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GROWER TALKS

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ON THE COVER

Just 3% of the United States' total land mass is considered urban, but our cities concentrate wealth in the forms of capital investment and people. And an astounding 82% of all Americans live in cities and nearby suburbs. So why aren't we concentrating more on the urban gardener? Debbie Hamrick offers her analysis beginning on page 46.



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Horticulture's future lies in the city. Cities are where the markets are. Cities are where the money is. Cities are where the people live. This first article in a two-part series looks at how our industry can capitalize on this urban market.
- 54 | **New Fertilizers for the Current Market** | by Dr. Cari Peters
Are you still using the same fertilizer formulation you relied on 10, 20 or even 30 years ago? Still reaching for the 20-10-20 or the 15-16-17 for everything in the greenhouse? Check out the newest developments in fertilizer formulation and a few new crops that have special nutrient needs not met by your typical formulas.
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Now available for commercial growers, biochar is a relatively new soil amendment that can help your plants grow even better.
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It's not as controversial as which political party you support, but many growers have had heated debates over which type of fertilizer is the "best." The debate continues, but here are some things to consider if you're thinking of changing sides.

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This six-part series from MasterTag will give you info for all of your frequently unanswered questions (FUQs) about POP and other marketing materials. This month: Part I about plant tags.
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What Have I Said "Yes" to This Time? As I start writing columns, I think it's useful to share a bit about myself—a bit on *how* I think and the basis of how my columns will be written.
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A Theory of Sandwiches & Pressure Cookers We place our predisposed personalities into the greenhouse sandwich and we turn on the pressure cooker of spring production, and before we know it, we cultivate anxiety.
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With today's beginner gardener often being hesitant to try new varieties or different classes, adding a few unique melons to the vegetable starter-plant display is a good way to encourage more sales.

FLIPSIDE



- GP16 | **Hort Calendar**
Your guide to upcoming industry events.
- GP30 | **8 Hot Picks For Spring** | by Jennifer Polanz
In an issue full of containers, we had to give you something to put in all those pots. Here are some great choices for wowing customers this spring.
- GP37 | **The 5 Impact Points of Color** | by Christina Salwitz
In Part 2 of this series we'll look at how knowing some of the tips and tricks of marketing YOUR colors can help boost sales.

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In the August 2012 issue of *GrowerTalks*, we published an article on research we were conducting at the University of Maryland on Brown Marmorated Stink Bugs (BMSB) in greenhouses. Since then, the BMSB has been reported in eight additional states, bringing the total to more than 38 states.

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Go Where the Money Is It's said that Master Thief Willie Sutton was asked why he robbed banks. His response was "because that is where the money is." That logic also applies to where Congress and the Administration should focus their attention in the next round of debates on revenue and spending.
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Lessons From FarmVille & Apple There isn't any one silver bullet for success, so the place to start is by understanding the people who make up the next generation and how they're different from their parents.
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The Evolution of a True Green Thumb When Yaacov Teplow-Phipps moved from Manhattan to a Hudson River town 25 miles to the north to open Garden Thyme NY, his resume changed as well as his address.
- 86 | **Growers Talk Business** | by Gary Mangum
Death, Taxes & Spring They say in life there are two things you can count on: death and taxes. In our business (and since the Mayans were wrong), we include spring on that list of guarantees.
- 88 | **Acres & Acres** | by Chris Beytes
Cheer Up, Dale If you know Dale Buist, then you know I'm being facetious. I haven't known Dale long myself, but I get the sense you rarely see him in a bad mood. This guy exudes joie de vivre.

GROWERTALKS

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Research

BY RYAN WARNER, ERIK RUNKLE,
SONALI PADHYE & CATHY WHITMAN

Controlling Flowering of Echinacea

Do you have problems with getting your echinacea to grow consistently? Some members of the Floriculture Research Alliance have advice on how to influence uniform flowering.













Scheduling plants for uniform flowering can be challenging. Flowering time of echinacea cultivars is often highly variable. We've been conducting research at Michigan State University over the past several years to improve our understanding of the factors influencing flowering of echinacea in an effort to develop commercial guidelines for uniform flowering.

Many plants flower in response to changes in day and night length—a phenomenon termed photoperiodism. Plants may be described as long-day, short-day or day-neutral for flowering. Within the long-day and short-day responses, plants can be further divided into having an obligate (or qualitative) response or a facultative (or quantitative) response. For example, plants with an obligate long-day response must be exposed to long days or flowering will not occur. In contrast, plants with a facultative response will flower earlier if exposed to the appropriate photoperiod, but will eventually flower under any photoperiod.

Long-day plants are induced to flower when the day length exceeds a species-specific "critical" length. It's actually the length of the night that's of primary importance. Thus, long-day plants are induced to flower when the night is shorter than a species-specific critical length. This explains why night-interruption lighting is effective for inducing flowering of long-day plants and also for preventing flowering of short-day plants, such as poinsettias and chrysanthemums.

>>>

Flowering characteristics of various clonally propagated (vegetative and tissue culture) echinacea cultivars based on research performed at Michigan State University.

Cultivar & Description	Starting Material	Weeks to flower under long days at 68F (20C)	Height at flower (inches)
 'Amazing Dream' Well-branched plants have pink flowers with petals held horizontally	72-cell plugs from Terra Nova Tissue culture	10-12	20
 'Bravado' Common variety with deep bronze cone and slightly reflexed rose-colored petals	128-cell plugs from Raker's	14-15	35
 'Cranberry Cupcake' Compact with numerous double pink flowers	72-cell plugs from Terra Nova Tissue culture	8-10	18
 'Fancy Frills' Selection of <i>E. purpurea</i> ; Double pink/purple flowers with frilly petals	72-cell plugs from Terra Nova Tissue culture	17	23
 'Fragrant Angel' Selection of <i>E. purpurea</i> ; Fragrant white flowers with yellow cones	72-cell plugs from Terra Nova Tissue culture	10	30
 'Green Eyes' Selection of <i>E. purpurea</i> ; Magenta flower color and green center	72-cell plugs from Terra Nova Tissue culture	13	24
 'Harvest Moon' Hybrid of <i>E. purpurea</i> and <i>E. paradoxa</i> ; Large yellow flowers with golden cone	30-cell plugs from Langeveld Tissue culture	10	26
 'Kim's Knee High' A dwarf selection of <i>E. purpurea</i> ; Pink petals are reflexed	30-cell plugs from Langeveld Tissue culture	9	22
 'Lilliput' This <i>E. purpurea</i> selection has a dwarf habit and medium-sized rose purple flowers	72-cell plugs from Terra Nova Tissue culture	14	17
 'Little Giant' Selection of <i>E. purpurea</i> ; Compact with large flowers; Deep pink petals	72-cell plugs from Terra Nova Tissue culture	16	13
 'Little Magnus' Another compact selection of <i>E. purpurea</i> ; Wide pink petals are not reflexed	30-cell plugs from Langeveld Tissue culture	9	18
 'Magnus' <i>E. purpurea</i> Perennial Plant of the Year in 1998; Deep pink petals that stay horizontal or reflex only slightly	30-cell plugs from Langeveld 128-cell seedlings from Raker's	10 10	34 39

Research

Short-day/long-day plant

The photoperiodic response of echinacea appears to be more complex than a simple short-day or long-day response. In fact, echinacea appears to have a “dual” photoperiodic requirement. Flowering occurs earliest if plants have been exposed to a period of short days followed by a period of long days. Thus, echinacea is referred to as a short-day/long-day plant, which can complicate crop scheduling.

Determining the critical photoperiods to satisfy the short-day and long-day requirements for flowering of echinacea would aid in scheduling crops to flower early and uniformly. Some day lengths, in particular 14 hours, appear to satisfy both the short-day and long-day photoperiod requirements, and thus growing plants under a constant 14-hour photoperiod (with a 10-hour dark period) promotes early flowering.

The exact “critical” day lengths for the short-day and long-day requirements of echinacea are unknown. We were interested in determining whether a 12-hour day would be sufficient to satisfy both photoperiod requirements for echinacea cultivars that flower the first year from seed. In the northern hemisphere, the day length reaches 12 hours in mid-March. Thus, if 12-hour days were sufficient to satisfy both the short-day and long-day requirements, this would facilitate forcing of early season echinacea crops without using supplemental lighting.

The 12-hour test

To evaluate the effectiveness of 12-hour days in satisfying the long-day requirement, we grew four echinacea cultivars that flower the first year from seed: Cheyenne Spirit, Prairie Splendor, PowWow White and PowWow Wild Berry under a range of photoperiod treatments. Treatments included constant exposure to a particular photoperiod or exposure to 9-hour days for two, four, six or eight weeks, followed by exposure to either 12-hour days or night-interruption lighting. Constant photoperiod treatments were 9-, 12- or 14-hour days or 9-hour days plus four hours of night-interruption lighting.

For all cultivars, flowering was most rapid and uniform for plants grown under a constant photoperiod of 14 hours, confirming the effectiveness of this day length to satisfy both the short-day and long-day requirements. This experiment was performed twice, once in winter and again in the spring. In the spring repli-

Flowering characteristics of various donally propagated (vegetative and tissue culture) echinacea cultivars based on research performed at Michigan State University.

	Cultivar & Description	Starting Material	Weeks to flower under long days at 68F (20C)	Height at flower (inches)
	'Mars' This selection of <i>E. purpurea</i> has large orange cones, surrounded by rose purple petals	72-cell plugs from Terra Nova Tissue culture	12	37
	'Orange Meadowbrite' Hybrid of <i>E. purpurea</i> and <i>E. paradoxa</i> ; Narrow orange reflexed petals and dark brown cone	30-cell plugs from Langeveld Tissue culture	7	24
	'Raspberry Tart' Compact plants produce numerous flowers with dark pink petals that are slightly reflexed	72-cell plugs from Terra Nova Tissue culture	8-9	14
	'Razzmatazz' Selection of <i>E. purpurea</i> ; Pink flowers with a cushion of short petals in the center and larger reflexed petals on the edge	30-cell plugs from Langeveld Tissue culture	9	28
	'Ruby Star' Selection of <i>E. purpurea</i> ; Vigorous and tall-growing; Pink petals are not reflexed	Seedlings from Raker's	11	34
	'Secret Passion' Good branching and unique salmon-pink double flowers	72-cell plugs from Terra Nova Tissue culture	7-8	24
	'Sunrise' Hybrid of <i>E. purpurea</i> and <i>E. paradoxa</i> ; Petals are sunny yellow and not reflexed	72-cell plugs from Ball Tissue culture	13	33
	'Sunset' Hybrid of <i>E. purpurea</i> and <i>E. paradoxa</i> ; Coral reflexed petals and rust-colored cone	30-cell plugs from Langeveld Tissue culture	10	31
	'Tangerine Dream' Showy orange flowers have broad reflexed petals	72-cell plugs from Terra Nova Tissue culture	12	27
	'Tiki Torch' Flowers are large with orange petals held horizontally	72-cell plugs from Terra Nova Tissue culture	8	25
	'Twilight' Hybrid of <i>E. purpurea</i> and <i>E. paradoxa</i> ; Reflexed rose red petals with reddish cone	30-cell plugs from Langeveld Tissue culture	10	29

cation for all cultivars, growing plants under 9-hour days for six or eight weeks followed by exposure to night-interruption lighting, resulted in a similar time to flower as growing plants under a constant 14-hour photoperiod, likely a result of the higher light levels for the spring experiment.

Growing plants under a 12-hour photoperiod after exposure to 9-hour days delayed flowering compared to plants grown under night-interruption lighting or >>>