we grow beautiful flowers to brighten people’s lives.



NORTHWEST

Jerriann Sabin
Bindweed Farm

Snow, snow and more snow; it is not so much the snow I mind but the monotony of landscape. We are surrounded by mountains but they are miles away and disappear into gray skies. There are no woods or lakes or even undulation of land to break up the landscape. So when the skies are low there is no separation between sky and land, just a seamless nondescript gray. I am cold and bored—I am craving variety.

Variety in landscape opens the world, excites the eye and animates the imagination. Variety in design functions the same way. With a little imagination an all-white bouquet can move from lifeless and boring to exciting and elegant. Imagine an armful of white lilies—quite lovely—but when those same lilies are combined with fluffy heads of white hydrangea and branches of snowberry, imagine the impact. How did this happen? What alchemy takes this bouquet from fine to fantastic?

Adding white hydrangea and snowberry to our imaginary bouquet introduces variety, and variety creates visual interest. Rhythm and repetition work together to create a more interesting design. When an element is repeated it creates a pattern; repeating and varying patterns creates rhythm. Lilies have large, triangular and smooth petals, offering star-shaped open flowers and torpedo-like unopen pods. The flowers and pods are “pre-arranged” asymmetrically on their stems and so even by themselves they are a simple and beautiful bouquet. Hydrangeas are round textural heads on strong stems, offering natural variety created by their multi-flowered structure. A large bundle of hydrangea in a striking vase is a great bouquet, especially if the vase contrasts with the texture of the flower. A generous bunch of snowberry

branches arching over a tall silver vase is as elegant as a chandelier—the creamy white berries dangle gracefully like crystals on dark slender stems. By themselves these flowers make nice bouquets but when these three elements come together they really make a statement.

Even though our imaginary bouquet is all “white”, subtle shifts, variations, in color and texture instantly create more interest. Adding hydrangea to the lilies creates a balanced rhythm as the eye bounces back and forth between two things of similar size but of very different textures. Throwing in snowberries creates visual drama—the arching branches complement the straight stems of the other flowers, elongating the overall design and softening and shifting the dimensions. The smooth surface of the berries echo, thus repeating, the smoothness of the lily petals and the clustering nature of the berries mimic the structure of the hydrangea, another repetition with variation that creates balance and counter balance.

Now imagine adding white foxglove and substituting “Limelight” hydrangea for an even more sophisticated design. The lime green tones of the hydrangea and the foxglove repeat the soft green that now becomes evident deep in the throat of the lilies. The deep violet spots of the foxglove are a larger version of the blossom ends of the snowberry, repeating their shape and color but on a different scale. These deeper tones also call attention to the dark stems of the snowberry and bring out all the other dark colors in the bouquet, creating an interesting counter balance—dark tones set against all the whites. (Imagine Clive Owen in a black tuxedo and crisp white shirt—the same idea in reverse.)

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The forecast does not look good—another storm front is moving in, another week drenched in gray. Scanning the sky, I squint and refocus, trying to distinguish land from sky. Searching for any color variations, any indication of clouds or light I catch a glimpse of movement—a slight fluctuation in flickering in the distance. The movement takes shape as a jagged line is pulled across the sky, opening the heavens and filling the air above me with sound and movement—geese, lots and lots of geese! And for a moment the sky is chaos, broken into little pieces like a plate smashed on a cement floor. A little variety, shattering the monotony.



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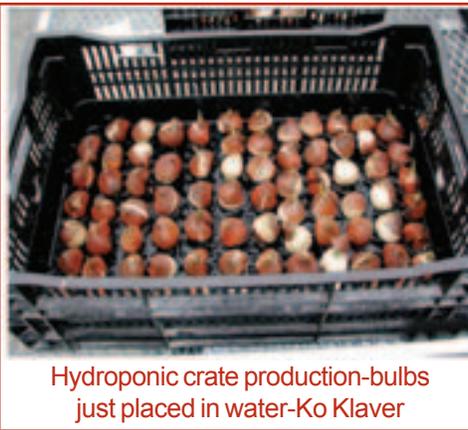
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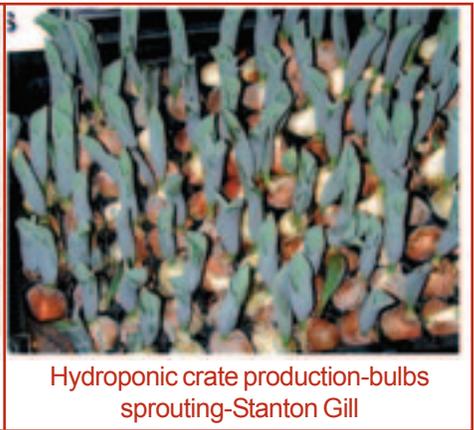
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Hydroponic crate production-bulbs sprouting-Stanton Gill

to another field the following year will help to reduce disease occurrence.

Stems of pulled tulips should be cleaned after picking. Simply swish a handful of stems in a large bucket of water to clean the soil off the stems before placing them in a bucket of water with preservative. If the tulips experience wilting after harvest, any bent stems must be wrapped or somehow supported in the bucket while rehydrating. Otherwise, they will remain bent even after being properly hydrated. Tulips can be stored in a cooler in water or dry at 35°F for up to one week. If stored dry, they must be supported when rehydrating. Tulips continue to grow after cutting, up to six inches after placing them in a vase.

Pests

Aphids

Tulips are relatively pest free but aphids can become an occasional problem, especially for greenhouse-forced crops. The two major species of aphids found in greenhouses on tulips are melon aphid (*Aphis gossypii*) and green peach aphid (*Myzus persicae*). Aphids can rapidly become a major pest if left unchecked. Because aphids feed on the plant fluids within the phloem of leaves and green stems, they represent a competing nutrient sink. Heavy aphid populations may measurably reduce plant vigor. Aphids also excrete large quantities of sugar-rich honeydew on which sooty mold fungus may grow. Before any attempt is made to control aphids, it is necessary to identify the species. Submit samples of aphids to your Extension office for identification.

After the species is identified, familiarize yourself with its biology on the tulip crop. Note whether it prefers particular species or cultivars of tulips, if it feeds selectively on certain parts of the plant, and how rapidly it reproduces.

Green peach aphid (*Myzus persicae*)

The color of green peach aphid can range from light green to yellow to gray-green to pink or even reddish. It is a fairly large aphid that most people can see without magnification. The green peach aphid has a pronounced indentation between the base of the antennae on the front of the head. The cornicles (two projections on the rear of the aphid) are long and slender. The color of the cornicles matches the body color of the aphid but the tips of the cornicles are black. This aphid can reproduce very rapidly and populations can explode in a very short time. Control should be attempted early before populations become large.

Melon aphid (*Aphis gossypii*)

The melon aphid is slightly smaller than the green peach aphid but it reproduces just as quickly. Both melon aphids and green peach aphids have been found to transmit viruses. The color of the melon aphid depends upon its food source. They may vary from slightly green to dark green to various mottled shades of green or even yellow. The antennae are shorter than the length of the body and there is no indentation between the base of the antennae, as

found with the green peach aphid. The cornicles of the melon aphid are short and very dark colored.

Insecticidal soaps offer some control against aphids. Applications should be applied at regular intervals for maximum efficacy. Growers that have problems with aphids can also apply foliar or soil drenches of a labeled neonicotinoid. Check the University of Maryland Cooperative Extension's Bulletin 363, "Total Plant Management for Greenhouse Production," to select a recommended systemic pesticide.

If you grow tulips in greenhouses, check the plants before moving them indoors to make sure they are free of aphid populations. Control weeds under the greenhouse benches and directly outside the greenhouse to prevent aphid populations from developing. Aphids can be prevented from migrating into the greenhouse by covering screen vents and doors with a 300-holes-per-inch mesh screening.

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Find the rest of this Maryland Cooperative Extension Service Fact Sheet (837) at <http://extension.umd.edu/publications/pdfs/FS837.pdf> or in the Members Only section of www.ascfg.org

The ASCFG Welcomes its Newest Members

Katherine Anderson, Marigold and Mint, Seattle, WA
Maria Baldwin, The Garden at Thornhill Farm, Charleston, SC
Hilda Bayliss, Hilda's Flowers, Manns Harbor, NC
Bud Cottrill, Saint Albans, WV
Dennis DeBaltzo, A-ROO Company, Strongsville, OH
Kay Devine, Koehler & Dramm, N. Kansas City, MO
Ivan Fisher, Fisher Farm, Janetville, ON
Mark Fitzgerald, Jr., Red Creek, NY
Joann Gallagher, Castlemaine Farm, Liberty, NC
Jane Henderson, Commonwealth Farms, Charlotte, NC
Sue Kent, Midnight Sun Peonies, Soldotna, AK
Carl King, King's Country Gardens, Owensboro, KY
Maria Pila Matiz-Mix, Garden Hill Farm, Carthage, NY
Cate Murphy, Talmar Gardens & Hort. Center, Baltimore, MD
Mary Ellen Muth, Muth Farm Flowers, Williamstown, NJ
Al Richards, Gambrius Flower Farm, Gambrius, MD
Bram Towbin, Plainfield Flower, Barre, VT
Kim Walton, Waltons Farm, Muskogee, OK
Ann Webb, Webb Farm, Russellville, AR

An ASCFG Regional Meeting

is coming to your area

Southeast

April 15
Wrens, Georgia

Mid-Atlantic

April 27
Gainesville, Virginia

Northwest

May 1
Mount Vernon, Washington

South-Central

July 6
Nacogdoches, Texas

Midwest

July 6
Ames, Iowa

What Can You Do for the ASCFG? **Participate in the Board of Directors!**

This year the following offices are up for election:

**President, Vice-president,
West Regional Director, and
Northwest Regional Director.**

If you're interested in furthering the goals of your organization, working with interesting people and visiting cut flower farms across the country, please contact the ASCFG office.



Top: Ko Klaver, Josie Crowson, Dave Dowling, Carolyn Tschetter, Susan Wright, John Dole, Brenda Smith, Joan Thorndike
Bottom: Judy Laushman, Jeriann Sabin, Polly Hutchison, Quinton Tschetter, Andrea Gagnon, Chas Gill

Students Earn ASCFG Scholarships

The ASCFG Scholarship Committee recently commended two students for their academic work, life experiences and career goals.

Amy Hinkle, a horticulture student at Penn State University, was awarded \$1000 for education expenses, a one-year



ASCFG membership, and complimentary registration to the 2009 National Conference. The Committee was impressed by her devotion to horticulture, and specifically to floriculture. Amy is commended for acting right away on commercially growing flowers with the intent on making a profit, proving that cut flower production is a enterprise as well as a joyful

experience. Amy's commitment to become one of the best flower growers showed the Committee that she was worthy of receiving the top prize.

The quality of the rest of the field was impressive enough that for the first time, the committee chose to recognize a second student. Jennie Love of the Longwood Gardens School of Professional Horticulture was provided \$500 by donors Brenda Smith, and Carolyn and Quinton Tschetter. Jennie will also receive a one-year student membership.



Fourth and fifth places were recognized by receiving a special one-year Student level ASCFG membership, which went to Cordella Fox of Central Piedmont Community College, and Nathan Thompson, a student at The Ohio State University.

Thanks for the Good Word!

New members named you as the reason they joined the ASCFG.

Allan Armitage
Erin Benzakein
Mark Bridgen
Lynn Byczynski
Van Cheeseman
Leah Cook
Dave Dowling
Chas Gill
Lane Greer

Polly Hutchison
Cathy Jones
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New Varieties



FROM the Director

Judy M. Laushman

When I first read John Friel's article about changes in the plant taxonomy world, I was relieved to realize that I wasn't the only one confused by new genera, different family assignments, and a totally new way of looking at classification. While I was editing Allan Armitage's *Herbaceous Perennial Plants*, I was continually looking up plants, only to find them listed under entirely different names. John has done a masterful job (as usual) explaining this process, one that may still be confusing, but is at the same time intriguing to any true plantsperson.

Another "new" development, but one that really shouldn't be, is the recent development to put flower fragrance "back into" flowers. The combination of alluring scent and visual beauty surely adds to flowers' appeal to the human psyche, affirming the recent findings that flowers and plants really do have a positive influence on humans. This is the kind of information you must be sharing with your customers. Make sure they take home enough flowers to place in several rooms of their homes.

Erin Benzakein's write-up of the results of her ASCFG Grower Grant is priceless. How Erin had time to conduct this research between growing and designing her flowers, appearing in magazines like *Sunset* and *Mary Jane's Farm*, and raising two children, I'm not sure. But the information about the grasses she chose to trial is complete, unbiased and useful for all growers. I can't wait to see the results of her grant about garden rose evaluation.

One of Erin's comments caught my eye: She made \$1,850 from a 60-ft. row of *Panicum* 'Frosted Explosion'. This reminded me of what Janet Foss said several years ago about another grass she had heard about one year at an ASCFG National Conference. She bought a packet of the seed for five dollars, and made enough money off that one planting to pay her way to the National Conference the next year. It's stories like that which make you realize

how serendipitous this business can be sometimes. One conversation with another grower can change the way you irrigate your fields, or set up your cooler. One speaker at a Regional Meeting can introduce you to a crop that no one else in your market is growing, and it becomes your primary profit market.

Don't forget to take advantage of these possibilities. This year more than ever, you need to continue educating yourself, expand your market, and extend the circle of growers who can help you accomplish these.

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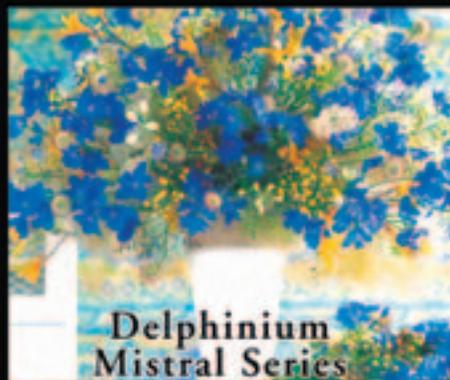
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