



The American GARDENER[®]

The Magazine of the American Horticultural Society

January / February 2014

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Cupheas

New Plants for 2014

The Basics of
Vermicomposting

Parsley's
showy
Siblings

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dark, and
handsome
has a
whole other
meaning.



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NOTES FROM RIVER FARM

WITH THE holiday festivities behind us and a new year before us, it's a good time for reflecting on the successes—and challenges—of the previous year, as well as for anticipating and planning the season ahead. Here at our River Farm headquarters, we rounded out 2013 with our annual holiday reception in December to thank our volunteers and other friends for another great year.

This event reinforces for us that the lifeblood of the AHS is the many wonderful people who come together to help us achieve our mission. In addition to you, our loyal members, this includes the small army of volunteers and other friends in the community as well as around the country. We are immeasurably grateful for the talents and other contributions each invests in our success, making it possible for us achieve new heights each year. Together we will continue to make America a nation of gardens, a land of gardens!

The winter months also provide an opportunity to reflect upon our gardens as we eagerly anticipate the next growing season. Gardens, whether large or small, are never static as we add,

replace, and experiment. If you are looking to try something new, this issue of *The American Gardener* includes our annual roundup of intriguing plant varieties debuting this spring (page 12). And don't miss our list of seeds available to you through our Members-Only Seed Exchange program (page 57). You can choose from almost 200 different seeds, which include rare varieties as well as old favorites.

A sure way to spice up your garden is with brightly colored flowers. Members of the genus *Cuphea* certainly pack a punch with their hot-hued blooms, and in our article about them (page 32) you'll discover some of the most flamboyant ones to grow—as a bonus, they attract hummingbirds. Or perhaps your garden resolutions include exploring a new technique. For example, if you've never tried vermicomposting, our article about it (page 28) offers basic guidelines for putting worms to work turning your kitchen scraps into a rich soil amendment.

During the colder months, many gardeners find new ideas and inspiration at flower shows, exhibitions, conferences, and other events throughout North America. Check our "Regional Happenings" section (page 54) to find out what's coming up in your area. Additional events are listed on our website (www.ahs.org).

In this New Year, we hope you will continue to help the AHS's vision and mission come alive by getting even more involved in gardening. From planting a tiny seed to creating vast landscapes, nurturing plants often results in rewards well beyond our expectations. This is especially true if we share our passion with neighbors, friends, and—most important—the next generation of younger gardeners.

We wish you a healthy, happy, and rewarding New Year!

Harry Risetto, Chair, AHS Board of Directors
Tom Underwood, Executive Director

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MEMBERS' FORUM

ANOTHER OSAGE-ORANGE CHAMPION?

I just saw your web special on the locations of notable and large Osage-orange trees. Very interesting! I thought you might like to add the national co-champion tree, estimated at 350 years old, is on the grounds of the Hagley Museum in Wilmington, Delaware, where it is accessible to the public.

*Jim Resch
Bear, Delaware*

WESTERN OSAGE SPECIMEN

Thanks for publishing the article on Osage-orange trees (November/December 2013). I work at the Rancho Los Cerritos Historic Site in Long Beach, California, which has a single female Osage-orange tree that dates to the 1840s. The tree was integrated into the estate garden Ralph Cornell designed in 1931 for the Bixby family. Today the tree's generous supply of fruit continues to astonish, amaze, and amuse visitors, who liken the peculiar fruit to green brains!

*Marie Barnidge-McIntyre
Rancho Los Cerritos Historic Site
Long Beach, California*

OSAGE-ORANGES IN ARRANGEMENTS

After reading the Osage-orange article, AHS member Amalie Ascher, a former garden columnist with the *Baltimore Sun* and author of *The Complete Flower Arranger* (1974), called to let us know that



A sliced Osage-orange fruit is the focal point of this arrangement by Amalie Ascher.



This stately Osage-orange tree is located near Piasa, Illinois.

she enjoyed using Osage-orange fruits in floral arrangements and crafts. Now retired and living in Baltimore, she sent along this image of one of her designs.

BEAUTIFUL BARRIERS

The article on "Beautiful Barriers" (November/December) includes trifoliolate or hardy orange, which is a great plant that deserves wider use in gardens. I wanted to mention that its scientific name, *Poncirus trifoliata*, has been changed to *Citrus trifoliata*.

*Charles Heuser
Professor Emeritus
Pennsylvania State University
Carlisle, Pennsylvania*

Editor's note: Taxonomists have indeed revised the name of trifoliolate orange, but the change hasn't really filtered down to American gardeners and nurseries yet. Expect to see the plant listed under both names for a while to come.

BULB SOURCES

I noticed that you omitted one of my favorite source for bulbs, McClure & Zimmerman, in the sources you listed with the article "Great Bulbs That Last" (Septem-

ber/October 2013). I'm sure your source list was not intended to be comprehensive, but I do think McClure & Zimmerman is a reliable company with an excellent catalog—no fancy colored pictures, but clear illustrations and helpful descriptions.

*Dorothy Smith
Meadville, Pennsylvania*

CORRECTIONS

AHS members Glenn Herold of Cedarburg, Wisconsin, and Judith Joy of Centralia, Illinois, pointed out an error that the editors introduced into Guy Sternberg's article on Osage-orange trees. The botanical term for plants that bear male and female flowers on separate plants is **dioecious**.

In the article "American Arborvitae" by Daniel Mount (November/December 2013), we misspelled the name of Ed Hasselkus, emeritus professor of horticulture at the University of Wisconsin in Madison and curator of the university's Longenecker Horticultural Gardens. 🌿

PLEASE WRITE US! Address letters to Editor, *The American Gardener*, 7931 East Boulevard Drive, Alexandria, VA 22308. Send e-mails to editor@ahs.org (note Letter to Editor in subject line). Letters we print may be edited for length and clarity.



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THE AMERICAN HORTICULTURAL SOCIETY TRAVEL STUDY PROGRAM 2014 TOURS



~ TOUR SPOTLIGHT ~

Gardens of Gloucestershire & the Chelsea Flower Show May 16–24, 2014

Spring will be in full glory during this not-to-be-missed trip to Gloucestershire. This area in southwestern England is rich in history and features splendid formal landscapes and charming informal gardens. We will also visit London to explore the Chelsea Flower Show, which is internationally known for its spectacular horticultural displays and garden designs. Verity Smith of Specialtours will serve as tour leader.

Accommodations are limited; please make reservations early.

~ Other 2014 Travel Destinations ~

Gardens, Wine, and Wilderness: A Tour of New Zealand

January 11–26, 2014 **SOLD OUT**

Private Gardens of Normandy and Paris

September 9–19, 2014

For more information about the AHS Travel Study Program,
visit www.ahs.org/gardening-programs/travel-study
or contact Joanne Sawczuk at jsawczuk@ahs.org; (703) 768-5700 ext. 132.

Participation in the Travel Study Program supports the American Horticultural Society and its vision of Making America a Nation of Gardeners, A Land of Gardens.



CONTACTS FOR AHS PROGRAMS, MEMBERSHIP BENEFITS & DEPARTMENTS

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INTERNSHIP PROGRAM The AHS offers internships in communications, horticulture, and youth programs. For information, send an e-mail to education@ahs.org. Information and application forms can also be found in the Gardening Programs area of www.ahs.org.

NATIONAL CHILDREN & YOUTH GARDEN SYMPOSIUM For information about the Society's annual National Children & Youth Garden Symposium, e-mail education@ahs.org or visit the Gardening Programs section of www.ahs.org.

RECIPROCAL ADMISSIONS PROGRAM The AHS Reciprocal Admissions Program offers members free admission and other discounts to nearly 300 botanical gardens and other horticultural destinations throughout North America. A list of participating gardens can be found in the Gardening Programs area of www.ahs.org. For more information, call (800) 777-7931 ext. 119.

RIVER FARM The AHS headquarters at River Farm is open 9 a.m. to 5 p.m. weekdays year-round (except Federal holidays), and 9 a.m. to 1 p.m. Saturdays from April through September. For information about events, rentals, and directions, visit the About River Farm section of www.ahs.org.

TRAVEL STUDY PROGRAM Visit spectacular private and public gardens around the world through the Society's acclaimed Travel Study Program. For information about upcoming trips, call (703) 768-5700 ext. 132, send an e-mail to jsawczuk@ahs.org, or visit the Gardening Programs section of www.ahs.org.

WEBSITE: www.ahs.org The AHS website is a valuable source of information about the Society's programs and activities. Users must set up a username and password to access the member's-only sections.

News from the AHS

January / February 2014

PROGRAMS • EVENTS • ANNOUNCEMENTS

NEW COLLABORATION AIMS TO INCREASE AWARENESS OF HORTICULTURE

THE AMERICAN HORTICULTURAL SOCIETY (AHS) has joined with a coalition of major horticultural organizations in supporting a multi-year campaign to promote public awareness of horticulture and interest in horticulture education programs and careers. In addition to the AHS, the initial sponsoring organizations of this initiative include the **American Society for Horticultural Science**, the **American Public Gardens Association**, the **National Junior Horticultural Association Foundation**, **Longwood Gardens**, and **AmericanHort** (the newly formed trade organization that merged the OFA and the American Nursery & Landscape Association).

"Unfortunately, horticulture is under siege," states a white paper the group sent to horticultural colleagues nationwide last December to instigate a coordinated effort to improve public awareness of horticulture. "We are concerned that, for those aware of horticulture, the perception is increasingly negative, while much of the general public, especially young people, appear to have little or no awareness of the importance and value of horticulture. This has resulted in a loss of influence among governmental agencies at various levels and a reduction in students considering horticulture as a career."

The coalition's initial proposal is to fund a study to assess public perceptions of horticulture education programs in high schools, youth groups, and colleges. Based on the results of the study, the next proposed step would be the creation of a marketing plan that would promote horticulture to students in higher education and the general public, and also aim to ensure that horticulture is prominently integrated in science, technology, engineering, and math initiatives and other federal science standards and curricula.

"Often in our work we find ourselves preaching to the proverbial choir. This initiative is a critical step towards widening the circle of people who understand and value the significant contribution that horticulture makes to our quality of life," says AHS Executive Director **Tom Underwood**. "We look forward to working closely with colleagues throughout the country on this important project."

2014 TRAVEL STUDY PROGRAM DESTINATIONS

AS YOU'RE THINKING about vacation plans for the year, consider joining other AHS members on one of two exceptional Travel Study programs scheduled this year—either a late spring visit to England or a fall tour of French gardens in both Normandy and Paris. Designed with the traveling gardener's interests in mind, these tours offer participants exclusive opportunities to view unforgettable gardens as well as meet the people behind them. Each trip also includes visits to sites of historical and cultural significance to provide a well-rounded experience.



The spring trip to England will include a day at the world-renowned Chelsea Flower Show.

From May 16 to 24, join AHS Executive Director **Tom Underwood** and his wife, **Jane**, for the Travel Study program, "Gardens of Gloucestershire & the Chelsea Flower Show" in England. The

tour will feature visits to Barnsley House, former home of legendary garden designer Rosemary Verey, and the great gardens of Hidcote Manor and Bowood House, along with several smaller private gardens. This trip will conclude with a full day in London at the Chelsea Flower Show.

Then from September 9 to 19, AHS President Emeritus **Katy Moss Warner** will host the Travel Study program, "Gardens of Normandy with Paris." While exploring the rolling French countryside,



The gardens at Giverny are among the many stellar attractions on the Normandy tour.

participants will visit Claude Monet's famous gardens at Giverny, historic landmarks along the Normandy coastline—including sites of the Allied landings in World War II—and several spectacular public and private gardens along the way. In Paris, the group will explore the Tuileries Garden, adjacent to the Louvre museum, and Patrick Blanc's celebrated vertical garden at the Quai Branly Museum.

Complete itineraries are available on the AHS website, or contact **Joanne Sawczuk** at (800) 777-7931, ext. 132 or jsawczuk@ahs.org for more details.



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AHS 2014 NATIONAL EVENTS CALENDAR

Mark your calendar for these upcoming events that are sponsored or co-sponsored by the AHS. Visit www.ahs.org or call (703) 768-5700 for more information.

APRIL 4 & 5. **Great Gardens and Landscaping Symposium.** Manchester, Vermont.

APRIL 5–7. **Colonial Williamsburg Garden Symposium.** Williamsburg, Virginia.

APRIL 10–12. **Spring Garden Market.** (10th is AHS members-only preview sale.) River Farm, Alexandria, Virginia.

APRIL 26–MAY 3. **Historic Garden Week in Virginia.**

MAY 15 & 16. **Coalition of American Plant Societies Meeting.** River Farm, Alexandria, Virginia.

MAY 16–24. **Gardens of Gloucestershire & the Chelsea Flower Show.** England. AHS Travel Study Tour.

JUNE 5. **AHS Great American Gardeners Awards Ceremony and Banquet.** River Farm, Alexandria, Virginia.

JULY 17–19. **AHS National Children & Youth Garden Symposium.** Columbus, Ohio.

AUGUST 15–17. **Homestead Resort's In the Garden Weekend.** Hot Springs, Virginia.



THE AMERICAN HORTICULTURAL SOCIETY'S 22ND ANNUAL

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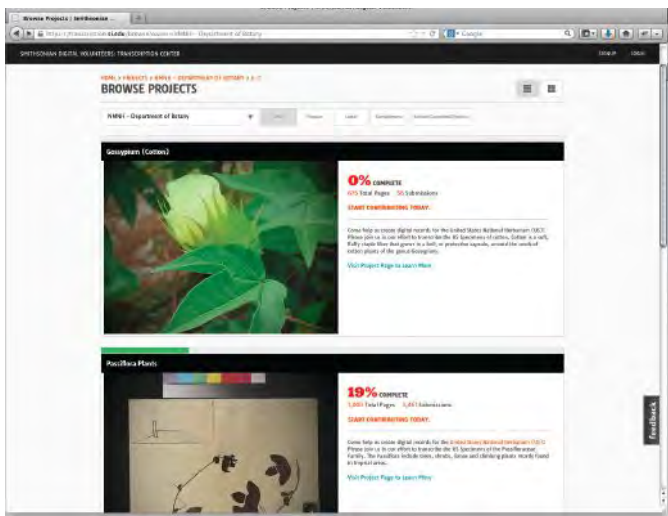
July 17-19, 2014 • Columbus, OH

2014 GREAT GARDENS AND LANDSCAPING SYMPOSIUM

JOIN HUNDREDS OF other gardeners for the 11th annual Great Gardens and Landscaping Symposium, held April 4 and 5 at the Equinox Resort in Manchester, Vermont. Along with the symposium's founder and organizer, **Kerry Ann Mendez**, this year's event will feature informative presentations by several horticultural luminaries including **David L. Culp**, **Thomas Christopher**, **Deborah Trickett**, and **Adam R. Wheeler**. Other highlights include a Garden Marketplace showcasing plant vendors, artisans, gardening gifts, and products. A new addition to the program this year is a special Garden Design Workshop hosted by Mendez. The AHS is a partner organization for this event. For more information, visit www.pyours.com/symposium or call (207) 502-7228.

SMITHSONIAN HERBARIUM NEEDS YOU

THE SMITHSONIAN INSTITUTION, based in Washington, D.C., is inviting AHS members to help increase the world's plant knowledge. All you need is a computer, an internet connection, and some free time. The U.S. National Herbarium at the Smithsonian holds millions of preserved plant specimens, most of which only have handwritten collection labels. Over the last several years, many of these specimens have been digitized. Now the Smithsonian's Transcription Center needs volunteers to view the collection labels online and transcribe them so researchers can search for and access the information more easily.



On the Smithsonian's transcription site, volunteers can choose from among a variety of projects to transcribe.

The Herbarium's holdings include species collected in the last 200 years from all over the globe, which makes it among the top 10 largest collections in the world. These specimens represent a "snapshot" of what a species looked like at a given time in history. "Through this information, scientists can develop taxonomic descriptions, and floral checklists for geographic destinations," says **Jason Shen**, Presidential Innovation Fellow at the Smithsonian Institution and one of the core team members in its Transcription Center. The information from the Herbarium helps scientists designate plant species as being rare or extinct in a specific area, if they know what existed in years past. Another

benefit of digitization is that the original specimens don't need to be handled as much. "It is our goal to digitize the entire U.S. Herbarium," says Shen.

To learn more about the project, or to volunteer, visit <https://transcription.si.edu/about>.

2014 AHS MEMBERS-ONLY SEED EXCHANGE

PORING OVER seed catalogs is a wintertime rite for many gardeners, giving us license to dream big about our gardens and begin planning what to plant in the upcoming growing season. To make the process even more special, you have a chance to select from seed offerings provided by AHS members around the country, along with some generous seed companies!

Check out the list of seeds available through the 2014 AHS Seed Exchange by turning to page 57 of this issue—you can order your seeds using the convenient form on page 59. A catalog with complete descriptions of each plant and an online order form will be available by mid-January on the AHS web-

Gifts of Note

In addition to vital support through membership dues, the American Horticultural Society relies on grants, bequests, and other gifts to support its programs. We would like to thank the following donors for gifts received between November 1, 2013, and December 31, 2013.

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If you would like to support the American Horticultural Society as part of your estate planning, as a tribute to a loved one, or as part of your annual charitable giving plan, please contact Scott Lyons at slyons@ahs.org or call (703) 768-5700 ext. 127.

site (www.ahs.org/seeds), or you may send a request to seeds@ahs.org to receive the catalog by e-mail.

The Seed Exchange is a benefit of AHS membership, so only current members may order from the catalog. Those AHS members who donated seeds will receive priority on orders submitted by February 15. Some seeds are in short supply, so don't delay; the deadline to submit all seed orders is March 15.

SAVE THE DATE: SPRING GARDEN MARKET

IT MAY still be winter in many parts of the country, but it's not too early to mark your calendars for the AHS's annual Spring Garden Market, held at the Society's River Farm headquarters in Alexandria, Virginia. From April 10 to 12, vendors from across the mid-Atlantic region will be offering a wide variety of annuals, perennials, native wildflowers, vegetables and other edibles, and more. Garden-related products such as books, hand-made jewelry, and outdoor accessories also will be available. AHS members are invited to attend the members-only preview sale on April 10, before the sale opens to general public on April 11 and 12. More details will be coming soon.



COLONIAL WILLIAMSBURG GARDEN SYMPOSIUM

THIS YEAR'S 68th annual Colonial Williamsburg Garden Symposium, "Home Grown: Turning Garden Treasures into Daily Pleasures," will take place April 5 through 7 in Williamsburg, Virginia. The AHS is honored to have had a long-running involvement with this outstanding horticultural program, and is a co-sponsor of this year's event, which will focus on organic gardening and living lightly. Guest speakers and Colonial Williamsburg staff members will make presentations on topics such as brewing beer, garden-to-table meals, herbs, heritage breeds, natural dyes, and more. AHS members are eligible for a discounted registration fee. For more information, visit www.history.org/conted or call (800) 603-0948.

2014 AMERICA IN BLOOM COMPETITION

AMERICA'S TOWNS and cities are invited to participate in the annual America in Bloom (AIB) competition. Winners of the best public garden displays and green spaces are awarded based on efforts in management, maintenance, improvement, and innovation in a variety of categories. As a horticultural partner with AIB, the AHS sponsors the Community Involvement Award, given to communities that demonstrate exemplary cooperation and service.

The deadline for participants to enter the 2014 contest is February 28. Participants will receive 25 percent off their registration fee for referring new communities to the competition. For more information, visit www.americainbloom.org or call (614) 487-1117.

News written by AHS staff.



Colonial Williamsburg — 68TH COLONIAL WILLIAMSBURG — GARDEN SYMPOSIUM

HOME GROWN: *Turning Garden Treasures into Daily Pleasures* APRIL 5-7, 2014

Guest speakers and Colonial Williamsburg staff will share their expertise on the concept, design, maintenance, and pleasures of organic gardening and living lightly — from the ground up. Topics include brewing beer, fragrance, garden-to-table meals, herbs, heritage breeds, natural dyes, and more!

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ORGANIC
Gardening

New for 2014

BY MARY YEE

IT MIGHT BE a bit of a cliché, but gardening really is an act of optimism, nowhere so apparent than in seed and plant catalogs this time of year when a slew of new varieties are introduced, most with the hope they are somehow better than what came before. Sure, some won't pan out, but part of the fun of gardening is trying something different.

How we navigate through the sea of new introductions varies from gardener to gardener. **Nancy Ondra**, a garden writer in Bucks County, Pennsylvania, says, "I'm always on the lookout for outstanding orange flowers." **Paul Lee Cannon**, a writer and garden consultant in Oakland, California, tends to gravitate towards offerings from a handful of companies with which he is familiar—one of them being Terra Nova Nurseries. "They are based in Oregon," says Cannon, "and most of their plants would work in [San Francisco] Bay area conditions." **Rita Pelczar**, a contributing editor for this magazine and an avid vegetable gardener in the mountains of North Carolina, says, "I look for heat resistance for spring crops such as lettuce and spinach, so I can enjoy them longer

after the weather warms up. I also look for cold tolerance for crops I plant in fall."

We asked these horticultural professionals and others across the country for recommendations of plants that performed well for them in trials last year and will be widely available this spring. Among those we consulted are **David Graper**, professor of horticulture and director of McCrory Gardens at South Dakota State University in Brookings; **Denny Schrock**, State Master Gardener Coordinator at Iowa State University in Ames; **Mark Dwyer**, director of horticulture at Rotary Botanical Gardens in Janesville, Wisconsin; **Robert Bowden**, director of Leu Gardens in Orlando, Florida; and **Vincent Simeone**, a horticulturist and garden writer in Oyster Bay, New York.

Among the plants that excelled for our experts are Shooting Star hellebore (page 13), 'Mighty Mosaic' coleus (page 14), and Sweet Lifeberry™ goji berry (page 15). Grow a new variety or two in your garden this spring. You just might find a real winner. 🌱

Mary Yee is managing editor and art director of The American Gardener.

PERENNIALS



BLOOMS OF BRESSINGHAM

***Echinacea purpurea* Supreme™ 'Cantaloupe'** is a double-flowered coneflower in a luscious new color. Young flowers have darker centers that eventually turn light orange. Plants grow 24 to 29 inches tall. Mark Dwyer says this selection had "a heavy flower count and strong stems," minimizing flopping. Zones 4–9, 9–1. Blooms of Bressingham, Terra Nova Nurseries.



STAR® ROSES AND PLANTS

Dark Blue Moody Blues veronica (*Veronica spicata* 'Novoverblu') bears dense spikes of deep blue flowers all summer long on compact plants that grow only 12 to 14 inches tall and wide. Other colors in this series include Light Blue Moody Blues, Mauve Moody Blues, and Pink Moody Blues. Zones 3–8, 8–1. Star® Roses and Plants.



SKAGIT GARDENS

'Beyond Blue' fescue (*Festuca glauca*) is a winner for Mark Dwyer, who notes the grass's "steely blue color was intense and experienced no fading in the hot summer." Plants grow 9 to 12 inches high and 18 inches wide and are suited for growing in containers or planted *en masse* in beds and borders. Zones 4–8, 8–1. Skagit Gardens and Southern Living Plant Collection.



SKAGIT GARDENS

Gold Collection® Shooting Star hellebore (*Helleborus xericsmithii* 'COSEH 790') features forward-facing white flowers that bloom in late winter and age to pink and pale green. Denny Schrock says its "rich green foliage holds up into early winter." Rita Pelczar enjoys "the lovely contrast between the red stems and dark green leaves." Plants grow 18 to 22 inches high and 24 inches wide. Zones 5–9, 9–5. Skagit Gardens.



WALTERS GARDENS

The eye-catching white-and-green-variegated leaves of '**Desert Diamond**' agave or century plant (*Agave* hybrid) grow in neat rosettes 12 to 15 inches tall and 18 inches wide. The spines on the thick leaves start out yellow, maturing to a dark red-brown. This plant is ideal for desert gardens and grows well in containers in more temperate regions. Zones 9–11, 11–5. Walters Gardens.



JELITTO

Perfect for rock and trough gardens, '**Rose Bells**' pasqueflower (*Pulsatilla vulgaris*) bears rose- and cherry-pink flowers with bright yellow centers in spring. Plants grow to 12 inches high with downy, fernlike foliage. Zones 5–7, 7–5. Jelitto.



WALTERS GARDENS

A reblooming daylily that flowers in late spring, **Hemerocallis 'Midnight Raider'** produces large ruffled, fragrant, red-purple blossoms with yellow halos and green throats. Plants grow 30 inches tall. Zones 3–9, 9–1. Walters Gardens.



TERRA NOVA NURSERIES

Coreopsis 'Bengal Tiger' is a vigorous tickseed with two-inch-wide yellow-and-rust-red flowers that bloom all summer. Drought- and heat-tolerant plants grow about 20 inches tall and 24 inches wide. Zones 5–9, 9–1. Terra Nova Nurseries.

Additional new perennials

- **Pennisetum alopecuroides 'Burgundy Bunny'** is a compact fountain grass that grows eight to 18 inches high and 12 to 18 inches wide; leaves are green with red in summer, turning all red in autumn; cream-colored plumes of flowers appear in late summer. Zones 5–9, 9–1. Bailey Nurseries.
- **Andropogon gerardii 'Rain Dance'** is a selection of native big bluestem with spiky, deep green foliage with red tips that turn entirely red in autumn. It grows to about six feet tall. Zones 3–9, 9–1. Emerald Coast Growers.
- **Helenium 'Short 'n' Sassy'**, a diminutive sneezeweed that grows 12 to 18 inches tall and 24 inches wide, bears loads of bright orange and yellow flowers with brown centers. Rita Pelczar says, "It bloomed continuously until mid-fall and has a neat, compact habit." Zones 4–8, 8–1. Skagit Gardens.
- **Heucherella 'Buttered Rum'** features glossy caramel-colored maplelike foliage that turns red in autumn. Denny Schrock notes its "warm coppery tones hold up through the heat and humidity of the Midwest." Zones 3–8, 8–1. Blooms of Bressingham.



BALL HORTICULTURAL COMPANY

'Mighty Mosaic' coleus (*Solenostemon* hybrid) was rated "superior" at the Penn State Trials. It also gets high marks from Robert Bowden: "If an annual makes it through a full summer in Florida, it has to be tough. 'Mighty Mosaic' is in the top five of the best coleus we have grown in the last several years. We received rave reviews from our guests about the intense mottled shades of burgundy and chartreuse. It's a strong grower and it flowers very, very late in the fall." Plants grow 18 to 24 inches tall and fare best in shade, but Mark Dwyer notes, "this variety was a solid asset in the full sun garden—with adequate moisture." Pan American Seed Company and Ball Horticultural Company.



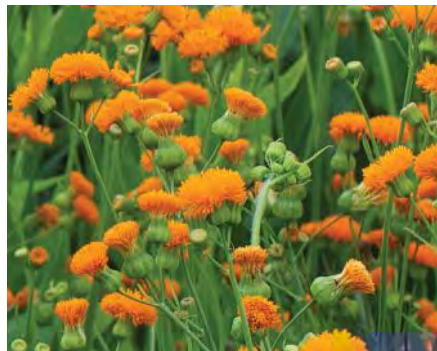
BALL HORTICULTURAL COMPANY

David Graper says *Petunia ×hybrida* **'Ching Cherry'** is "a great petunia with creamy-white flowers with vibrant cherry stripes and yellow throats. Plants were covered with flowers all summer long." Mark Dwyer adds, "It performed very well in containers." Plants grow 10 to 16 inches tall. Ball Horticultural Company and Burpee.



PROVEN WINNERS

"For a bright, polar white shot of color in your display, you can't go wrong with this beauty," says Robert Bowden of **Whirlwind® White fan flower** (*Scaevola aemula*). "It held up for us in our intense heat and high humidity and was perfect in hanging baskets." The small flowers bloom on stems that trail to 24 inches. Proven Winners.



SELECT SEEDS

If, like Nancy Ondra, you like orange flowers, try **'Irish Poet' tassel flower** (*Emilia javanica*). This is actually a rare heirloom plant that is being reintroduced to today's gardens. Ondra says it "was a star in my hot-color garden from June through October. The tufted, bright orange flowers of this easy-to-grow sun-lover appear at the tips of slender, lightly branched stems reaching 18 to 24 inches tall, adding dots of eye-catching color." Select Seeds.

Additional new annuals

- **Zahara™ Sunburst zinnia** (*Zinnia marylandica*) grows 12 to 18 inches tall, has good disease resistance, and is ideal for sunny, hot, and dry areas. David Graper says, "Great mounded plants held their lovely orange and rust-red pin-striped flowers just above the foliage, which helps hide the older faded flowers. It looked great all summer and fall." Pan American Seed Company, Ball Horticultural Company, Burpee.
- **Moonlight Eclipse™ petunia** (*Petunia ×hybrida*) bears continuously-blooming dark blue/purple flowers with a refreshing light green edging; mounding plants grow 12 to 14 inches tall. Suntory.
- **'Shock-o-Lat'** is a multi-branching sunflower (*Helianthus annuus*). Its six-inch-wide blooms have dark brown-red petals tipped in golden yellow. Plants grow to six feet tall and the flowers produce no pollen, making them a good choice for indoor floral arrangements. Park Seed.
- **'White Lightning' osteospermum** (*Osteospermum ecklonis*) produces white daisylike flowers on mounded plants to 18 inches tall and 20 inches wide. This heat-tolerant species is originally from Africa, where it is perennial; here it is grown primarily as an annual. David Graper says, "This is one of the few osteospermums that has bloomed all summer since planting and the well-branched plants look great, too." Burpee.

EDIBLES



PROVEN WINNERS

Sweet Lifeberry™ goji berry (*Lycium barbarum* 'SMNDSL') is a thorny deciduous shrub from Asia that bears bright red antioxidant- and protein-rich fruits in summer. Plants grow to 10 feet tall and five feet wide. The flavor of the fruit is both sweet and sour and has been variously compared to that of raisins, cranberries, and tomatoes. This selection promises extra-sweet fruit. Denny Schrock admits, "I was skeptical of goji berry, since I considered it a fad grown for its purported health benefits rather than fruit quality. However, I was pleasantly surprised by the appealing flavor of the attractive berries produced on a first-year plant. I can't wait for a bigger yield next year when the plant is more established." Zones 5–9, 9–1. Proven Winners.

Additional new edibles

- **Sugar Mountain™ Blue haskhap** (*Lonicera caerulea*) is a native honeysuckle with small, tubular fruits with a flavor described as a cross between blueberry and raspberry. Plants grow five to six feet tall and wide. Zones 2–8, 8–1. Spring Meadows, Proven Winners.
- **'Dragon's Tongue' arugula** is an attractive selection of wild rocket that has peppery-tasting green leaves with prominent red veins. Robert Bowden says, "We have used it as an ornamental in mixed containers with annuals and perennials. Smaller types of 'greens' often have a tough time in the Florida summer heat but 'Dragon's Tongue' came through unblemished." Johnny's Selected Seeds, Park Seeds, Gurney, J.W. Jung, and others.
- **'Muir' lettuce** is heat tolerant and forms full heads of light green ruffled leaves and resists many types of downy mildew. Johnny's Selected Seeds.
- **'Bam' basil** is highly heat tolerant and does not flower, so it continues to produce fragrant green leaves all summer long. Burpee.



FALL CREEK NURSERY

Brazelberries™ Blueberry Glaze™ blueberry (*Vaccinium* Blueberry Glaze™) is a compact two- to three-foot-tall shrub with glossy, dark green leaves reminiscent of boxwood; the foliage turns deep red in fall. The small mid-season fruits have a wild blueberry flavor. Zones 5–8, 8–1. Fall Creek Nursery.



BURPEE

If you like 'Early Girl' tomatoes, try **'Summer Girl' hybrid tomato**, which produces larger crops about a week earlier, between 49 and 52 days. The rounded five- to six-ounce fruits are good for slicing and eating fresh. Plants are highly tolerant of common tomato diseases such as verticillium and fusarium wilt. Burpee.



JOHNNY'S SELECTED SEEDS

'Adelaide' carrot is a true baby-sized hybrid selection that is only three to four inches long at maturity (about 55 days). The sweet orange roots don't have the tough cores of other so-called baby carrots, which are large carrot varieties harvested at an immature stage. Johnny's Selected Seeds.

TREES, SHRUBS, & VINES



PROVEN WINNERS

'Diamond Ball' clematis (*Clematis* hybrid) produces pale blue, double, four- to five-inch-wide flowers on both new and old wood all summer. Plants grow to six feet tall and three feet wide. Zones 4–9, 9–3. Proven Winners.



DAVID AUSTIN ROSES

The fully double scarlet flowers of **'Heathcliff' English rose** (*Rosa* Ausnippet) have a fragrance described as a mixture of tea rose and old rose with notes of cedar. Plants grow about three-and-a-half feet tall and three feet wide. Zones 5–9, 9–1. David Austin Roses.



BAILEY NURSERIES

First Editions® Pink Frost Florida anise tree (*Illicium floridanum*) is a keeper for Vincent Simeone, who says, the tree “offers creamy variegated leaves that turn pink in cold weather. This is complemented by a shrubby habit to six feet tall and wide or more and deep reddish maroon, star-shaped flowers in spring. This shrub is a real eye-catcher in the winter landscape and is virtually carefree once established—resisting drought, heat, and deer.” Zones 6–9, 10–9. Bailey Nurseries and Plant Introductions.



PROVEN WINNERS

'Lemon Lace' cutleaf elderberry (*Sambucus racemosa*) sports bright yellow-green foliage and grows three to five feet tall. Mark Dwyer says “this variety has a finer texture than the standard ‘Sutherland Gold’ variety and features the same orange spring highlights. An occasional severe rejuvenation pruning will promote vigorous and showy new growth. This is an eye-catcher in the full or part sun border and has container applications as well.” Zones 4–7, 7–1. Spring Meadows and Proven Winners.

Additional new trees, shrubs, and vines

- **Sweet Spot™ Decorator Rose™** (*Rosa* hybrid) is a new line of compact hybrid roses in four colors, each with dark pink-red centers: Calypso (scarlet and yellow); Peach (soft peachy pink), Ruby (deep pink and soft pink); and Yellow (bright yellow, maturing to soft yellow). Plants grow 16 to 24 inches high. Zones 5–10, 9–1. Anthony Tesselar International.
- **Blue Cascade distylium** (*Distylium* Blue Cascade®) is an Asian evergreen shrub in the witch hazel family. “This plant has great potential as a replacement for overused cherry laurel, euonymus, cotoneaster, and juniper, performing especially well in hot, humid climates,” says Vincent Simeone. Blue Cascade has a spreading habit, growing to three feet tall and four feet wide with blue-green foliage. “Distylium in the Northeast should be planted in partial shade, with some protection from the potentially harsh afternoon southern sun in winter,” Simeone advises. “It also works quite well in dense shade.” Zones 6–9, 9–5. Gardener’s Confidence Collection.
- **'Scentsation' honeysuckle** (*Lonicera periclymenum*) is a deciduous vine that blooms mid-spring through summer and climbs to 15 feet. Denny Schrock says “I especially like its extended showy display. Not only are the creamy yellow flowers colorful and fragrant, after blooms fade, the vine is loaded with brilliant red berries. As of yet, I’ve not seen a problem with self-seeding from the berries.” He adds that his plants “have withstood severe drought as well as several months of saturated soils followed by another drought, continuing to thrive and bloom well.” Zones 4–8, 8–4. Proven Winners.
- **Enchantress® hydrangea** (*Hydrangea macrophylla* ‘Monmar’) is a rebloomer with ruby-black stems; nine-inch-wide flowerheads (pink in alkaline soil, blue in acidic soil) bloom on old and new wood; shrubs grow three to four feet tall and three to five feet wide. Zones 5–9, 9–5. Monrovia.



J. FRANK SCHMIDT & SON

Skinny Genes oak (*Quercus robur* × *Q. alba* 'JFS-KW2QX') has a very narrow, columnar shape, growing to 45 feet tall and 10 feet wide. It has dark green foliage that turns yellow in autumn. Zones 4–8, 8–4. J. Frank Schmidt & Son.

Wholesale Nurseries/ Marketing Consortiums

Visit these companies' websites to locate retail sources for their plants.

- Anthony Tesselaar International**, www.tesselaar.com.
- Bailey Nurseries**, www.baileynurseries.com.
- Ball Horticultural Co.**, www.ballhort.com.
- Blooms of Bressingham**, www.bloomsofbressingham.com.
- Fall Creek Farm & Nursery**, www.fallcreeknursery.com.
- Gardener's Confidence**, www.gardenersconfidence.com.
- J. Frank Schmidt & Son**, www.jfschmidt.com.
- Monrovia**, www.monrovia.com.
- Plant Introductions**, www.plantintroductions.com.
- Proven Winners**, www.provenwinners.com.
- Skagit Gardens**, www.skagitgardens.com.
- Star Roses and Plants/Conard-Pyle**, www.starrosesandplants.com.
- Southern Living Plant Collection**, www.southernlivingplants.com.
- Suntory**, www.suntorycollection.com.
- Terra Nova Nurseries**, www.terravanurseries.com.
- Walters Gardens**, www.waltersgardens.com.

Retail Mail-Order Sources

- David Austin Roses**, Tyler, TX. www.davidaustinroses.com.
- Forestfarm**, Williams, OR. www.forestfarm.com.
- Great Garden Plants**, Holland, MI. www.greatgardenplants.com.
- Gurney's Seed & Nursery Company**, Greendale, IN. www.gurneys.com.
- Hirt's Gardens**, Medina, OH. www.hirts.com.
- Jelitto Perennial Seeds**, Louisville, KY. www.jelitto.com.
- J.W. Jung Seed Company**, Randolph, WI. www.jungseed.com.
- Johnny's Selected Seeds**, Winslow, ME. www.johnnyseeds.com.
- Park Seed**, Greenwood, SC. www.parkseed.com.
- Plant Delights Nursery**, Raleigh, NC. www.plantdelights.com.
- Raintree Nursery**, Morton, WA. www.raintreenursery.com.
- Reimer Seeds**, Saint Leonard, MD. www.reimerseeds.com.
- Select Seeds**, Union, CT. www.selectseeds.com.
- W. Atlee Burpee & Company**, Warminster, PA. www.burpee.com.
- Wayside Gardens**, Hodges, SC. www.waysidegardens.com.



MONROVIA

The bright evergreen foliage of **Golden Duchess™ eastern hemlock** (*Tsuga canadensis* 'MonKinn') grows on cascading branches and tolerates full sun. Shrubs grow three to four feet tall and three to five feet wide. Zones 4–7, 7–3. Monrovia.



BAILEY NURSERIES

Bred by University of Georgia horticulturist Michael Dirr, **First Editions® Cobalt-n-Gold™ hypericum** (*Hypericum* 'PIIHYP-I') is a mounded shrub that grows only two to three feet high with exfoliating bark. Its silver-green foliage turns red, yellow, and orange in autumn; three-quarter-inch yellow flowers bloom in late spring to early summer. Zones 4–7, 7–4. Plant Introductions and Bailey Nurseries.

the Sensory Lives of Plants

Scientists are still investigating the complex ways in which plants interact with the world around them.

BY GEOFF HODGE

IN THE WORDS of David Attenborough, the famous broadcaster and natural historian, “Plants can see. They can count and communicate with one another. They are able to react to the slightest touch and to estimate time with extraordinary precision.” This may seem fanciful, but the more that botanists learn about plants, the more they discover just how intimately plants are able to sense their environment.

Experienced gardeners will already have some inkling of this, but probably not to the extent to which it actually happens. Most people just think of plants as more or less inanimate objects, and this view can be forgiven because the time scale of plants is quite different to our own.

Most of us already know, however, that emerging shoots seek out the light, and that germinating seeds are able to sense gravity. Everybody knows that some flowers turn their heads to the sun, and some close at night. Others can even catch prey or fend off their enemies. The more we discover, the more examples we find. The sensory capa-



Sunflowers (*Helianthus annuus*), which orient themselves toward prevailing light as they grow, are an example of positive phototropism.

bility of plants is a phenomenon that botanists are only just beginning to understand.

SEEING LIGHT

It has been known for many years, since the very early experiments in the mid-17th century, that plants sense or “see” light and react to its presence by starting to photosynthesize. Nowadays botanists are able to describe a number of ways that plants respond to light: **photomorphogenesis**, which is the way a plant develops itself structurally in response to light;

phototropism, which is the method by which plant tissues grow away or toward light; and **photoperiodism**, the synchronization of plant growth with time.

Visible light is just one part of the whole electromagnetic spectrum, which includes x-rays, gamma rays, radio waves, and microwaves. Sound, incidentally, is not part of the spectrum.

Plant organs contain photosensitive compounds (photoreceptors) that react to the presence of light, and even specific wavelengths of light. The main photore-

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In this sequence showing sprouting beans, the roots grow downward because of gravity (positive geotropism) and the stems grow upward (negative geotropism). Once the stems hit the soil surface, they orient themselves by phototropism.

ceptors are phytochrome (absorbs red and blue light), cryptochrome (absorbs blue and ultraviolet light), UVR8 (absorbs ultraviolet light), and proto-chlorophyllide (red and blue light). From this we can see that the red and blue wavelengths of light, at opposite ends of the spectrum, are most useful to plants. Interestingly, the only colors that our eyes see are those that are reflected back to us from an object. We perceive plants as being green because these are the wavelengths of light that the plant does not absorb.

PHOTOTROPISM

Stems and leaves frequently orientate themselves in respect to the main source of light. Roots seldom exhibit phototropism, but they do tend to bend away from light if they come into contact with it. Growth toward the light is known as positive phototropism, growth away from it is known as negative phototropism.

The experiments of Charles Darwin and his son Francis, in 1880, demonstrated that the phototropic stimulus is detected at the plant's growing tips, but that the bending of the tip is caused by cells lower down. To show this, they used the coleoptiles (the protective sheath around the

emerging shoot tip of monocot seedlings) of germinating oat seedlings. Those that had their tips covered were unable to respond to the light, but those that had only their tips exposed were still able to grow toward it. It took the work of the Danish scientist Boysen-Jensen in 1913 to show that some sort of chemical signal was being sent from the tip of the plant to cells farther down. This led to Frits Went's later discovery of the plant hormone auxin in 1926.

An increase in light intensity leads to a corresponding increase in phototropism—but if the light becomes too intense, there will be negative phototropism, i.e. the plant will start to retreat from the light. High light levels, particularly in the ultraviolet range, may also stimulate the manufacture of anthocyanins—a type of natural sunblock. Plant scientists have demonstrated that phototropism is triggered by both the red and blue parts of the light spectrum, leading them to believe that more than one type of photoreceptor is responsible for phototropism.

PHOTOPERIODISM

The synchronization of plants with seasonal and daily time is known as photo-

periodism. It causes many plant responses, such as stem elongation, flowering, leaf growth, dormancy, stomatal opening, and leaf fall. It is also widely seen in animals. In fact, much of what we see in the natural world is happening because plants and animals are able to detect the varying lengths of day or night.

Seasonal photoperiodism plays a greater role the farther away plants are from the equator, where there is very little seasonal variation in day length. In cool temperate regions, for example, seasonal differences are huge; entire forests of trees drop their leaves as the summer fades and herbaceous perennials die back to their ground-dwelling buds.

The rate at which day length changes varies during the year. Near the summer and winter solstices there is little variation in the rate of change, but during the spring and fall equinoxes, day length changes more rapidly. Often it is the length of darkness, rather than that of daylight, that plants are responding to.

In plants, the study of the effects of photoperiodism has mostly been on flowering times, as this usually correlates with season. Under controlled conditions (i.e. with the

vagaries of weather taken out of the equation) a given species of plant will flower at approximately the same date each year.

Plants are either long-day plants (LDP) or short-day plants (SDP). LDPs flower only when the day length exceeds their critical photoperiod, and these plants typically flower during late spring or early summer as days are getting longer. SDPs only flower when the day length falls below their critical photoperiod, and these are typically late summer or fall-flowering plants such as asters and chrysanthemums. Natural nighttime light, such as moonlight, or that from street lighting is not sufficient to interrupt flowering.

Day-neutral plants, those that are unaffected by day length, are sometimes encountered. Many common weeds are day-neutral, but so are broad beans and tomatoes. They may start to flower after reaching a certain overall developmental stage or age, or in response to different environmental stimuli, such as a period of low temperature.

PHOTOMORPHOGENESIS

Plant response to light that is neither directional nor periodical is known as photomorphogenesis. It is how light causes a plant to develop. An example is seen during germination, when the emerging shoot first encounters light. It will send a signal down to the root, causing the root to start branching. Plant hormones are an important part of photomorphogenesis, as they are the signals that one part of a plant will send out to initiate a response elsewhere. Examples might be tuber formation in potatoes, stem elongation in low light, or leaf formation.

COLOR SIGNALS

Color is used by plants, often to trigger the senses of animals. No gardener can deny being attracted to plants with plenty of large and colorful flowers. In the wild, colorful flowers are used to attract pollinators, acting like shining beacons.

Pollinators respond differently to the different wavelengths of light, and flowers are colored specifically to attract their pollinators. Many insects, particularly bees, respond to long wavelengths of light in the blue, violet, and ultraviolet range, whereas plants predominantly pollinated by birds will have flowers colored red and orange. Butterflies prefer colors such as yellows, oranges, pinks, and reds.



Patterns of spots or streaks on flower petals, as shown in this blackberry lily, often help pollinators find their nectar reward.

Many flowers are patterned with streaks or lines, called nectar guides. These serve as landing strips for insects, directing them toward their nectar or pollen rewards. Some nectar guides are visible under normal light conditions, but many only show up under ultraviolet light.

The color of most flowers fades after successful pollination and usually it is the intensity of their color that diminishes. This acts as an indicator to any passing pollinator that the flower has aged, that there is no pollen or nectar reward, and that they should move on to another flower. In some plants the flower actually changes color after pollination, as in certain members of the borage family (Boraginaceae), such as forget-me-nots (*Myosotis*) and lungworts (*Pulmonaria*), which change from pink to



Lungwort (*Pulmonaria* spp.) flowers, as shown here in the selection 'Mrs. Moon', change from pink to blue following pollination, signalling to other pollinators that there is no more nectar or pollen.

blue. Color changes are also seen in fruit to indicate their ripeness.

“TOUCHING” AND “FEELING”

Plants are not only sensitive to touch, but they are also sensitive to other external forces such as gravity and air pressure. The directional response to touch is known as thigmotropism, and the response to gravity is known as geotropism.

Thigmotropism The tendrils of some climbing plants, such as species of grape (*Vitis*), are strongly thigmotropic. Their tendrils feel the solid object on which they are growing, by detecting the contact via sensory epidermal cells called tactile blebs or papillae, which results in the coiling response. Any stems that twine around a support, or any clinging roots or twining petioles, are also doing so by thigmotropism.

The plant hormone auxin once again plays an important role. The cells that have received the physical stimulus produce auxin, which is transported to the growth tissue on the opposite side of the shoot that has been touched. This tissue then grows faster and elongates to bend around the object. In some cases, the cells on the contact side compress, which further enhances the curving response.

Roots exhibit a negative thigmotropic response, growing away from objects they feel. This allows them to grow through the soil, taking the path of minimum resistance, and to avoid stones and other large obstacles.



The leaves of sensitive plant fold when touched because of a process known as thigmonastism.

The leaves of the sensitive plant (*Mimosa pudica*) are famous for being able to close up and droop when touched. This is not a thigmotropic response, however, but rather a form of thigmonastism—a similar phenomenon but resulting from a different mechanical response.

Thigmonastism is an immediate response based on very fast changes in cell turgor (how much water the cells contain). It is not caused by cell growth. Other thigmonastic responses include the closing of the traps of the Venus flytrap (*Dionaea muscipula*) when insects land on them, and the twining of the stems or roots of the strangler fig (*Ficus costaricana*).

Geotropism Sometimes referred to as gravitropism, geotropism is the growth reaction of plants in response to gravity. Roots exhibit positive geotropism, growing downward in the direction of the Earth's gravitational pull, and stems exhibit negative geotropism, growing upward in the opposite direction.

In the garden, geotropism is seen in germinating seedlings, when the emerging root begins its downward exploration of the soil. However, it is also seen in some trees and shrubs with a weeping or exaggerated downward growth habit. Examples include weeping pear (*Pyrus salicifolia*

'Pendula') and Kilmarnock willow (*Salix caprea* 'Kilmarnock'). Plants such as *Cotoneaster horizontalis* produce stems that seek to grow along the ground, rather than up or down—a sort of neutral geotropism.

SENSING SCENT

Plants are known to react to certain molecules in the air, the best known of these being ethylene, which causes a response in ripening fruit. Ethylene is also known to play a role in senescence of plant organs, such as flower drop and leaf fall, and it is known to be produced from all parts of higher plants. The chemical has also been found to be released in response to environmental stresses, such as flooding and wounding.

Studies show that when insect pests attack plants, the plants release into the air a variety of volatile chemicals, including pheromones, which are picked up by neighboring plants. One of these chemicals, methyl jasmonate, induces nearby plants to start producing organic chemicals, particularly tannins, that will help them fight off and resist the impending attack. The smell of cut grass, lovely as it is, is actually caused by the release of a variety of volatile chemicals. These may have a plant defense function, and they may be a signal that can be picked up by other plants.

THE EFFECTS OF WIND AND STROKING

Plants growing in windy situations produce thicker and tougher stems to resist wind damage. This has a practical consideration for gardeners when it comes to staking trees. A short stake no longer than one-third of the height of the tree, rather than a longer stake reaching up to just below the lowest branches, produces a tree that is free to flex its trunk in the wind and encourages thickening near the base of the trunk. This results in a tree that is able to fend for itself when the stake is removed. Brushing over young seedlings with your fingers or a sheet of paper produces stronger stems and therefore more resilient seedlings and young plants. —G.H.

Dodder (*Cuscuta*) is a parasitic plant whose seedlings use chemosensory methods to detect and grow toward their hosts. A series of experiments by scientists at the Pennsylvania State University were used to prove that one of the species (*C. pentagona*) grows toward volatile chemicals produced by tomato plants. They began by showing that if dodder is drawn to the tomato plant, a favorite host, the seedling will lean and grow toward it—even in the dark. They then demonstrated that dodder grown close to a fake plant with no tomato odor will just grow upright. Faced with a choice between a tomato plant and a wheat plant, dodder was shown to always grow toward the tomato. Finally, to prove that dodder smells the tomato, the two plants were grown in two separate boxes connected only by a tube through which the chemicals produced by the tomato could reach the dodder. The dodder grew toward the tube.

Furthermore, when grown next to a wheat plant only, dodder will grow toward it as it needs a food source, but if given the option, it will always grow toward tomatoes. It was demonstrated that wheat produces one attractant that the dodder can detect, but tomatoes produce a cocktail of three chemicals that are more attractive to dodder.

Geoff Hodge is a gardening and horticultural writer based in the United Kingdom.

Parsley's Showy Siblings

BY BARBARA PERRY LAWTON

These ornamental members of the parsley family have a lot to offer American gardens.

FROM MAGIC to medicine, from kitchen to ornamental garden beds, members of the parsley family (Apiaceae, also known as Umbelliferae) have a rich and varied historical relationship with humans. Worldwide, the family includes some 300 genera and nearly 3,000 species, mostly native to the temperate and sub-arctic regions of the Northern Hemisphere.

Although the majority are herbaceous, some are shrubs or subshrubs and a few are trees. In North America, native and introduced species number 380 to 440, depending on whom you ask. In addition to popular culinary herbs, delicious vegetables, and delightful ornamentals, the family boasts some of the world's most poisonous plants, including poison hemlock and water hemlock; some species also cause dermatitis (see "Umbellifers to Avoid," page 26). Needless to say, proper identification is critical.

The characteristic inflorescence shared by family members is called an umbel, hence they are often referred to as umbellifers. Umbels are composed of multiple florets that radiate from a single spot at the end of a main stem, giving the inflorescence an umbrella-like appearance. The umbel may be single or compound and the number of flowers in each umbel depends on the species.

While individual flowers are tiny, the umbel itself is often large and showy, attracting a variety of insects, many of

Flowers of *Eryngium* × *zabelii* 'Big Blue' appear in summer above a mound of silvery foliage.



BILL JOHNSON

which are beneficial. Bees, ladybugs, hover flies, and parasitic wasps are attracted to the florets from which they sip nectar, and because they also prey upon a variety of plant pests, they are good companions for other garden plants. The black, pale green, and orange caterpillars of the beautiful eastern black swallowtail butterflies thrive on several members of the parsley family, especially carrots, parsley, dill, fennel, and the native golden Al-

sea spray. Most produce a basal rosette of spiny leaves and attractive thistlelike umbels. They combine well in the garden with other perennials such as black-eyed Susans, yarrow, and grasses; fresh or dried, sea holly flowers are long lasting and add a distinctive quality to arrangements.

"I'm particularly fond of the unique flowers of the four-foot native perennial, rattlesnake master [*Eryngium yuccifolium*, USDA Hardiness Zones 4–9, AHS Heat

But Avent considers another species, *Eryngium pandanifolium* (Zones 8–10, 11–8), "the star of the bunch." Native to Brazil and Argentina, this perennial produces a clump of evergreen leaves three feet tall by five feet wide, and a five-foot stalk of gray-green flowers in late summer. "It's an amazing plant with the presence of a yucca or dasylirion," says Avent.

Native from Europe and Asia to northern Africa, alpine sea holly (*E. alpinum*, Zones 5–8, 8–4) bears blue flowers with prominent, spiky bracts on two-foot perennial plants. "For flower power, this is the best species," writes horticulturist Allan Armitage in his book, *Herbaceous Perennial Plants* (see "Resources," page 25).

Growing to two feet tall, Zabelii's sea holly (*E. xzabelii*, Zones 4–8, 8–4) is a hybrid species known for its deep blue, almost iridescent flower bracts. Several selections are available, including 'Sapphire Blue' and the slightly taller 'Big Blue'.

Giant sea holly, also known as Miss Willmott's ghost (*E. giganteum*, Zones 4–9, 12–1) is a striking four- to five-foot sea holly with steely blue summer flowers surrounded by prominent silver-gray bracts (for some history about this plant, see "Miss Willmott's Ghost," page 25).

MORE ORNAMENTAL UMBELLIFERS

Native to Europe and central Asia, garden angelica (*Angelica archangelica*, Zones 4–8, 8–1) is a five- to seven-foot biennial or short-lived perennial. Its domed umbels of lime-green florets are 10 inches across; they appear in early to mid-summer atop deeply divided bright green foliage. Its imposing stature makes it ideal for the back of an ornamental bed or as a dramatic focal point; site in part shade in warm regions. It's a garden must-have for Rose Marie Nichols-McGee, owner of Nichols Garden Nursery in Albany, Oregon. "Let it drop a few seeds and you'll have angelica for years to come," she says. "The carefree sequence of bloom will keep the bees happy because this is an early source of pollen. It's a humble treasure and underutilized."

Masterwort (*Astrantia major*, Zones 4–7, 7–1) produces tidy umbels of delicate green, pink, or deep purple-red flowers surrounded by showy bracts starting in early summer. Native to Europe and western Asia, masterwort grows two to



With red to purple stems topped by dramatic green umbels, garden angelica is an attention getter.

exanders (*Zizia aurea*). Be sure to plant enough for both you and the butterflies.

SEA HOLLIES

Among the diverse ornamentals in the parsley family, my favorites are the sea hollies (*Eryngium* spp.). These sun-loving plants need well-drained soil, and true to their common name, they are tolerant of salty

Zones 12–1]," says Neil Diboll, president of Prairie Nursery, in Westfield, Wisconsin. Pure white or pale greenish-blue, golf-ball-like orbs appear from mid-summer to fall, held above glaucous, yuccalike leaves. 'Kershaw Blue' is a wide-leaf form with powder blue leaves, which Tony Avent, owner of Plant Delights Nursery in Raleigh, North Carolina, finds particularly appealing.



Masterworts, including the selection 'Hadspen Blood', above, thrive in part or dappled shade and will sometimes self-seed. Shady, moist sites are also ideal for sweet cicely, left, which has anise-scented, fernlike foliage and lacy umbels of white flowers.

three feet tall with loose rosettes of palmate, sometimes lobed, foliage. "For sure, this is a plant that is overlooked for no good reason," says Armitage. "It is sufficiently cold hardy for much of the country, tolerates a good deal of heat, and half a dozen excellent cultivars are there for the asking." Planted in clumps or drifts, masterwort is a decorative addition to partly shaded beds or borders. In moist, well-drained soil, it may self-seed vigorously, but deadheading the spent flowers will prevent this. Look for such handsome cultivars as 'Hadspen Blood' which produces dark red bracts and flowers, 'Abbey Road', with its maroon-pink flowers with wine-red bracts on black stems, or 'Buckland', which has pink flowers with green-tipped white bracts.

Also suited to part shade is sweet cicely (*Myrrhis odorata*, Zones 3–7, 7–1), a rugged two- to four-foot perennial native to Europe. "I love sweet cicely in a shad-

TOP: ALEXANDRA SZYWALA... BOTTOM: ALAN AND LINDA DETRICK

ed part of my garden where it is moist,” says Holly Shimizu, executive director of the U.S. Botanic Garden in Washington, D.C., who likens its soft green foliage to “an herbal fern with fine texture and an elegant beauty.” While it grows well in the sun in cooler regions, “here in the mid-Atlantic, it can burn in the heat of summer,” says Shimizu. Although delightfully aromatic and often used in potpourri, it is no longer recommended as an edible.

Brilliant golden yellow umbels decorate golden Alexanders (*Zizia aurea*, Zones 4–9, 9–3) and heart-leaved Alexanders (*Z. aptera*, Zones 4–9, 9–4), two widely distributed North American natives. Golden Alexanders grows to three feet tall with rather coarse, toothed compound leaves, while heart-leaved Alexanders is more compact and has attractive heart-shaped leaves. Both bloom in late spring to early summer and are best suited for naturalizing in a meadow garden or open woodland area where they may spread through self-seeding. (For more



Appearing in early summer, the blooms of golden Alexanders are a magnet for butterflies.

garden-worthy umbellifers, see the chart on page 27.)

CULTURAL TIPS

Most umbellifers prefer a site with full sun to part shade and well-drained soil, which

is especially important in winter. Be sure to get the soil right prior to planting since many species produce a taproot and do not like to be disturbed. A deep, loose soil is preferred; working organic matter into your soil prior to planting will help if your existing conditions are less than perfect.

Most parsley family seeds are notoriously slow to germinate, but sowing in warm soil will hasten sprouting; pre-warming soil with a cloche is an effective technique. Also be sure to use fresh seed since the period of viability is often no more than a year. Transplanting can be a problem with species that produce a single taproot, so sow these in place or transplant seedlings when they are very young.

DESIGN TIPS AND PLEASING COMBINATIONS

Umbellifers contribute pleasing textures, dramatic forms, and lively color to a garden design. Many produce fine, fernlike foliage that adds a soft touch to mixed borders, while the spiky basal foliage of other umbellifers contributes a bold contrast to fine-textured companions.

MISS WILLMOTT'S GHOST

When Miss Ellen Willmott, born in 1858, inherited her father's extensive English estate, which included Warley Place in Essex, she had plenty of money to support her love of plants. A hard taskmaster who could not abide a weed, it was rumored that she had 204 gardeners working for her at Warley Place, to say nothing of her other properties. Her horticultural fame and success led to many honors.



Miss Willmott's ghost sea holly

But Willmott grew more eccentric and peculiar as the years went by. As great as her fortune had been, it melted away as she spent profligately on her many plant pursuits. By the time of her death in 1934, she was reduced to living in three shabby rooms of the once-elegant Warley Place.

In her prime, however, Willmott carried seeds of the handsome bluish-green sea holly (*Eryngium giganteum*), a biennial or short-lived perennial, as she toured many gardens. She loved this plant and would

secretly scatter the seeds as she went. Thus her trail was marked by appearances of the plant that came to be called “Miss Willmott's Ghost”. Some said she became as prickly as the sea holly she loved. Her energetic seed sowing led to this sea holly being commonly known and grown, especially in England. —B.P.L.

Resources

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Sources

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Joy Creek Nursery, Scappoose, OR. (503) 543-7474. www.joycreek.com.

Plant Delights Nursery, Raleigh, NC. (919) 772-4794. www.plantdelights.com.

Prairie Nursery, Westfield, WI. (800) 476-9453. www.prairienursery.com.



An impressive mass of 'Hadspen Blood' masterwort anchors this shady perennial bed in the garden of Diane Gaughan in Bow, Washington.

UMBELLIFERS TO AVOID

Not all members of the parsley family are assets in kitchen and garden—some are rampantly invasive and others are highly poisonous. As with all plants, the tendency to invasiveness often differs by region and mode of spread.

Among the most notorious invasive parsley family members is cow parsley or giant hogweed (*Heracleum mantegazzianum*). This large plant is extremely invasive in the Pacific Northwest, New York, and Pennsylvania, but not so much in the rest of the country. Poison hemlock (*Conium maculatum*) is invasive throughout much of the country, especially along railroads and highways.

Bishop's weed or goutweed (*Aegopodium podagraria*) is widely invasive when it is planted in sunny unrestricted sites, although the selection 'Variegata' can be a useful groundcover for low light spots such as those dim, bare areas under decks. Escaped wild parsnip (*Pastinaca sativa*) is highly invasive throughout much of Michigan, Ohio, Pennsylvania, Tennessee, Virginia, and Wisconsin. Fennel (*Foeniculum vulgare*) has become weedy in much of the country, yet it is prized in herb gardens and is an excellent host plant for butterflies.

To determine which plants may be invasive in your region, check with your local Extension agency or consult online resources such as USDA Plants Database (<http://plants.usda.gov>) and Invasive.org (www.invasive.org).

Both internal and external poisons make some parsley family species quite dangerous. Most famous of all the internals is poison hemlock, the plant responsible for the death of Greek philosopher Socrates. Water hemlock (*Cicuta maculata*) is somewhat less potent, but also poisonous.

Plant juices of angelica (*Angelica* spp.), parsnips (*Pastinaca sativa*), and especially giant hogweed can cause dermatitis in many people. Beware of coming in contact with poison hemlock and water hemlock, too, as they can cause skin irritations and rashes.

—B.P.L.

Individual flowers are typically tiny and delicate, but their arrangement in showy umbels, usually held well above the foliage, adds seasonal color both in the garden and as cut flowers.

"*Eryngium yuccifolium* is a drama queen demanding attention in the dry border," says garden designer and author Lucy Hardiman of Portland, Oregon. "Pair it with your favorite grass for instant effect." Another combination she likes is the dusky foliage of *Sedum* 'Postman's Pride' paired with the steel blue flowers of *Eryngium planum* 'Blaukappe'. "In my street-side gravel beds, the metallic blue umbels of *Eryngium* 'Sapphire Blue' bask in full sun, contrasting with the strappy foliage and luminous salmon spires of *Kniphofia* 'Alcazar,'" says Hardiman.

Some of the more delicate umbellifer flowers can become lost in a large garden. To prevent this, Rebecca Sweet, a garden designer in Silicon Valley, California, and author of *Refresh your Garden Design with Color, Texture and Form* (see "Resources," page 25), recommends planting them in drifts. "For example, planted in small numbers, the airy shape and soft ruby colors of the *Astrantia major* 'Abbey Road' flowers might easily be overlooked.... But when planted en

MORE UMBELLIFERS TO CONSIDER

Botanical Name (Common Name)	Height/Spread (feet)	Description	Origin	USDA Hardiness, AHS Heat Zones
<i>Angelica gigas</i> (Korean or purple angelica)	2–6/4	Large biennial or short-lived perennial with fernlike leaves and purple-red umbels set off by deep red bracts in late summer and fall	China, Korea, Japan	4–8, 8–2
<i>Angelica keiskei</i> (Tomorrow's leaf)	2–5/3	Perennial with bold evergreen leaves, 5-foot-tall flower stem with white flowers in midsummer	Japan	7–9, 9–5
<i>Bupleurum fruticosum</i> (Shrubby hare's ear)	4–6/6–8	Evergreen shrub with waxy, blue-green leaves and yellow-green umbels from midsummer to fall; can be sheared as a hedge, tolerates salt spray	Mediterranean	7–11, 12–7
<i>Eryngium venustum</i> (Mexican sea holly)	2/1	Perennial with a rosette of spiky gray leaves and stalks of silver, thistlelike flowers in summer; drought tolerant, may self-seed	Mexico	6–10, 10–5
<i>Orlaya grandiflora</i> (White lace flower)	1½–2/1½	Annual with fernlike foliage and 4- to 5-inch umbels of white flowers that resemble lace cap hydrangeas in summer to fall; self-seeds	Mediterranean	0–0, 8–1
<i>Seseli gummiferum</i> (Moon carrot)	3/1	Drought-tolerant annual or short-lived perennial with feathery, silver-gray leaves; self-seeds	S. Europe, Mediterranean	5–9, 9–4
<i>Smyrniium perfoliatum</i> (Perfoliate Alexanders)	2–5/2	Upright biennial with yellow-green leaves and bracts, yellow, dome-shaped umbels appear in spring of second year	S. Europe, N. Africa, SW Asia	6–10, 8–1
<i>Trachymene coerulea</i> (Blue lace flower)	2/1	Upright annual or biennial with pale green leaves and long-stemmed, lavender-blue umbels in summer that are good for cutting	Australia	0–0, 12–6



Angelica gigas



Seseli gummiferum

masse, they make quite a visual impact while adding a sense of order to the garden,” she says.

Sweet suggests that drifts are also effective for tying together separate areas of a garden and providing a cohesive flow. “When used in drifts, umbellifers such as sea holly, dill, or masterwort have a magnificent ethereal effect—similar to clouds—and can softly fill the negative space in between larger, bolder plantings,” says Sweet.

“*Astrantia major* and its cultivars are among my favorite perennials, says Hardiman. “They appear frequently in my design

work and are subtle stars in my own garden.” In a difficult spot on the north side of her house that gets part sun and part shade, she grows *Astrantia* ‘Roma’ with *Astilbe* ‘Lili Goos’ against a background of boldly-textured *Hosta sieboldiana* ‘Frances Williams’. For an easy, contemporary planting, she suggests combining “masses of *Astrantia* ‘Abbey Road’ with sweeps of Japanese forest grass (*Hakonechloa macra* ‘Aureola’).”

WORTHY OF WIDER ACCLAIM

Obviously, the parsley family includes a number of handsome ornamental plants. While many have been popular with Eu-

ropean gardeners for some time, only a handful are commonly found in garden centers and nurseries in this country. But they are gaining popularity, and more varieties are becoming available, especially from mail-order nurseries that specialize in rare or unusual plants (see “Sources,” page 25). So break out of the conventional format. Grow some of the many wonderful ornamental umbellifers that are too little known. They are well worth your acquaintance.

Barbara Perry Lawton is an award-winning garden writer based in St. Louis, Missouri.

the basics of Vermicomposting



Even if you don't have room for a compost pile, putting earthworms to work in a vermicomposter will turn your kitchen scraps into black gold.

BY KRIS WETHERBEE

FOR ALL ITS rewards, gardening can be a labor-intensive and time-consuming endeavor. Who among us hasn't at one point or another wished that a large crew of helpers would magically appear, perhaps emerging from the ground like the soldiers who grew from dragon's teeth in Greek mythology. Well, what if I were to tell you how to recruit hundreds of workers who will work without pay 24 hours a day?

Okay, so the workers I'm talking about are actually a hungry crew of earthworms. With the help of specialized bacteria that live in their digestive tracts, these worms can eat their way through kitchen scraps and other vegetative matter, a process known as vermicomposting. The end result of their efforts is worm castings, a

mineral-rich organic fertilizer that can be applied to indoor and outdoor plants.

One of the best things about vermicomposting is you don't need a lot of space to practice it—you can do it in an apartment, a townhouse, even a school classroom. Because worms can consume food at a much more rapid pace than the bacteria-driven decomposition that occurs in a conventional compost pile, vermicomposting is essentially odorless, which makes it a viable indoor option. Plus it's fairly easy to do, is a great project to get kids involved with gardening, and reduces the amount of waste

Red wiggler worms, shown above, are the best choice for vermicomposting because they adapt well to the close confines of an indoor worm bin and consume food scraps efficiently.

going to landfills. Some communities are even offering free or discounted worm bins to residents as part of recycling incentives.

THE RIGHT WORMS

You can't use just any old worms you dig out of the backyard for vermicomposting. For best results, you need red wigglers (*Eisenia fetida*), sometimes known as manure worms or tiger worms. These are super-efficient composters, eating half their body weight in vegetable and fruit scraps each day and reproducing prolifically. These relatively small earthworms—usually between one and three inches long—thrive in the confined environment found in a typical worm bin.

"The larger earthworms we find in our garden soil are very active and mobile,"



Worm bins are easy to make out of recycled containers or storage bins such as the one above. There are also a variety of commercial bins available, including multi-level ones like the one at right.

says Amber Gribben, co-owner of Urban Worm Girl, a company that sets up and troubleshoots worm bins at homes and classrooms in the Chicago area. “As a result, they make poor house guests because they aren’t content in an enclosed environment” and may escape.

GETTING STARTED

In addition to your red wigglers, you will need a container, some bedding, and some vegetable or fruit scraps to get started. The best way to get the worms is to order them from a reliable supplier (see “Sources,” page 31), preferably one based in your region so the worms will spend less time in transit. “I recommend starting with a pound of worms—which is roughly 1,000,” says Gribben.

There are dozens of prefabricated worm bins available, including some sophisticated multi-level bins that simplify the process of harvesting the worm compost. But if you’re a do-it-yourselfer, you can easily convert a plastic storage container into a worm bin, or recycle objects such as a discarded trunk, sturdy Styrofoam box, or clean, food-grade bucket. The size is up to you, but ideally the bin should be at least eight to 12 inches



deep and slightly wider or longer than it is deep. (For instructions on creating your own vermicomposter from a plastic storage bin, turn to the sidebar on page 30.) Place bins in a well-ventilated but sheltered and frost-free place, such as a laundry room, basement, or garage.

A variety of materials will serve as bedding for red wigglers, but a mixture of shredded or torn-up newspaper and cardboard is ideal (avoid glossy advertising supplements, which don’t absorb water well). You should have enough shredded

bedding that it will fill half your bin when loose and dry. After ensuring you have enough, remove the materials and soak or spray it with water to moisten. Then squeeze out excess moisture and fluff up the bedding—this creates air spaces and gives the worms freer movement—before placing it back in the worm bin.

Sprinkle three or four cups of garden soil, compost, or coconut coir (made from the fibrous husks of coconuts) over the paper, then use your hands to mix it all together. Bury some finely chopped vegetable and fruit scraps (about two cups total) in several locations under the surface of the bedding, then add the red wigglers on top. Cover the bin with a lid and let your worms start exploring their new home.

WORM DIET

Red wigglers’ primary diet should be the peelings and trimmings from a variety of fruits and vegetables, but you can add occasional “snacks” such as coffee grounds (with paper filters), tea leaves, and starches (pasta, rice, or bread). Dried, crushed egg shells can be added once in a while because they are an aid to earthworms’ digestive processes.

Items to avoid adding include “strong-smelling or spicy foods that are distasteful to earthworms—such as the fleshy part of onions or garlic, jalapeños, Brussels sprouts, and citrus rinds—because these will sit around longer and may produce an odor,” says Gribben. “Also don’t add meat, dairy products, or oils because they won’t decompose—any animal products could introduce pathogens to the worm bin.” And pineapples might be the symbol of hospitality, but don’t add them to worm bins because they contain a chemical toxic to earthworms.

Add new food to the bin every few days as needed to replace what is being consumed. If you notice an odor or see uneaten food, cut back on the frequency or amount of food. Each time you add food, check the bedding to make sure that it stays slightly moist. Gribben recommends adding new bedding periodically, even if it’s only torn up scraps of the cardboard rolls from paper towels or toilet paper. “Adding paper is

BUILDING A SIMPLE WORM BIN

For do-it-yourselfers, here's how to create a worm bin from an 18-gallon plastic container, which can handle kitchen wastes for a family of four to six. A container of any size can be used to make your worm bin as long as it is at least 12 inches in height and opaque to keep out sunlight, which the worms don't like. Keep in mind that the worm bin will need to sit inside or on top of another container, which serves to catch any liquids that drain from the bin.

—K.W.

What You'll Need

- 18-gallon plastic storage bin (not clear) with lid, for worm bin
- 30-quart plastic storage bin, about 8 inches high, for collecting any excess moisture (this can be diluted with an equal volume of water and used to fertilize outdoor plants)
- 4 bricks or blocks of wood about 2 to 3 inches in height (all the same height)
- Electric drill with $\frac{1}{4}$ -inch and $\frac{1}{16}$ -inch bits (for making drainage and ventilation holes)
- A mixture of torn or shredded non-glossy newspaper and cardboard (empty paper egg cartons work well)
- Garden soil, potting mix, coconut coir, or well-aged compost
- Chopped kitchen scraps
- One pound of red wigglers



step 1 Using the $\frac{1}{4}$ -inch bit, drill 15 to 20 drainage holes in the bottom of the 18-gallon bin (shown). Next, using the $\frac{1}{16}$ -inch bit, drill 6 to 8 evenly spaced ventilation holes near the top edge on each long side of the bin.



step 2 Set the 30-quart plastic bin in a well-ventilated but sheltered location. Place the bricks or blocks of wood, spaced equally apart, in the bottom of the this bin. Set the 18-gallon bin on top of the bricks or wood. The bottom bin will collect excess moisture that drains from the worm bin.



step 4 Fill the bin about half full with the torn paper and cardboard, then remove the paper and soak it in water to moisten. Squeeze it until it has the consistency of a wrung-out sponge and return it to the bin.



step 5 Fluff up the moistened bedding to create air spaces for the worms to move through, then add several handfuls of soilless potting mix, coir, or compost. Mix the bedding together by hand.

PHOTOGRAPHS BY RICK WETHERBEE



step 3 To create the bedding for your worms, start by tearing up or shredding a mixture of newspapers (avoid the glossy inserts) and cardboard—you can “repurpose” items such as egg cartons and the cardboard tubes from paper towels and toilet paper rolls for this purpose.



step 6 Place the worms on top of the bedding and bury food scraps in several places underneath. Cover the bin securely with the lid. Check the bin every day or two to make sure the worms are adequately fed and maintained as described in the article.

partly for moisture management,” she says. “You can use it to compensate for humidity and excess moisture in food scraps, which can be more of an issue in summer months when you tend to be adding juicier, more water-rich food scraps.”

TENDING THE WORM BIN

Always keep a lid on your worm bin when not actively tending it. This will reduce moisture loss from the bedding and help prevent fruit flies or other pests from laying their eggs in the kitchen scraps. “Keep a nice layer of shredded newspaper or compost on top of food scraps at all times,” Gribben also advises. A lid also will keep out household pets, although Gribben says they are not usually attracted to worm bins.

When the volume of the bedding has diminished substantially and what remains looks like compost, it’s time to remove the worm castings and refill with



FRICK WETHERBEE

Having children participate in maintaining a worm bin is a great way to introduce them to nature and gardening.

fresh bedding. Worm bins should be harvested every two to three months on average. “One of the common problems we encounter with new clients is a reluctance to harvest the compost,” says Gribben, who emphasizes that it’s beneficial both for the worms and for homeowners to remove it on a regular schedule. Some prefabricated worm bins are set up so you can add new food and bedding to another level to encourage worms to migrate upward, but if you have a home-

Sources

Gardens Alive!, Lawrenceburg, IN. (513) 354-1482.

www.gardensalive.com.

Northwest Redworms, Camas, WA. (360) 513-7251.

www.northwestredworms.com.

Planet Natural, Bozeman, MT. (800) 289-6656. www.planetnatural.com.

Resources

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Composting Inside and Out by Stephanie Davies. Krause Publishing, Betterway Home Books, Cincinnati, OH, 2011.

EarthWormDigest.org, www.wormdigest.org.

Urban Worm Girl, www.urbanwormgirl.com.

made bin, the easiest way to harvest is to transfer all the old bedding and compost/castings over to one side of the bin. Fill the vacant side with moistened fresh bedding and food scraps. The worms will gradually move over to the new bedding in search of food. The worm castings can then be removed, and new moistened bedding added in its place.

You can use the worm compost as a soil amendment for garden beds or containers, mix some into the potting medium you use for houseplants or seedlings, or dilute it and use it as compost tea. According to Gribben, an active, well-tended worm bin can produce 10 to 15 gallons of compost a year. “Research indicates that the worm castings function like hormones—boosting plant health and providing protection against disease,” she says. For best results, she recommends adding 30 to 40 percent vermicompost to potting soil mixtures.

Given how easy it is, why not try your hand at vermicomposting with your own crew of red wigglers? The worms will reward your efforts by turning your garbage into high quality compost your plants will appreciate. And, what’s more, it’s a lot of fun! ☺

Freelance writer Kris Wetherbee lives in Oakland, Oregon.



JOSH MCCULLOUGH

Cuphea Fever

With intriguing common names like bat-face plant, cigar flower, firecracker plant, and Mexican heather, these colorful tender perennials turn the heat up in any garden.

BY CALEB MELCHIOR

READ ANY description of the genus *Cuphea* and you can start counting off the prerequisites for any gardener's dream-plant list. Easy to grow—check. Bears brightly colored flowers—check. Blooms over long periods of time—check. Thrives in heat and humidity—check. Attracts hummingbirds—check. Easy to propagate—check. Suitable for garden beds or containers—check. It's an impressive list of attributes.

Of course, no plant genus is perfect. Most *Cuphea* species are native to subtropical or tropical regions, so they are categorized as tender perennials and few overwinter outdoors except in nearly frost free areas such as southern California, the Florida Keys, and Hawaii. They are generally considered hardy in USDA Zones 10–12 and heat tolerant in AHS Heat Zones 12–1. But whether you treat them as annuals and replace them each year, or grow them in containers that can be stashed in a warm place for the winter, you will find them to be worthy additions to your garden.

A BIT ABOUT THE GENUS

The genus *Cuphea* comprises some 250 to 300 species of evergreen shrubs, herbaceous perennials, and annuals native primarily to Mexico and Central America. A handful of non-ornamental species are native to the continental United States, including blue waxweed (*Cuphea viscosissima*), which is found over much of the eastern U.S.

The genus is a member of the loosestrife family (Lythraceae), along with crape myrtles (*Lagerstroemia* spp.) and pomegranates (*Punica granatum*). Only six or seven species are readily cultivated

in North America, but many selections and hybrids have been introduced.

Cuphea flowers come in two primary forms that botanists and gardeners have dubbed “cigar” and “bat-face.” These flower forms have become a handy way to differentiate the ornamental species.



Opposite: Black-eyed cuphea's flowers are bright pink to orange with a yellow tip; two tiny dark-colored petals resemble whimsical eyes. **Above:** Caribbean Sunset™ is a selection of black-eyed cuphea with an orange tube and maroon to purple eyes.

CIGAR TYPES

Cigar-type flowers are comprised of long narrow calyx tubes—technically known as hypanthia—that flare slightly wider at the open end. The flared tip often is a contrasting color, which helps pollinators find the

opening (and creates the fanciful resemblance to a lighted cigar that spawned the common name). Cigar flower or firecracker plant (*C. ignea*), native to Mexico, is the most commonly grown cigar-type cuphea, growing about a foot tall and wide with lance-shaped leaves. Its individual flower tubes are burnt orange in color, with bands of white and dark purple at the tip.

The Mexican giant cigar plant (*C. micropetala*), growing taller and more upright than *C. ignea*, also has tubular flowers, but they're more dramatically flared at the tips. Its leaves are broader and oblong in shape. This may be the hardiest of the cupheas, overwintering in USDA Zone 7 or 8. It blooms from late summer into fall.

Black-eyed cuphea (*C. cyanea*), another Mexican native, has incandescent pink and yellow flowers with two small, dark-colored “eyes” at the tip. It grows one to two feet tall.

BAT-FACE TYPES

In bat-face types, two to six petals form at the ends of the flower tube. The petals vary in size and shape in relation to the flower's corolla, creating flowers with highly variable looks.

Bat-face cuphea (*C. llavea*) has only two reflexed petals, barely half as long as the flower tube. The two flares give the appearance of little pointed wings, thus the name. In some of the hybrids, such as Flamenco Samba™, six flares open to form a flower as wide as it is deep.

In Mexican or false heather (*C. byssopifolia*), the corolla is green and disappears into the foliage, while the six flared petals give the tiny white or pale purple flowers a more conventional, starlike appearance. Some-

times called elfin herb, Mexican heather is also distinguished by its neat, compact stature and dainty, glossy green leaves. It is sometimes employed as an edging plant along paths or borders.

Cupheas hybridize easily and many selections now being offered are probably hybrids between two or more species. Crosses between bat-face cuphea and a species with the unlovable name creeping waxweed (*C. procumbens*) may be listed under *C. xpurpurea*.

REGIONAL RECOMMENDATIONS

I talked to tropical plant experts and experienced gardeners around the country to find out which species and selections they recommend in their regions.

■ **MIDWEST** Chris Kelley has been growing tropicals for over 20 years at Cottage Garden, her nursery in Alton, Illinois. She regularly travels throughout the country to find tropicals that will thrive in the heat, humidity, and drought of midwestern summers so, not surprisingly, cigar flower is one of her standards. “*Cuphea ignea* and its hybrids are probably the best of the genus for our lower Midwest climate,” she says, citing their attractive, mildew-resistant foliage.

The standard species form of cigar flower is a fiery burnt orange, but Kelley’s favorite selections have flowers in softer shades. ‘Ballistic’, a vibrant selection produced from a cross with a bat-face cuphea, “is the deepest purple of any *Cuphea ignea* I have grown,” Kelley says, “The end of the corolla is dipped in white, adding a showy bicolor effect.” ‘Ballistic’ is a very compact hybrid “perfect for container, basket, or window box use,” says Kelley. Its heavy flowering makes it an excellent plant for highly visible situations.

Kelley also admires ‘Starfire Pink’, another hybrid with bat-face characteristics, distinguished by dusty rose corollas and bright lavender flares. She describes it as “the best cuphea for a pastel effect.”

In addition to cigar flower and its hybrids, Kelley’s containers are home to many other outstanding cupheas. ‘Purple Passion’ is a large (three- to five-foot high and wide), sprawling hybrid with violet bat-face flowers. “I am in love with this plant,” she says. The small purple flowers are held all along the stems, giving the plant a diffuse,



Top: One of four current selections in the hybrid Flamenco series, Flamenco Samba™ bears lipstick red petals with purple and white highlights. **Above:** The glossy green foliage, starlike flowers, and tidy, shrublike habit of Mexican heather make it useful as an edging plant in a sunny bed or border.



'David Verity', shown here in a bed with ageratum and yarrow, is a vigorous cigar-type selection with reddish-orange and yellow flowers.

almost twinkling appearance. "It is a wonderful hardy annual that self-sows," Kelley says. She hastens to add that it's not invasive in her Illinois garden, "It pops up unexpectedly, providing a touch of purple."

■ **MID-ATLANTIC** Cupheas may get a slower start during the cooler springs the East Coast experiences, but it doesn't take them long to catch up once the weather warms. At Chanticleer gardens in Wayne, Pennsylvania, horticulturist Dan Benarcik and his colleagues use cupheas and other unusual plants in striking color combinations to create magical effects in containers and borders.

'David Verity', a red-orange cigar-type hybrid, "is an absolute workhorse for us here in the Delaware Valley," says Benarcik. "The heat really turns it up." It grows quickly to three to four feet tall. "Some people are scared of orange," Benarcik says, "But it's my happy place." He likes to combine the sizzling orange flowers with contrasting purples such as the foliage of 'Princess Caroline' fountain grass (*Pennisetum* sp.).

For the less audacious, Benarcik suggests pairing 'David Verity' with analogous shades

of orange and brown, as found in *Coleus* 'Rustic Orange' and *Acalypha* 'Inferno'.

Benarcik also enjoys the diminutive pleasures of Flamenco Samba™, one of the selections in the Flamenco series. A hybrid of *C. llavea* 'Tiny Mice' and *C. procumbens*, Samba has one-inch flowers with dark purple tubes and red petals. "Unlike 'David Verity', Samba is more of an edging and detail plant, spilling or at least growing laterally," Benarcik says. "I use it as a detail or to tuck into a container. It has that wonderful little purple touch to it, tying disparate elements together."

■ **SOUTHEAST** Gardeners in the southern United States are particularly fond of cupheas because these tenacious plants hold the garden together through the misery of steamy July days and muggy August nights. Pam Baggett's Singing Springs Nursery in the Piedmont region of North Carolina was once a magnet for tropholics throughout the country. Although Baggett no longer operates the nursery, she continues to cherish a wide variety of cupheas in her own garden.

For all-around performance, Baggett's go-to species is cigar flower. "They're in bloom when you buy them and they're still in bloom at frost," she says, "They just don't stop."

Baggett also puts in a plug for Mexican giant cigar plant, which she says is reliably perennial in USDA Zone 7. Unlike most other cupheas, which are compact plants with fairly continuous flowering through the summer, Mexican giant cigar plant erupts with candy-corn colored cigar flowers in late autumn. "I think it looks good even out of bloom, so that makes it worth it to me," she says. "And, of course, there's the really nice orange flowers in the fall."

Cuphea glutinosa, native to Mexico but naturalized in a few sites in Louisiana and Texas, is one of the tiniest species on Baggett's list. Growing only eight inches to a foot tall, the plants have wiry stems that sprawl to create a low, mounded habit up to 18 inches wide. Like Mexican heather, *C. glutinosa* has flowers in which the flares are so enlarged, they resemble little stars. Baggett describes the flower color as "a nice little gentle soft purple with a red-violet streak."



Bat-face cupheas such as ‘Tiny Mice’ are excellent choices for containers and hanging baskets.

For a dramatic edging plant, Baggett recommends Riverdene Gold™ (‘Aurea’), a chartreuse-leaved form of Mexican heather that has hot pink flowers.

A little farther south, in Athens, Georgia, Meg Green has managed the test gardens at the University of Georgia in Athens for over 25 years. She recommends ‘Totally Tempted’, a bat-face variety that has bright red flares at the end of a purple corolla. She cites its heavy flowering and bright colors as the reason for her devotion.

■ **SOUTHWEST** In the Southwest, gardeners often grow cupheas as a substitute for less vigorous shade plants. Mary Irish, author of numerous books on Southwest gardening, appreciates their heavy and prolific flowering despite the heat. She gardened near Phoenix, Arizona, for 25 years before moving to Castroville, Texas, not far from San Antonio, in 2012.

Irish says both bat-face cupheas and cigar flowers are generally reliable perennials throughout the lower Southwest. With its showy scarlet and purple flowers, bat-face cuphea is her personal favorite. “I’d recom-

mend using it in a bed where a lot of color is needed, perhaps near the house, where you’ll see it all the time,” she says, “You don’t want to waste all of those flowers.”

Cigar flower is also beloved by southwestern gardeners, particularly the hybrid ‘Twinkle Pink’, a bat-face cross that has hot pink corollas and tiny white flares, each centrally striped pink.

CARE AND PROPAGATION

Cupheas will thrive in full sun in most North American gardens, but they may do better in part or dappled shade in very warm regions. Grow cupheas in fertile, moist, organic-rich soils. They do tend to bloom more prolifically if fertilized regularly, so add compost tea or a balanced fertilizer every couple of weeks during active growth. To encourage bushy plants, pinch off the tips early in the summer to stimulate branching.

Cupheas are easy to propagate from seeds and cuttings. Sow seeds, uncovered, in late winter, about six weeks before the last frost date for your region. Provide bottom heat (70 to 75 degrees Fahrenheit) and a grow light. Seeds can be trans-

Sources

Annie’s Annuals & Perennials, Richmond, CA. (888) 266-4370. www.anniesannuals.com.

Avant Gardens, North Dartmouth, MA. (508) 998-8819. www.avantgardensne.com.

Davidson Greenhouse & Nursery, Crawfordsville, IN. (765) 364-0556. www.davidsongreenhouse.com.

Goodwin Creek Gardens, Williams, OR. (541) 846-7357. www.goodwincreekgardens.com.

Plant Delights Nursery, Raleigh, NC. (919) 772-4794. www.plantdelights.com.

Resources

Armitage’s Manual of Annuals, Biennials and Half-Hardy Perennials by Allan Armitage. Timber Press, Portland, OR, 2001.

Hummingbird Gardens: Turning Your Yard into Hummingbird Heaven by Stephen Kress. Brooklyn Botanic Gardens, Brooklyn, NY, 2007.

planted into individual containers once their true leaves form. They sometimes self-seed, so you can also pot up seedlings from the garden. According to Baggett, cupheas tend to hybridize easily, so seed-grown forms may yield interesting variations in flower color and shape.

Cuttings can be taken any time and rooted in sand or a soilless potting mix that is kept evenly moist. Transplant them into containers once roots have formed and keep them in a cool, sunny location over winter.

SO MUCH TO OFFER

No matter where you live, it’s well worth growing cupheas. They will amaze you with their heat tolerance, long bloom times, and vibrant colors. Plant them near a porch or patio—they do well in both conventional containers and hanging baskets—then sit back and enjoy the hummingbirds and other pollinators that are drawn to the flowers all summer long.

Caleb Melchior is a garden writer based in Perryville, Missouri.



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American Elderberry: A Native Fruit Worth Cultivating

by Jim Long



The lacy white flowers of American elderberry, above, bloom in early summer, followed by clusters of small edible fruit, left, that ripen in late summer to fall.

THE FIRST TIME I plucked an elderberry and tasted it, at the age of eight, it was so awful I spat it out. My grandmother observed my reaction with amusement. “They’re not good until they’re cooked,” she explained. “Just wait until you see what we’re going to do with them.”

It was late summer and she was harvesting elderberries to make jelly. I carried the basket for her while she cut off the huge fruit clusters with her pruners. Later, when I got my first taste of her elderberry jelly on buttered toast, I understood why we had gathered so many berries.

As an adult, I walked the woods and meadows in Arkansas many times with the late wild foods writer, Billy Joe Tatum, gathering elderberry blossoms and fruit. She made fritters as well as a champagnelike beverage from the flow-

ers, and syrup and jelly from the berries. We once shared a memorable breakfast of elderberry blossom fritters, drizzled with elderberry syrup.

Elderberries have a long history of culinary and herbal use, but they have garnered greater attention in recent years because scientific research has confirmed they offer many nutritional and health benefits. The processed fruits contain more phosphorus and potassium than any other temperate fruit crop and they are rich in vitamin C. They are believed to help reduce swelling, fight inflammation, reduce cholesterol, and boost the immune system.

AMERICAN AND EUROPEAN SPECIES

The elderberries I experienced in the wild were the native American elderberry (*Sambucus canadensis*, syn. *S. nigra* ssp.

canadensis, USDA Hardiness Zones 2–9, AHS Heat Zones 9–1), which grows near old fields and along fencerows and roadsides over much of the United States and Canada. The closely related European black elder (*S. nigra*, Zones 3–8, 8–1) is naturalized in the mid-Atlantic and parts of Ontario.

A somewhat informal-looking deciduous shrub with suckering stems and compound leaves, American elderberry reaches five to 12 feet high and nearly as wide (European elder can grow as tall as 20 feet). Enormous, flat-topped clusters of lightly fragrant, creamy white flowers bloom over a period of five to eight weeks starting in early summer. Even if you never make use of the berries, the butterflies and pollinators that are drawn to the flowers are a worthwhile reason for growing this plant. Several ornamen-

PLANTING BASICS

Planting Plant either rooted cuttings or divisions from established plants in early spring. While not fussy about soil type, elderberries grow best in a slightly acidic soil that is high in organic matter and which stays consistently moist. Mulch around the plants to prevent weeds and water regularly until established. Elderberries are shallow-rooted, so avoid tilling or digging near them.

Spacing Set plants eight to 10 feet apart, in full to part sun. Since the plants can reach seven feet (or more) in height, other flowering or fruiting plants can be planted around or in front of them.

When to harvest Elderberries will fruit the second year after planting, with the third season being even more productive. Flowering and fruiting occur from late summer into fall. —J.L.

tal selections have been introduced; one of the most striking options is a cultivar of European elder called 'Eva' (Black Lace™) that has lacy purple foliage and pinkish flower clusters.

Fruiting occurs over a long period from late summer into fall and the plants generally have new flower clusters blooming at the same time as fruit clusters are ripening.

GROWING GUIDELINES

Although elderberries tolerate a wide variety of soils and locations, they grow best in fertile, mildly moist but well-drained soil, with a pH between 5.5 and 6.5. In the wild, they thrive at the edges of woods and in meadows, but they will also flourish tucked at the back of the home garden in full sun to part shade.

Plant elderberries in the spring, starting with nursery plants, rooted cuttings, or root divisions. Plant as early as the ground can be worked and mix a generous amount of composted organic matter into the soil of the holes before setting in the plants. Space them eight to 10 feet apart. Mulch generously to prevent weeds—you'll want to avoid cultivating the soil close to the plants because elderberries are shallow-rooted.

Fruiting is most prolific when two or more varieties are planted within 60 feet of each other for cross-pollination. Plants start producing when they are two to three years old. Elderberries send out suckers freely with vigorous new branches each season. One-year-old branches will develop side branches that produce the primary fruiting the second and third seasons, so it is a good idea to prune out any canes that are over three years old or any that are broken, dead, or

diseased. Elderberry canes are sturdy and upright, so no staking is required.

PESTS AND DISEASES

Elderberry plants are generally free of pests and diseases. Cane borers are occasionally a problem but are rarely present in large numbers and are easily controlled by removing old canes. Birds love the berries, so some protective netting over the plants during fruiting in late summer may be needed, but the harvest is generally so bountiful that gardeners can usually afford to share.

RECOMMENDED VARIETIES

The 'Adams' and 'Johns' series of American elderberry are reliable choices. Both are heavy producers, but 'Johns' begins producing fruit about two weeks earlier than 'Adams'. Another reliable but somewhat later producing cultivar is the mid-to late-season 'York'; its berries are slightly larger than either of the previous two cultivars. Planting 'Adams' and either 'Johns' or 'York' together is recommended for best production.



When cooked, elderberries can be used alone or with other fruits to make jelly, syrup, or pie.

Resources

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Sources

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www.americanmeadows.com.

Edible Landscaping, Afton, VA. (800) 524-4156.

www.ediblelandscaping.com.

Hirt's Gardens, Medina, OH. (330) 239-0506. www.hirts.com.

Horizon Herbs, Williams, OR. (541) 846-6704. www.horizonherbs.com.

Raintree Nursery, Morton, WA. (800) 391-8892. www.raintreenursery.com.

ENJOYING THE HARVEST

Although the ripe fresh berries look tempting, they have an unpleasant, bitter flavor. In addition, unripe berries contain a mild toxin that is neutralized by cooking or drying. They are best when used to make pies, jelly, juice, or syrup. Apples are a nice complement to elderberry flavor, so the fruits are often combined in pies and jelly.

The flowers can be harvested in clusters, divided, and the smaller clusters dipped into light pancake batter and quickly fried in oil for elderberry fritters. Wine can be made from either the flowers or the berries. Since flowering and fruiting occur simultaneously over many weeks, it's easy to try a variety of recipes for preserving both. Even the green berries are sometimes pickled to make a condiment much like capers. ☺

Jim Long is the owner of Long Creek Herbs in Blue Eye, Missouri. He's written more than 20 books on herbs, gardening, and cooking and blogs at jimlongsgarden.blogspot.com.

Understanding Cold Tolerance and Microclimates

by Scott Aker



IN THE DEPTHS of winter, our gardens are given over to nature. We watch the weather forecast to see if work or school might be cancelled, but most of us give little thought to the impact the weather is having on our gardens. People tend to assume plants are dormant and oblivious to the cold, but even when dormant, plants sense temperatures and react accordingly all winter long, gaining hardiness with sharper cold and taking the first steps to spring budding with warmth and longer days of late winter. While it may seem that we are at nature's mercy when it comes to losses from frost and cold, there are some things you can do to help plants in your garden better withstand temperature fluctuations.

Even quite hardy plants, like this euphorbia, may succumb to sudden cold snaps.

If you think that global warming means that you can start growing plants that were previously not hardy in your garden, you are mistaken. While average temperatures have been on the increase, the potential for short bouts of damaging cold still exists for most of us in North America.

In the future, the plants we choose for our gardens may actually need to have greater winter hardiness, because long warm interludes during the winter can cause many plants to fail to develop the full measure of dormancy they need in order to be prepared to withstand short icy blasts. By all means continue to experiment with borderline hardy plants, but don't expect drastic and permanent changes in your plant palette.

HOW PLANTS DEAL WITH COLD

To fully understand the steps you can take to protect plants from extreme cold, you should first understand how plants deal with cold. Cold is a problem for plants because, like us, they are composed mostly of water. When that water freezes, it forms ice crystals. What was liquid and fluid one moment turns into something solid and sharp-edged the next. Water also expands as it freezes. The result is massive rupturing of cell membranes. When the ice crystals melt, the liquids leak from the mangled cells and there is no possibility of recovery. Cold-hardy plants get around this by preventing the formation of ice crystals in their tissues or slowing their formation drastically, so individual ice crystals are much smaller and less damaging.

Most of the water in deciduous trees and shrubs is withdrawn to the roots, where it is protected from rapid temperature changes by the mass of earth in which they are growing. Even if the ground freezes, it freezes much more slowly than water in the aerial parts of the plant. This results in smaller ice crystals that may not damage cell membranes at all.

To see this process at work, monitor a hardy cactus in the autumn. The plains prickly pear cactus (*Opuntia polyacantha*), for instance, can withstand temperatures of minus 50 degrees Fahrenheit (F) by removing water from its fleshy pads to the point where the liquid within cells has such a high concentration of dissolved sugars and salts that it cannot freeze. Water loss is linked to daylength, in part, so the cactus is ready for winter even if it arrives very suddenly after a long period of warm fall weather. The cactus will shrivel with shorter days, even if the ground is continuously moist.

WAYS COLD CAN INJURE

Cold also injures plants by drying out living

tissues. Envision a broad-leaved evergreen plant such as a Southern magnolia (*Magnolia grandiflora*). The dark green leaves intercept sunlight that assists in the photosynthetic process. The sunlight also elevates the temperature of the leaf tissue. With the leaf tissue now warmed, water vapor is lost from the leaf more rapidly, particularly if the humidity is low, as it often is on cold, sunny winter days. If the soil is frozen or dry from lack of rain, the net result is that water is lost more rapidly than it can be replaced. Strong wind that continuously carries away the warmer, moister air near the leaf surfaces makes things worse by promoting even more water loss. Leaf tissues dry to the point of no return, and scorch is soon evident around the margins of leaves, farthest from the sustaining source of water.

Temperatures below freezing are not needed to injure truly tropical plants. Banana tree leaves turn greasy and black in temperatures below 40 degrees F because the cold upsets the biochemistry of the membranes in cells, compromising them irreparably.

Even some plants that are well adapted to cold can't handle sudden changes in temperature. A camellia that is hardy to 0 degrees F may not be injured by even colder temperatures if it has a long period of gradual acclimation to progressively cooler temperatures. Yet the same camellia might be severely damaged if it suddenly experiences a 10 degree F night after a long period when the minimum has been 30 degrees F.

IDENTIFYING AND CREATING MICROCLIMATES

If you have not already identified your garden's most sheltered spots, this is a good time to do it because it will help you site marginally hardy plants by the time planting season arrives. First, think of all the things in your landscape that buffer extreme temperatures. The dark color of an asphalt driveway and its mass may help it hold heat that is radiated from it on cold nights, giving nearby plants a few degrees of warmth that may be crucial to survival. The same is true of stone or masonry walls, long known by gardeners for their ability to gather and provide warmth to plants growing nearby. Don't overlook your foundation or basement walls when looking for warm spots. Use large sections of wall to your advantage by training more tender plants on them.

Gardening Q&A with Scott Aker

GETTING AN AMARYLLIS TO REBLOOM

I carefully followed all the instructions for an amaryllis that I got last December. The bulb got huge, and I've had it in a cool part of my basement since November. I've been checking now for a month for signs of life, and the holidays have passed. Any hope it might still bloom?

Your amaryllis will definitely bloom if the bulb recovered nicely from last year's flowering. It will need 10 weeks of storage in cool temperatures to bloom, and it will tell you it is ready when you see the tips of the flower stalks poking up from the bulb. Amaryllises naturally bloom in early spring unless they are harvested early—as holiday amaryllises are—and kept in cool storage throughout fall.

ROSEMARY NEEDS TO CHILL

I received a rosemary topiary from a friend, and it's been lovely and fragrant in my windowsill. I've given it as much light as I can, but I can't keep it as cool as recommended. It's started putting on some weak new growth. How can I keep it healthy?

Keep it as cool as you possibly can, give it as much sun as you can, and water it sparingly. If the weather is above freezing, place the plant outside in a protected location. You can keep it outdoors as long as temperatures don't dip far below freezing. Your rosemary will be happier with a few frosty nights than it will be in the low humidity and warmish temperature found indoors. —S.A.


Send your gardening questions to Scott Aker at saker@ahs.org (please include your city and state with submissions).

Exposure is also important. A south facing slope presents a more favorable aspect to the weak winter sun and may be several degrees warmer than a north facing slope. A bed on the east side of your home will intercept the sun's first rays in morning. While this may seem advantageous, it is often not, particularly for broad-leaved evergreens. Eastern exposures see the most rapid rise in temperature from their coldest just before dawn to full sun a short time after sun rise. The rapid rise in temperature may be challenging for borderline hardy plants. A western exposure is better since plants have many hours to be gradually warmed before they receive the full intensity of bright sun on clear winter days.

A friend who gardens in Quebec can grow perennials that aren't reliably hardy in my Maryland garden. His success lies in the deep, reliable snow cover that insulates his plants. Often only the surface of the soil freezes in his garden, while a 15 degree morning results in several inches of frost penetrating the exposed soil of my garden beds. Perhaps worse are the many freeze-and-thaw cycles that churn

the soil in my garden, heaving roots out of the ground, whereas in his garden, soil temperature stays right around freezing under the snow.

Emulate nature by spreading loose, fluffy mulch around plants that need more protection. Dry leaves and straw are my favorite materials for this purpose, and I've found that piling them up to two feet deep helps to keep the soil warmer throughout the winter. A few branches or evergreen boughs on top will protect the mulch from winter wind. Be sure to check plants as weather warms in late winter and early spring so you can move the mulch aside before growth begins.

Remember that plants are alive throughout the winter, and life processes require water. During any periods of unseasonable warmth and dryness, it's a good idea to water newly planted trees, shrubs, and perennials. The extra shot of water will help them sail through the next cold snap, and encourage healthy spring growth. 

Scott Aker is a horticulturist based in the Washington, D.C. area.

Horticultural News and Research Important to American Gardeners

PROMISING NATIVE SHRUBS

The very qualities that make non-native shrubs such as burning bush (*Euonymus alatus*) so popular for challenging landscaping situations also can make them invasive. Jessica Lubell, a professor in the Department of Plant Science and Landscape Architecture at the Univer-



Native to the eastern United States, these sweet ferns thrive in a challenging parking lot setting.

sity of Connecticut, is on a mission to find and promote native shrubs that are as adaptable and ornamental, yet more well-behaved, than their exotic counterparts. Over the last few years, several species have shown promise in her research trials.

“Some of the species that have performed well and show wide adaptability are *Cephalanthus occidentalis* (buttonbush), *Comptonia peregrina* (sweet fern), *Diervilla lonicera* (northern bush honeysuckle), *Eubotrys racemosa* (sweetbells), *Myrica gale* (sweetgale), *Prunus pumila* var. *depressa* (creeping sand cherry), *Corylus americana* (American filbert), and *Spiraea tomentosa* (steeplebush),” says Lubell. “These species are relatively underused so they provide an addition to what is currently being grown [by nurseries].”

Outstanding landscape performance is one thing, but Lubell notes that growers are often hesitant to add native species to their inventories because little may be

known about best practices for cultivating them. In an effort to make these plants become more commercially viable, she is also experimenting with various propagation methods to determine which species would be the easiest to grow.

So far this research, published in the August 2013 issue of *HortScience*, has shown that *Corylus cornuta* (beaked hazelnut) and *Viburnum acerifolium* (mapleleaf viburnum) “could be propagated at a level necessary for consideration as a new commercial crop by general wholesale nurseries looking to add select native shrubs to their product lines.”

To learn more about this research into native shrubs, visit plantscience.uconn.edu/lubellcv.html.

BREADFRUIT'S MOSQUITO-REPELLING ABILITY CONFIRMED

Breadfruit (*Artocarpus altilis*) has been cultivated for thousands of years in tropical regions around the Pacific Ocean for its many virtues, such as its nutritious

fruit and useful wood. It also has a long history of use as a mosquito repellent. “The tip of the hard, dried inflorescence is burned, like a mosquito coil,” explains Diane Ragone, director of the National Tropical Botanical Garden’s Breadfruit Institute in Kalaheo, Hawaii.

The chemicals responsible for this have recently been identified by scientists from the U.S. Department of Agriculture’s Agricultural Research Service (ARS) and Canada’s University of British Columbia. “This was the first research to show that breadfruit really works as a repellent, validating a folk remedy,” says Charles Cantrell, chemist at the ARS Natural Products Utilization Research Unit in Oxford, Mississippi. “We found that three chemicals—capric, undecanoic, and lauric acids—were responsible for the repellent activity,” says Cantrell.

When these compounds were applied to artificial membranes over a blood substitute or to cloth worn by human volunteers, they were “significantly more



Mosquito-repelling chemicals produced by breadfruit trees have been identified.

LEFT: COURTESY OF JESSICA LUBELL/UNIVERSITY OF CONNECTICUT. RIGHT: COURTESY OF JIM WISEMAN

effective at repelling mosquitoes than DEET, the primary insecticide against biting insects,” says Kamal Chauhan, chemist at the ARS Invasive Insect Biocontrol and Behavior Laboratory in Beltsville, Maryland.

Find more information about this study at www.ars.usda.gov.

CORNELL UNIVERSITY'S ONE-STOP-SHOP FOR CLIMATE CHANGE INFORMATION

Cornell University in Ithaca, New York, has launched a new website designed to provide reliable information to farmers and gardeners on climate change in their area. “Climate change is such a complex issue, reaching into virtually every facet of our lives today that no simple summaries are adequate,” says Jonathan Comstock, content coordinator of Cornell Climate Change website. “Cornell has a tremendous breadth of activities related to understanding and coping with climate change that range from research and education to Extension and outreach. This website will help connect those activities across the entire Cornell



This nearly dried up lake near San Luis Obispo in California, caused by prolonged drought, may be a sign of climate change.

community to both invigorate them by cross-fertilization and to make their fruits available to the general public.”

The new resource provides information on how to deal with climate change and to help farmers and gardeners find ways to be part of the solution. It contains a searchable directory of research related to climate change and Cornell’s outreach programs, along with summaries, contact information, and links to more information. Visitors can explore a Climate Change Forum, where Cornell experts explain their research; Climate Change Q&A, where visitors can ask a Cornell expert their questions; and news updates that focus on how the Cornell community is addressing the issue.

“What’s with the Weather” is one of the site’s features that Allison Charchyan, director of Cornell’s new Institute for Climate Change and Agriculture, is particularly excited about. “We relay information from the Northeast Regional Climate Center at Cornell that helps explain recent weather events within the context of climate change,” she says. “It’s

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COURTESY OF TIM MCCABE / NGRS

the kind of timely research-based information that you can share around the water cooler when the conversation inevitably turns to weird weather.”

The overall goal of the website, says Chatrchyan, is to “explain the science of climate change so that everyone can understand how it affects their lives, and can start making changes.”

To learn more, visit climatechange.cornell.edu.

CRAPE MYRTLE COLLECTION ACHIEVES NAPCC ACCREDITATION


The crape myrtle (*Lagerstroemia* sp.) collection at Norfolk Botanical Garden (NBG) in Virginia recently received the North American Plant Collections Consortium (NAPCC) accreditation from the American Public Gardens Association. This accreditation designates the collection as a resource for plant identification and cultivar registration as well as sets the standard for other crape myrtle collections. This NBG collection contains 82 different *Lagerstroemia* species and cultivars, located throughout the garden’s 155 acres.







This specimen in full bloom is part of Norfolk Botanical Garden’s impressive crape myrtle collection.

These plants were favored by Fred Heutte, the first director of the NBG from 1936 to 1966, so have had prominent placement at the garden from the beginning. Ranging from small shrubs to medium-sized trees, crape myrtles make

versatile additions to many gardens, offering a long and colorful bloom period in the summer, brilliant fall color, and mottled bark year-round. Learn more about NBG’s collection at www.norfolkbotanicalgarden.org.




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PEOPLE and PLACES in the NEWS

Garden Book Editor and Author Frances Tenenbaum Dies

The garden writing world lost one of its giants when Frances Tenenbaum died on September 24, 2013 at the age of 94 in Cambridge, Massachusetts. With a journalism background, Tenenbaum began her career editing for various magazines, newspapers, and book publishers. At the age of 55, she became a book editor for Houghton Mifflin in Boston, where she began to specialize in gardening books. In particular, for more than 30 years she edited the well-respected Taylor's Guide series including *Taylor's Encyclopedia of Garden Plants* (2003). She also wrote several books, including *Gardening At The Shore*, published in 2006 by Timber Press.



Frances Tenenbaum

Among the many awards Tenenbaum received were the 1999 Horticultural Communication Award from the American Horticultural Society and the 2000 Gold Medal from the Massachusetts Horticultural Society. She was named to the Garden Writers Association Hall of Fame in 2004.

To read a profile of Tenenbaum previously published in this magazine, click on the web special linked to this issue on the AHS website (www.ahs.org).

Monrovia Debuting Online Retail Ordering Option

Have you ever tried to acquire an unusual plant or a specific cultivar but couldn't find it in your local garden centers? Monrovia, a wholesale nursery based in Azusa, California, is hoping to provide a solution by offering its plants directly to home gardeners through its website starting in January. Shoppers can have the plants shipped to participating independent garden centers in their area for pick-up in spring.

"Oftentimes we find that the plants people are looking for just aren't available in their area," says David Kirby, vice president of sales at Monrovia, "or they have a difficult time securing orders in their garden center." The idea, Kirby explains, is to help independent garden centers offer more variety to their customers as well as bring online shoppers to these businesses they might not otherwise visit.

To learn more, visit www.monrovia.com/shop-monrovia.

HIGHER-YIELDING HABANERO

If you like hot peppers, a new habanero pepper currently known as 'Caro-Tex 312' soon will heat up your taste buds. Boasting a number of outstanding attributes, this hybrid is the result of a collaborative effort between Texas A&M University's Vegetable and Fruit Improvement Center in Col-



'Caro-Tex 312' produces bountiful harvests of bright orange hot peppers.

lege Station and the USDA Agricultural Research Service's Vegetable Laboratory in Charleston, South Carolina.

For starters, "its horticultural attributes include very high yields, and deep orange colored fruit," says Texas A&M associate professor Kevin Crosby. And because it produces fruit sooner in the growing season, "multiple harvests are possible," Crosby adds. In trials when harvests from other habanero varieties began to markedly decline, 'Caro-Tex 312' continued to fruit heavily. Also unique to this hybrid are "resistance genes against tomato spotted wilt virus and root knot nematode as well as tobacco mosaic virus and potato virus Y," notes Crosby. For more information about this pepper, visit vffc.tamu.edu.

News written by Editorial Intern Audrey Harman and Associate Editor Viveka Neveln.

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Devastating Disease Causes Citrus Crisis

by Missy Katner



Citrus greening, a bacterial disease, is considered a grave threat to American citrus growing.

HAVE YOU noticed the cost of orange juice skyrocketing in recent years? You can thank citrus greening, a bacterial disease originating in China, which has ravaged Florida's citrus groves since it was first detected in the state in 2005. Also known by its Chinese name *huanglongbing* (HLB), which translates to "yellow dragon disease," it is fatal to all species of citrus and no cure exists.

"HLB is arguably the most significant threat that commercial citrus has faced in the U.S.," says Matt Daugherty, assistant Extension specialist at the Department of Entomology at University of California–Riverside. In the last eight years, it has cost Florida alone billions of dollars in ruined fruit and lost jobs. The relentless disease has reached such epidemic proportions that the U.S. Department of Agriculture announced in December that it is creating a "unified emergency response framework" to better coordinate the efforts of all the various state and Federal entities working on the problem.

HLB is also a very serious concern for home gardeners, notes Daugherty, especially in states where it is prevalent. Awareness is key to protecting healthy plants and preventing further spread of the disease.

TINY TROUBLEMAKERS

Not for the first time, a bug and a bacterium are collaborating to wreak agri-



Above: Tiny sap-sucking insects called psyllids transmit the citrus greening bacteria. **Right:** Citrus trees infected with the disease, such as this pomelo, bear misshapen and bitter-tasting fruit.

cultural, economic, and environmental havoc on a global scale. The bacterial pathogen that causes HLB is primarily spread by the Asian citrus psyllid, an insect as small as a pencil point that feeds on citrus leaves. HLB itself causes citrus trees to produce bitter, misshapen, green fruit—rendering it unmarketable as either produce or for juice. Trees decline and die over the span of a few years.

Either the disease or the psyllid is present in most major citrus-producing areas of the world. In North America, these areas include Mexico, California, Texas, Hawaii, Arizona, and much of the southern United States. State and Federal-issued quarantines are currently in place to slow the spread of the disease while researchers race to find solutions. Limited success has been seen with biological control of the psyllids, heat-treating infected trees, spraying micronutrients on the foliage, and using antibiotics to curtail the bacteria, but no big breakthroughs have been made.

"The ultimate solution may be the development of new citrus varieties that are resistant to the psyllid and/or pathogen," Daugherty says. "However, those varieties are, at best, several years away."

In the meantime, citrus growers must remove infected trees as fast as possible to prevent the demise of whole groves. Many





Symptoms of citrus greening disease include the development of mottled yellow-green patterns on the foliage.

have turned to using ever-increasing quantities of pesticides to reduce psyllid populations. For farmers already struggling to stay profitable, the added expense of aggressive spray programs coupled with drastically reduced yields is not sustainable long term.

As the situation grows more dire, the National Center for Genetic Resources Preservation in Colorado has begun preserving pathogen-free citrus germplasm for restoring lost or imperiled cultivars. Whether farmers will want to grow them remains to be seen—many are selling off their dying citrus groves to developers or turning to alternative crops.

ON THE HOMEFRONT

If you plan to grow any kind of citrus in your garden or indoors, purchase your trees from reputable, licensed nurseries. To make sure new trees are pest free, it's a good idea to quarantine them from other citrus for a few weeks before planting. In-

spect your new tree regularly for signs of psyllids or greening.

“Because there is no cure for HLB once a tree is infected,” Daugherty says, “home growers are limited to reducing the potential for psyllid transmission of the pathogen.” This can mean using physical barriers or chemical controls. But be forewarned that preventive applications of pesticides have yielded mixed success on a residential scale, primarily because no single chemical is completely effective at eliminating the pest in all stages of its life cycle.

Closely inspect both newly planted trees and existing trees for signs of HLB or psyllids at least monthly. The first symptom of citrus greening—and it may take years after infection before it appears—is yellowing of the foliage (hence the name yellow dragon disease). Look for blotchy yellow-to-green mottled patches on leaves, Daugherty advises. Some nutritional deficiencies can cause a similar mottling on leaves, but in that case the pattern of yellowing will look the same on both sides of the leaf, whereas the greening-induced mottling is unique on either side of the leaf.

The only definitive way to know if your tree has the disease is through DNA analysis by an authorized plant diagnostic laboratory. If you suspect your tree has HLB, it should be removed immediately. To prevent any further spread of the bacterium from the infected plant, do not compost it. If possible, allow it to completely dry out and double bag all parts of it before disposal.

You should also report it to your local county agricultural commissioner's office or the state department of agriculture. “Some states have a hotline specifically for reporting invasive pests and diseases,” says Daugherty. You also can report it online through www.saveourcitrus.org, a website run by the USDA's Animal and Plant Health Inspection Service.

UNCERTAIN PROGNOSIS

Despite the millions of dollars already spent on tracking and research, the yellow dragon continues to elude control efforts. As the ramifications of HLB continue to play out, the fate of the entire American citrus industry is at stake.

Freelance writer Missy Katner is always better prepared to tackle her day after a slice of grapefruit in the morning.

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GREEN GARAGE®

Contributing editor Rita Pelczar reports on products she has found useful or innovative in her garden, with an emphasis on earth-friendly tools and supplies. Here she focuses on products for making winter garden chores easier.

Making the Most of Winter Days

Minus the foliage and colorful blooms that flesh out the landscape in other seasons, certain chores awaiting your attention become more obvious in winter, such as trees and hedges that would benefit from a trim and hardscaping that needs repair. Don't wait until the busy growing season is upon you, put on your gloves now and get busy.

Wonder Grip® Nicely Nimble™ gloves are just what you need to tackle those winter chores. Made of seamless knit nylon/Spandex, the palms are coated with a layer of flexible, breathable nitrile. These gloves strike the right balance between protecting your hands and maintaining finger dexterity. Plus the nitrile palms give you a non-slip grip, even when wet. For heavier jobs, palms of the **Wonder Grip® WG310** are double-coated with textured latex. The gloves are available in a variety of sizes and colors. www.lfsglove.com.



The precision-ground blades of the **Garden Multi-Snip** from Fiskars make short work of small pruning jobs, and they are even equipped with a notch for cutting wire. More tasks can be tackled with the outside edges of the blades: one edge is a very sharp utility knife, great for slicing open bags of fertilizer, the other edge is serrated for sawing through twine or light rope. The tool comes with a storage sheath. www.fiskars.com.



Toro's new **Cordless Max Hedge Trimmer** will help you keep your hedges in shape, even if they're not near an electrical outlet—it's powered by a rechargeable 24-volt battery. With a 24-inch steel cutting bar, the trimmer has a good reach, and it cuts through branches up to $\frac{5}{8}$ inches thick. It also works great for removing the old growth of herbaceous perennials before new growth emerges in spring.



The handle rotates 90 degrees, so you can cut both horizontally and vertically with ease. And at only seven pounds, it's easy to maneuver. www.toro.com.

Lifting large, heavy bags of fertilizer and potting soil is made easier with the **Handy Camel**, which resembles a chip-bag clip on steroids. Made of rugged plastic, it is 17 inches long and has a sturdy handle for toting bags up to 40 pounds. Its hinged closure system provides a tight seal, so it's also useful for securing opened bags and preventing spills. It works great for keeping mice out of my birdseed and chicken feed. www.thehandycamel.com.



The chilly months are a good time to check your houseplants and see which need repotting. The **Garden Chic Potting Bench** provides just the right place for me to get the job done. I love its compact, efficient design; almost a yard wide but only 14 inches deep, it fits easily into my mudroom but can also be used outdoors. The sturdy eucalyptus frame includes a shelf and two drawers for storing labels, markers, and other items. The zinc tabletop makes cleanup a breeze.



On the lower shelf of the potting bench I keep my **Garden Accessory Storage Box**. It's a hinged polypropylene box with secure latches and a handle. It is 15 by 14 by $3\frac{1}{2}$ inches with lots of compartments for organizing small items. I primarily use mine for the seeds I'm saving for spring. Both the potting bench and the storage box are available from Gardener's Supply Company (www.gardeners.com).



A contributing editor for The American Gardener, Rita Pelczar lives near Asheville, North Carolina.



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Recommendations for Your Gardening Library

What's Wrong with My Fruit Garden?

David Deardorff and Kathryn Wadsworth. Timber Press, Portland, Oregon, 2013. 312 pages. Publisher's price, softcover: \$24.95.

BEYOND STRAWBERRY plants in a container or a few blueberry bushes here and there, most gardeners don't grow a wide variety of fruiting plants. This is partly because of space limitations, and partly because some fruits have a reputation for being difficult to grow successfully in a home garden.



In *What's Wrong with My Fruit Garden?*, authors David Deardorff and Kathryn Wadsworth aim to allay these qualms, contending that you can grow tasty, blemish-free fruits and nuts with much less work than

you might think. They provide extensive information based on their many years of experience to help you successfully cultivate 37 different crops—from almonds to watermelons—and grasp concepts that will help you grow many others.

The book includes a two-page profile of each plant with some basic botanical and cultural information. A problem-solving guide, complete with clear color photographs, makes it easy to diagnose pest and disease issues common to each of these plants. Once you have narrowed down the culprit of your fruit troubles, the authors list several “100 percent organic” remedies ranging from cultural to chemical.

For example, if those blueberries you may be trying to grow shrivel up and then turn grayish white, you've got a case of mummyberry. Suggested solutions include managing water, enhancing air movement, and applying baking soda, sulfur, or copper. You can look up each of the listed remedies in the back of the book for more details about how and why they work.

When it comes to pesticides, the authors are careful to point out that just because a product is approved for organic gardens, it still can be harmful to non-target species. They advise using “the least toxic product first” and only going the pesticide route after other strategies have proven ineffective.

If I have any criticism of this well-organized and concise book, it's that I wished even more types of fruits had been profiled. Hopefully there will be a sequel.

—Doreen Howard

Doreen Howard's most recent book, Heirloom Flavor, has just been released by Cool Springs Press. Based in Roscoe, Illinois, she blogs for The Old Farmer's Almanac and is the former garden editor for Woman's Day magazine.

Vegetable Literacy: Cooking and Gardening with Twelve Families from the Edible Plant Kingdom.

Deborah Madison. Ten Speed Press, Emeryville, California, 2013. 416 pages. Publishers price, hardcover: \$40.

FOR MANY gardeners, planting a garden is all about flowers, yet for cooks it's more about growing food. Leave it to Deborah Madison—a leading authority on vegetarian cooking—to inspire both gardeners and cooks to pay attention to how botany affects flavor. *Vegetable Literacy* is a significant and unique addition to the world of cookbooks, as it challenges the way most of us think about edible plants.



While Madison's muse was a single carrot that went to seed in her garden, it is clear that ample research went into this endeavor. The book focuses on 12 plant families whose edible members are those “we are most familiar with at the table.” Chapter size varies from large ones on the nightshades (potatoes, tomatoes, peppers) and legumes (beans, peas, peanuts) to the single entry under morning glory (sweet potatoes).

“Because the garden is the other side of the kitchen,” she writes, “it helps to have some ideas about how to use what we grow, how plants relate to one another on the plate as well as in the garden bed.” With a keen eye and clever palate, Madison uses her knowledge of botanical similarities to create delicious combinations of vegetables and herbs. In the carrot family, for example, she notes that “the exceptionally large numbers of herbs in this family are, for the most part, perfection with any of their companion vegetables.” For each plant, she also includes other “companions” such as cheeses, oils, fruits, and nuts that go well with it. Stunning photography by Christopher Hirsheimer and Melissa Hamilton illustrate the text.

Madison's prose is both warm and personal as she offers food for thought as well as more than 300 new recipes designed to bring out the best in each vegetable. A recipe index arranged by plant family makes it easy to find innovative ways to prepare whichever vegetable you have on hand.

Vegetable Literacy is sure to inspire improvisation in the kitchen and curiosity in the garden. This insightful look at vegetables and herbs will influence the way you cook, eat, and garden.

—Ellen Ecker Ogden

Ellen Ecker Ogden is the author of The Complete Kitchen Garden (Stewart, Tabori & Chang, 2011) featuring theme designs and recipes for cooks who garden. Learn more at www.ellenogden.com.

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Published by Mitchell Beazley/Octopus Books USA

Washington Park Arboretum

by Helen Thompson



THE WASHINGTON PARK Arboretum (WPA) is something of an urban oasis. Co-managed by the Seattle Parks Department and the University of Washington, this sprawling city park in the middle of Seattle actually used to be home to a lumber mill in the 1880s. The space comes with a unique history and a modern twist.

By 1900, it was a modest city park—one of Seattle's first. The Olmsted Brothers landscape architecture firm, led by Frederick Law Olmsted's two sons, started designing the arboretum around the turn of the 20th century, but the park was not established as an arboretum until 1934. Today, WPA comprises 230 acres, nestled amid two north Seattle

neighborhoods and Lake Washington. It contains more than 10,000 individual plants belonging to 4,400 taxa.

AN OLMSTED LEGACY

The crowning feature of the Olmsted plan for Washington Park turned a dirt "speedway" into a meandering meadow path lined with flowering azaleas, dogwoods, and cherry trees, many of which were planted by Seattle Garden Club members in the 1930s. One of the more striking remnants of the Olmsted design, **Azalea Way** is absolutely beautiful in spring. "People come from all over to walk the length and see the flowering cherries and azaleas," says David Zuckerman, the WPA's manager of horticulture and plant records.

One of Zuckerman's favorite autumn features is the **Woodland Garden**, which showcases many of the Arboretum's Japanese maples. "Every year when the colors change, it always seems to give you a beautiful view," says Zuckerman. The Woodland Garden's lagoon also serves as one of the Arboretum's two watersheds.

Another great place to see stunning fall color is the **Seattle Japanese Garden**, a three-and-a-half-acre facility located at the southern end of the Arboretum. This garden, which is maintained by the Seattle Parks Department, has an entrance fee.

During cooler seasons, the **Witt Winter Garden** features "plants that 'wow' in the winter time," explains Zucker-

In spring, visitors can enjoy the meandering paths of Azalea Way, which still hews close to the original design by the Olmsted Brothers firm.



Mahonias and other plants with winter interest grace the Witt Winter Garden, left, while an exotic monkey puzzle tree draws visitors to the new Pacific Connections collection, right.

man. These include hellebores, Chinese witch hazels, and dogwoods.

PACIFIC CONNECTIONS

One of the WPA's claims to fame is its vast collections of oaks, maples, hollies, magnolias, and camellias. According to Zuckerman, its conifers, including a grove of 60-year-old sequoias, often leave East Coast

visitors in awe. "When people come to the northwest, the thing that wows them the most is the size of our conifers," he says.

But, the WPA's latest display is a shift from more traditional fare. **Pacific Connections** aims to transport visitors across continents. Plants from the Otago region of New Zealand, the Sichuan province of China, the peatlands of Chile, Australia's



Plants from disparate regions with similar climates can be seen in the Pacific Connections area.

Additional Information

Washington Park Arboretum,
2300 Arboretum Drive E, Seattle, WA
98112. (206) 543-8800.
www.arboretumfoundation.org.

- Open daily dawn to dusk.
- Arboretum admission: Free.

■ Seattle Japanese Garden (www.seattlejapanesegarden.org) Admission: Adults \$6; Seniors/Students/Youths \$4; Children under five free.

Other nearby sites to explore:

Pike Place Market,
www.pikeplacemarket.org.

Woodland Park Zoo, www.zoo.org.

Discovery Park, www.seattle.gov/parks/environment/discovery.htm.

Victorian Alps, and Cascadia in the Pacific Northwest all grow side by side on the southern end of the Arboretum. Why bring these four disparate geographic areas together? They all have similar climates, and each region is also known for its plant diversity, explains Zuckerman. The sight of a Chilean monkey puzzle tree growing yards away from New Zealand flax creates an exotic vibe in the space.

FUTURE PLANS

Ultimately these "ecogeographic" gardens will lead to more extensive forests beyond, demonstrating how these plants grow in the wild. "The goal is basically for people to feel like they're there," says Zuckerman, "without having to hop on a jet and burn all this jet fuel to get to New Zealand. But, there's also a core conservation value." Currently, the beginnings of the Cascadia, New Zealand, and Chilean forests have been planted, with more to come in 2014.

The grounds of the WPA have the atmosphere of a traditional botanical site, with an impressive array of woody plant collections and an Olmsted legacy. But, with its free-flowing layout and unusual exhibits, the park maintains ties to both its urban environment and sister gardens along the Pacific Rim.

Helen Thompson is a freelance writer living in Great Falls, Virginia.



REGIONAL HAPPENINGS

Horticultural Events from Around the Country

NORTHEAST

CT, MA, ME, NH, NY, RI, VT

RAP JAN. 18–FEB. 16. **Amaryllis & Cymbidiums.** Special display. Buffalo & Erie County Botanical Gardens. Buffalo, New York. (716) 827-1584. www.buffalogardens.com.

RAP JAN. 25. **Extending the Season's Harvest: Growing Vegetables for Four Seasons.** Class. Berkshire Botanical Garden. Stockbridge, Massachusetts. (413) 298-3926. www.berkshirebotanical.org.

JAN. 25 & 26. **Cape and Islands Orchid Society Show.** The Resort and Conference Center. Hyannis, Massachusetts. (508) 540-5006. www.caos.org.

RAP JAN. 26. **Exploring Victory Gardens: How a Nation of Vegetable Growers Helped to Win the War.** Lecture. The Arnold Arboretum. Boston, Massachusetts. (617) 384-5209. www.aroretum.harvard.edu.

FEB. 5–7. **New England Grows! Expo.** Boston Convention & Exhibition Center. Boston, Massachusetts. (508) 653-3009. www.newenglandgrows.org.

FEB. 20–23. **Rhode Island Spring Flower & Garden Show.** Rhode Island Convention Center. Providence, Rhode Island. (401) 272-0980. www.flowershow.com.

FEB. 20–23. **Connecticut Flower & Garden Show.** Connecticut Convention Center. Hartford, Connecticut. (860) 844-8461. www.ctflowershow.com.

RAP FEB. 22 & 23. **Camellia House Weekend.** Music, tours, activities. Planting Fields Arboretum. Oyster Bay, New York. (516) 922-8600. www.plantingfields.org.

MAR. 1. **Hardy Plant Symposium.** Connecticut Hardy Plant Society. Wethersfield, Connecticut. (860) 747-8175. www.cthardyplantsociety.org.

MID-ATLANTIC

DC, DE, MD, NJ, PA, VA, WV

RAP JAN. 25. **Winter Tree ID.** Class. U.S. National Arboretum. Washington, DC. (202) 245-4523. www.usna.usda.gov.

JAN. 25–MAR. 30. **Orchid Extravaganza.** Exhibition. Longwood Gardens. Kennett Square,

Botanical gardens and arboreta that participate in AHS's Reciprocal Admissions Program are identified with the **RAP** symbol. AHS members showing a valid membership card are eligible for free admission to the garden or other benefits. Special events may not be included; contact the host site for details or visit www.ahs.org/rap.

Pennsylvania. (610) 388-1000. www.longwoodgardens.org.

RAP JAN. 26–APR. 21. **Orchid Exhibition.** Smithsonian Gardens. Washington, DC. (202) 633-2220. www.gardens.si.edu.

FEB. 7–9. **Home & Garden Show.** The Greater Richmond Convention Center. Richmond, Virginia. (804) 467-7038. www.macevents.com.

RAP FEB. 12–14. **Winter Symposium & CVNLA Short Course.** Lewis Ginter Botanical Garden. Richmond, Virginia. (804) 262-9887. www.lewisginter.org.

FEB. 13–16. **New Jersey Flower & Garden Show.** New Jersey Convention Center. Edison, New Jersey. (732) 449-4004. www.njflowershow.com.

RAP FEB. 15. **Garden Seminar—By the Yard.** Norfolk Botanical Garden. Norfolk, Virginia. (757) 441-5830. www.norfolkbotanicalgarden.org.

FEB. 20. **Land Ethics Symposium: Creative Approaches for Ecological Landscaping.** Sheraton Bucks County Hotel. Bowman's Hill Wildlife Preserve. Langhorne, Pennsylvania. (215) 862-2924. www.bhwp.org.

Looking ahead

MAR. 1–9. **Philadelphia Flower Show.** Pennsylvania Convention Center. Pennsylvania Horticultural Society. Philadelphia, Pennsylvania. (215) 988-8800. www.phsonline.org.

MAR. 29. **Lahr Native Plant Symposium and Sale.** U.S. National Arboretum, Washington, DC. (202) 245-4521. www.usna.usda.gov.

SOUTHEAST

AL, FL, GA, KY, NC, SC, TN

RAP JAN. 24–26. **Chocolate Festival.** Fairchild Tropical Botanic Garden. Coral Ga-

bles, Florida. (305) 667-1651. www.fairchildgarden.org.

RAP JAN. 24–26. **Southern Gardening Symposium.** Callaway Gardens. Pine Mountain, Georgia. (800) 225-5292. www.callawaygardens.com.

JAN. 25 & 26. **Manatee River Orchid Society Show.** Bradenton Municipal Auditorium. Bradenton, Florida. (941) 723-1356. www.manateeriverorchidsociety.com.

RAP JAN. 28–30. **Southern Gardening Symposium: The Pleasure Garden.** Atlanta Botanical Garden. Atlanta, Georgia. (404) 876-5859. www.atlantabotanicalgarden.org.

RAP JAN. 31–FEB. 2. **Sandhills Orchid Society Spring Show.** Cape Fear Botanic Garden. Fayetteville, North Carolina. (910) 494-4764. www.sandhillorchid.org.

RAP FEB. 22 & 23. **Garden Festival & Bonsai Show.** Flamingo Gardens. Davie, Florida. (954) 473-2955. www.flamingogardens.org.

FEB. 27–MAR. 2. **Nashville Lawn & Garden Show.** Nashville, Tennessee. (615) 876-7680. www.nashvillelawnandgardenshow.com.

MAR. 4. **Celebrating 30 Years: It's All About the Plants Symposium.** Davidson Garden Club. Davidson, North Carolina. (206) 979-6483. www.davisonssymposium.org.

MAR. 5–MAY 18. **International Flower & Garden Festival.** Walt Disney World Resort. Lake Buena Vista, Florida. (407) 939-5277. www.disneyworld.disney.go.com.

NORTH CENTRAL

IA, IL, IN, MI, MN, ND, NE, OH, SD, WI

JAN. 21–30. **Cleveland Home & Garden Show Expo.** Great Lakes Expo Center. Cleveland, Ohio. (216) 529-1300. www.homeandflower.com.

JAN. 25 & 26. **Orchid Society of Minnesota "40th Anniversary" Winter Carnival Orchid Show.** Marjorie McNeely Conservatory. St. Paul, Minnesota. (612) 223-4059. www.mnorchid.wix.com.

RAP JAN. 26. **Winterfest.** Family-friendly activities. Boerner Botanical Gardens.

Hales Corners, Wisconsin. (414) 525-5650. www.boernerbotanicalgardens.org.

RAP FEB. 6. **Herbal Remedies for Winter.** Class. Green Bay Botanical Garden. Green Bay, Wisconsin. (920) 490-9457. www.gbbg.org.

RAP FEB. 15–MAR. 16. **Orchid Show.** Chicago Botanic Garden. Glencoe, Illinois. (847) 835-5440. www.chicagobotanic.org.

FEB. 15. **Winter Seminar 2014: Four Seasons of Color.** Men's Garden Club of Youngstown. Girard, Ohio. (330) 545-2266. www.mgcy.org/Pages/default.aspx.

FEB. 18. **Harmful Algae Bloom: When Blooms Go Bad.** Class. Matthaei Botanical Gardens & Nichols Arboretum. Ann Arbor, Michigan. (734) 647-7600. www.lsa.umich.edu/mbg/learn/community.asp.

FEB. 27–MAR. 2. **Fort Wayne Home & Garden Show.** Allen County Memorial Coliseum. Fort Wayne, Indiana. (260) 432-1705. <http://home-gardenshow.com>.

Looking ahead

MAR. 15–23. **Chicago Flower & Garden Show.** Navy Pier. Chicago, Illinois. (312) 241-1250. www.chicagoflower.com.

SOUTH CENTRAL

AR, KS, LA, MO, MS, OK, TX

RAP JAN. 25. **Tree Talk Winter Walk.** Lady Bird Johnson Wildflower Center. Austin, Texas. (512) 232-0200. www.wildflower.org.

RAP JAN. 29. **Great Texas Trees.** Lecture. South Texas Botanical Gardens & Nature Center. Corpus Christi, Texas. (361) 852-2100. www.stxbot.org.

RAP FEB. 15. **Arbor Day Native Plant Sale.** Crosby Arboretum, Mississippi State University. Picayune, Mississippi. (601) 799-2311. www.crosbyarboretum.msstate.edu.

FEB. 21–23. **Arkansas Flower & Garden Show.** Statehouse Convention Center. Little Rock, Arkansas. (501) 821-4000. www.arkansas.com/events.

RAP FEB. 27. **Succulent Wreath Workshop.** Botanica. Wichita, Kansas. (316) 264-0448. www.botanica.org.

Looking ahead

MAR. 1–31. **Nacogdoches Azalea Trail.** Tours. Nacogdoches, Texas. (936) 564-7351. www.nacogdochesazaleas.com.

SOUTHWEST

AZ, CO, NM, UT

RAP FEB. 3. **Downton Abbey: Its Gardens and Landscapes.** Lecture. Santa Fe Botan-

Restored Conservatory Opens at the Birmingham Botanical Garden

FIRST OPENED in December 1962, the conservatory at Birmingham Botanical Garden (BBG) in Alabama has become an iconic landmark not only for the garden but for the city of Birmingham.



The newly restored conservatory preserves its classic architecture with modern infrastructure.

It is also noteworthy as an increasingly rare example of conservatory architecture because several others of its type in North America have been demolished. Its own aging infrastructure posed a safety hazard, forcing its closing in April 2011. Two-and-a-half years and \$1.4 million later, the completely renovated

conservatory reopened to the public in December 2013.

Now visitors once again may enjoy the conservatory's collections of orchids, camellias, economically important species such as coffee and banana, tropicals such as palms and cycads, and native and exotic desert plants. The next phase of BBG's ongoing Master Plan involves creating new exhibits to showcase in the updated conservatory.

To learn more, visit www.bbgardens.org or call (205) 414-3950.

Chicago Botanic Garden to Host Its First Major Orchid Show

ONE OF THE largest and most diverse flowering plant families will bring an infusion of color to brighten Chicago's winter during the Chicago Botanic Garden's Orchid Show from February 15 to March 16. More than 12,000 orchids from around the world will surround visitors with their exotic beauty and tantalizing fragrance. Displays such as an orchid-and-palm allée and several orchid trees will show off the dazzling diversity of these plants, and educational exhibits will describe orchid conservation efforts. Throughout the show, experts from the Illinois Orchid Society (IOS) will be available to answer questions and provide re-potting services; on weekends the society will also offer orchids for sale.



Orchids such as this delicate-looking *Habenaria medusa* will be part of Chicago Botanic Garden's Orchid Show.

In tandem with the displays, several orchid-focused special events will be offered such as family activities involving ice-cream-making (using the vanilla orchid seed) and creating a tropical terrarium. On March 8 and 9, the IOS will host a judged orchid show.

For tickets and a more detailed list of the show's features, visit www.chicagobotanic.org or call (847) 835-5440.

—Audrey Harman, Editorial Intern

Dallas Blooms Celebrates 30th Anniversary



Thousands of tulips help welcome spring at the Dallas Arboretum and Botanical Garden.

FOR THE LAST three decades, Dallas Arboretum and Botanical Garden in Texas has celebrated spring with a floral extravaganza known as Dallas Blooms. This annual festival features some 500,000 spring-blooming bulbs including tulips, daffodils, Dutch irises, and hyacinths, in addition to thousands of other spring-blooming annuals, perennials, and woody plants. This year, the 30th annual Dallas Blooms promises to be even more spectacular, according to Terry Lendecker, the Arboretum's vice president of advertising and promotions. This year's festival is featuring Birds in Paradise with two 75-foot-tall peacock topiaries and a Birdhouse Display that will be up through the end of the year. The festival runs from February 21 through April 5.

The Dallas Arboretum participates in the AHS's Reciprocal Admissions Program. Present your current AHS membership card to receive free admission and parking. Find more information by visiting www.dallasarboretum.org or calling (214) 515-6615.

—Audrey Harman, Editorial Intern

ical Garden. Santa Fe, New Mexico. (505) 471-9103. www.santafebotanicalgarden.org.

RAP FEB. 12. **Honeybee Hive Management Systems.** Class. The Hudson Gardens & Event Center. Littleton, Colorado. (303) 797-8565. www.hudsongardens.org.

FEB. 22. **High Plains Landscape Workshop.** Lincoln Center. Fort Collins, Colorado. (970) 416-2486. www.fcgov.com/gardens.

RAP FEB. 28. **Chihuly in the Garden: An Inside View.** Lecture. Desert Botanical Garden. Phoenix, Arizona. (480) 941-1225. www.dbg.org.

Looking ahead

RAP MAR. 9. **Waterwise Landscape Planning for Non-Designers.** Class. Denver

Botanic Gardens. (720) 865-3500. www.botanicgardens.org.

MAR. 7-9. **Maricopa County Home Show—Southwestern Flower & Garden Experience.** University of Phoenix Stadium. Phoenix, Arizona. (602) 485-1691. www.maricopacountyhomeshow.com.

WEST COAST

CA, HI, NV

JAN. 24-26. **Peninsula Orchid Society Show & Sale.** Community Activities Building. Redwood City, California. (510) 494-8850. www.penorchidsoc.org.

RAP JAN. 26 & FEB. 9. **Seeing is the Seed: Exploring the Arboretum and A Place of Your Own With Words on Paper.** Class. Los

Angeles County Arboretum & Botanic Garden. Arcadia, California. (626) 821-3222. www.arboretum.org.

RAP JAN. 31-FEB. 14. **Introduction to Ceanothus.** Class. Santa Barbara Botanic Garden. Santa Barbara, California. (805) 682-4726. www.sbbg.org.

RAP FEB. 22. **Fruit Tree Pruning 101.** Class. Mendocino Coast Botanical Gardens. Fort Bragg, California. (707) 964-4352. www.gardenbythesea.org.

MAR. 19-23. **San Francisco Flower & Garden Show.** San Mateo Event Center, San Francisco, California. (415) 684-7278. <http://sfgardenshow.com>.

NORTHWEST

AK, ID, MT, OR, WA, WY

JAN. 27-31. **Tacoma Home & Garden Show.** Tacoma Dome. Tacoma, Washington. (253) 756-2121. www.otshows.com.

FEB. 5-9. **Northwest Flower & Garden Show.** Washington State Convention Center. Seattle, Washington. (253) 756-2121. www.gardenshow.com.

FEB. 16. **The Design and Aesthetics of the Japanese Garden.** Lecture. Portland Japanese Garden. Portland, Oregon. (503) 223-1321. www.japanesegarden.com.

RAP FEB. 22. **Gardener's Special Winter Guided Walk.** Leach Botanical Garden. Portland, Oregon. (503) 823-9503. www.leachgarden.org.

FEB. 28-MAR. 2. **Yard, Garden, and Patio Show.** Oregon Association of Nurseries. Oregon Convention Center. Portland, Oregon. (503) 682-5089. www.ygshow.com.

CANADA

RAP JAN. 27. **Garden Design: Top Trends for 2014.** Class. Toronto Botanical Garden. Toronto, Ontario. (416) 397-1341. www.torontobotanicalgarden.ca.

FEB. 1. **Plant Lab: Roots are Radical.** Class. VanDusen Botanical Garden. Vancouver, British Columbia. (604) 718-5898. www.vandusengarden.org.

RAP MAR. 1 & 2. **Orchid Society Annual Show.** Royal Botanical Gardens. Hamilton, Ontario. (905) 527-1158. www.rbg.ca.

MAR. 14-23. **Canada Blooms.** Flower and garden show. Direct Energy Centre. Toronto, Ontario. (416) 447-8655. <http://canadablooms.com>.

2014 AHS Seed Exchange

Nearly 200 kinds of seeds are offered in this year's Seed Exchange, available only to American Horticultural Society members. For a quick reference, here is the list of seeds to choose from, with an order form on the back of the following page. To see the full catalog with detailed plant descriptions, visit www.ahs.org/seeds. If you prefer to receive a printed copy of the catalog, please send a self-addressed, stamped, legal-size envelope to us at **Seed Exchange Catalog, 7931 East Boulevard Drive, Alexandria, VA 22308**.

ANNUALS

- | | | | |
|--|---|--|---|
| 1 <i>Angelica gigas</i> (purple angelica) | 25 <i>Mirabilis jalapa</i> (four o'clock, marvel of Peru, mixed colors) | 49 <i>Chasmanthium latifolium</i> (river oats) | 73 <i>Oenothera biennis</i> (evening primrose) |
| 2 <i>Antirrhinum majus</i> (snapdragon) | 26 <i>Nicotiana sylvestris</i> (woodland tobacco) | 50 <i>Coreopsis grandiflora</i> (tickseed) | 74 <i>Ornithogalum longibracteatum</i> (false sea onion) |
| 3 <i>Calendula officinalis</i> (pot marigold) | 27 <i>Nigella damascena</i> (love-in-a-mist) | 51 <i>Coreopsis lanceolata</i> (lance-leaved tickseed) | 75 <i>Rudbeckia hirta</i> (black-eyed Susan) |
| 4 <i>Celosia</i> sp. (cockscomb) | 28 <i>Oenothera glazioviana</i> , syn. <i>O. lamarckiana</i> (magic evening primrose) | 52 <i>Dianthus deltoides</i> (maiden pink) | 76 <i>Telekia speciosa</i> (heartlife, yellow oxeye daisy) |
| 5 <i>Chrysanthemum carinatum</i> syn. <i>C. tricolor</i> (painted daisy) | 29 <i>Papaver rhoeas</i> (Flanders poppy) | 53 <i>Digitalis lutea</i> , syn. <i>D. eriostachya</i> (straw foxglove) | 77 <i>Verbascum chaixii</i> (nettle-leaved mullein mix) |
| 6 <i>Chrysanthemum coronarium</i> (garland chrysanthemum) | 30 <i>Papaver somniferum</i> (breadseed poppy) | 54 <i>Digitalis purpurea</i> (common foxglove) | VINES |
| 7 <i>Cleome hassleriana</i> (spider flower) | 31 <i>Ricinus communis</i> (castor bean) | 55 <i>Echinacea purpurea</i> (purple coneflower) | 78 <i>Aristolochia fimbriata</i> (Dutchman's pipe) |
| 8 <i>Consolida ajacis</i> syn. <i>Delphinium ajacis</i> (larkspur, mixed colors) | 32 <i>Rudbeckia</i> spp. (black-eyed Susan, gloriosa daisy) | 56 <i>Echinops bannaticus</i> (globe thistle) | 79 <i>Campsis radicans</i> (trumpet creeper, trumpet vine) |
| 9 <i>Consolida ajacis</i> 'Giant Imperial Mix' (rocket larkspur) | 33 <i>Silene armeria</i> (garden catchfly) | 57 <i>Echinops ritro</i> (southern globe thistle) | 80 <i>Cardiospermum halicacabum</i> (balloon vine, love-in-a-puff) |
| 10 <i>Coreopsis tinctoria</i> syn. <i>Calliopsis tinctoria</i> (tickseed) | 34 <i>Tagetes erecta</i> (Crackerjack series marigold) | 58 <i>Erodium manescaui</i> , syn. <i>E. manescavii</i> (Manescau erodium, heron's bill) | 81 <i>Lablab purpurea</i> (hyacinth bean) |
| 11 <i>Cosmos bipinnatus</i> 'Sensation Mixed Color' (cosmos mixture) | 35 <i>Tagetes patula</i> (French marigold mix) | 59 <i>Erysimum asperum</i> (western wallflower) | 82 <i>Lathyrus odoratus</i> 'Old Spice Mix' (annual sweet pea mix) |
| 12 <i>Cosmos sulfureus</i> (gold cosmos) | 36 <i>Torenia fournieri</i> 'Clown Blue' (wishbone flower cultivar) | 60 <i>Gaillardia aristata</i> (blanketflower) | TREES AND SHRUBS |
| 13 <i>Dianthus barbatus</i> (sweet William) | 37 <i>Zinnia elegans</i> 'California Giant Mix' (zinnia cultivar mix) | 61 <i>Gentiana andrewsii</i> (bottle gentian) | 83 <i>Chionanthus retusus</i> (Chinese fringe tree) |
| 14 <i>Gilia tricolor</i> (bird's eyes) | 38 <i>Zinnia elegans</i> 'Come and Cut Again Mix' (zinnia cultivar mix) | 62 <i>Helenium autumnale</i> (sneezeweed) | 84 <i>Maclura pomifera</i> (Osage-orange) |
| 15 <i>Gypsophila elegans</i> (baby's breath) | 39 <i>Zinnia elegans</i> 'Lilliput Mixed Colors' (zinnia cultivar mix) | 63 <i>Hemerocallis</i> sp. (daylily hybrid) | 85 <i>Magnolia tripetala</i> (umbrella magnolia) |
| 16 <i>Helianthus annuus</i> 'Dwarf Sungold' (sunflower cultivar) | 40 <i>Zinnia haageana</i> , syn. <i>Z. angustifolia</i> (Persian zinnia) | 64 <i>Hesperis matronalis</i> (dame's violet, sweet rocket) | 86 <i>Styrax japonicus</i> (Japanese snowbell) |
| 17 <i>Helianthus annuus</i> 'Fun 'N Sun' (hybrid sunflower mix) | 41 <i>Zinnia peruviana</i> , syn. <i>Z. pauciflora</i> (Peruvian zinnia) | 65 <i>Hosta</i> spp. (hosta, plantain lily hybrids) | 87 <i>Styrax japonicus</i> 'Pink Chimes' (Japanese snowbell cultivar) |
| 18 <i>Helianthus annuus</i> 'Lemon Queen' (sunflower cultivar) | PERENNIALS | 66 <i>Leucanthemum</i> sp. (Shasta daisy) | 88 <i>Ulmus americana</i> (American elm) |
| 19 <i>Impatiens balsamina</i> (balsam) | 42 <i>Alcea rosea</i> (common hollyhock) | 67 <i>Lilium formosanum</i> (Formosa lily) | HERBS |
| 20 <i>Linum grandiflorum</i> var. <i>rubrum</i> (scarlet flax) | 43 <i>Aquilegia alpina</i> (alpine columbine) | 68 <i>Lobelia cardinalis</i> (cardinal flower) | 89 <i>Allium schoenoprasum</i> (chives) |
| 21 <i>Linum usitatissimum</i> (common flax, linseed) | 44 <i>Aquilegia</i> spp. (mixed-color columbines) | 69 <i>Lobelia siphilitica</i> (blue lobelia) | 90 <i>Anethum graveolens</i> (dill) |
| 22 <i>Lobularia maritima</i> syn. <i>Alyssum maritimum</i> (sweet alyssum, carpet of snow) | 45 <i>Asclepias incarnata</i> (swamp milkweed) | 70 <i>Lychnis coronaria</i> (rose campion) | 91 <i>Borago officinalis</i> (borage) |
| 23 <i>Lunaria annua</i> (honesty, money plant) | 46 <i>Baptisia australis</i> (false indigo) | 71 <i>Lychnis coronaria</i> 'Alba' (white rose campion) | 92 <i>Coriandrum sativum</i> (cilantro) |
| 24 <i>Melampodium</i> sp. (gold medallion flower) | 47 <i>Belamcanda chinensis</i> (blackberry lily) | 72 <i>Malva moschata</i> (musk mallow) | 93 <i>Foeniculum vulgare</i> 'Florence' (fennel cultivar) |
| | 48 <i>Cassia hebecarpa</i> (wild senna, American senna) | | 94 <i>Matricaria recutita</i> (German chamomile) |
| | | | 95 <i>Mentha x piperita</i> (peppermint) |

- 96 *Ocimum basilicum* (Genovese basil)
- 97 *Ocimum basilicum* (large-leaf Italian basil)
- 98 *Ocimum basilicum* (Thai basil)
- 99 *Origanum majorana* (marjoram)
- 100 *Origanum vulgare* (oregano)
- 101 *Petroselinum crispum* (parsley)
- 102 *Salvia officinalis* (common sage, purple sage)
- VEGETABLES AND FRUITS**
- 103 *Abelmoschus esculentus* 'Burgundy' (heirloom okra cultivar)
- 104 *Abelmoschus esculentus* 'Clemson Spineless' and 'Clemson Spineless 80' (heirloom okra cultivars)
- 105 *Allium cepa* 'Red Purple' (bunching onion cultivar)
- 106 *Beta vulgaris* 'Chioggia' (beet cultivar)
- 107 *Beta vulgaris* 'Detroit Dark Red' (beet cultivar)
- 108 *Beta vulgaris* 'Ruby Queen' (beet cultivar)
- 109 *Brassica juncea* 'Southern Giant Curled' (mustard greens)
- 110 *Brassica oleracea* 'DeCicco' (broccoli cultivar)
- 111 *Brassica oleracea* 'Purple Vienna' (kohlrabi cultivar)
- 112 *Brassica oleracea* 'Red Russian' (kale cultivar)
- 113 *Brassica rapa* ssp. *chinensis* (pak choy)
- 114 *Brassica rapa* ssp. *nipposinica* (mizuna Asian greens)
- 115 *Brassica rapa* var. *narinosa* (tatsoi Asian greens)
- 116 *Capsicum annuum* 'Long Red Cayenne' (hot chili pepper cultivar)
- 117 *Capsicum annuum* 'Pompeii' (sweet bell pepper)
- 118 *Capsicum annuum* 'Tabasco' (hot pepper variety)
- 119 *Citrullus lanatus* var. *lanatus* 'Black Diamond' (watermelon cultivar)
- 120 *Citrullus lanatus* var. *lanatus* 'Blacktail Mountain' (watermelon cultivar)
- 121 *Citrullus lanatus* var. *lanatus* 'Golden Midget' (watermelon cultivar)
- 122 *Citrullus lanatus* var. *lanatus* 'Sugar Baby' (watermelon cultivar)
- 123 *Citrullus lanatus* var. *lanatus* 'Yellow Baby' (watermelon cultivar)
- 124 *Cucumis melo* 'Hale's Best' (cantaloupe cultivar)
- 125 *Cucumis melo* 'Honey Rock' (cantaloupe cultivar)
- 126 *Cucumis melo* 'Rocky Ford' (muskmelon cultivar)
- 127 *Cucumis sativus* 'Marketmore 76' (cucumber cultivar)
- 128 *Cucumis sativus* 'Parisian Pickling' (cucumber cultivar)
- 129 *Cucumis sativus* 'Straight Eight' (cucumber cultivar)
- 130 *Cucurbita pepo* 'Blue Hubbard' (winter squash cultivar)
- 131 *Cucurbita pepo* 'Buttercup' (winter squash cultivar)
- 132 *Cucurbita pepo* 'Butternut' (winter squash cultivar)
- 133 *Cucurbita pepo* 'Dill's Atlantic Giant' (pumpkin cultivar)
- 134 *Cucurbita pepo* 'Jack-o-Lantern' (pumpkin cultivar)
- 135 *Cucurbita pepo* 'Musquee de Provence' (pumpkin cultivar)
- 136 *Cucurbita pepo* 'Ronde de Nice' (summer squash cultivar)
- 137 *Cucurbita pepo* 'Yellow Crook-neck' (summer squash cultivar)
- 138 *Cucurbita pepo* 'Yugoslavian Finger Fruit' (heirloom squash cultivar)
- 139 *Cucurbita* spp. (mixed ornamental gourds)
- 140 *Daucus carota* var. *sativus* 'Danvers Half Long' (carrot cultivar)
- 141 *Daucus carota* var. *sativus* 'Nantes' (carrot cultivar)
- 142 *Eruca vesicaria* ssp. *sativa* (arugula)
- 143 Fall Garden Salad Mix (blend includes spinach, radish, lettuce, kale, cilantro, beet)
- 144 *Lactuca sativa* 'Buttercrunch' (Bibb head lettuce cultivar)
- 145 *Lactuca sativa* 'Green Towers' (romaine lettuce cultivar)
- 146 *Lactuca sativa* 'Red Oakleaf' (loose-leaf lettuce cultivar)
- 147 *Lactuca sativa* 'Red Salad Bowl' (loose-leaf lettuce cultivar)
- 148 *Lactuca sativa* 'Salad Bowl' (loose-leaf lettuce cultivar)
- 149 *Lycopersicon lycopersicum* 'Beefsteak' (tomato cultivar)
- 150 *Lycopersicon lycopersicum* 'Black Cherry' (tomato cultivar)
- 151 *Lycopersicon lycopersicum* 'Hillbilly' (tomato cultivar)
- 152 *Lycopersicon lycopersicum* 'Large Red Cherry' (tomato cultivar)
- 153 *Lycopersicon lycopersicum* 'Marianna's Peace' (tomato cultivar)
- 154 *Lycopersicon lycopersicum* 'Oxheart' (tomato cultivar)
- 155 *Lycopersicon lycopersicum* 'Red Pear' (tomato cultivar)
- 156 *Lycopersicon lycopersicum* 'Roma' (tomato cultivar)
- 157 *Lycopersicon lycopersicum* 'Rutgers' (tomato cultivar)
- 158 *Lycopersicon lycopersicum* 'Spoon' (tomato cultivar)
- 159 *Melothria scabra* (Mexican sour gherkin)
- 160 Mesclun Mix (greens blend includes arugula, kale, lettuce, mustard, endive, and mizuna)
- 161 Mild Mustard Mix (greens blend includes kale, pak choy, mizuna, and mustard)
- 162 *Phaseolus lunatus* 'Baby Thorogreen' (lima bean cultivar)
- 163 *Phaseolus vulgaris* 'Conover Family Butterbean' (heirloom butterbean cultivar)
- 164 *Phaseolus vulgaris* 'Early Contender' (bush bean cultivar)
- 165 *Phaseolus vulgaris* 'Fat Man' (pole bean cultivar)
- 166 *Phaseolus vulgaris* 'Frank Barnett' (pole bean cultivar)
- 167 *Phaseolus vulgaris* 'Golden Wax' (bush bean cultivar)
- 168 *Phaseolus vulgaris* 'Kentucky Blue' (pole bean cultivar)
- 169 *Physalis subglabrata* 'Toma Verde' (tomatillo cultivar)
- 170 *Pisum sativum* 'Laxton's Progress' (shelling pea cultivar)
- 171 *Pisum sativum* 'Oregon Sugar Pod' (sugar snap pea)
- 172 *Pisum sativum* var. *sativum* 'Mammoth Melting Sugar Snow' (snow pea cultivar)
- 173 *Raphanus sativus* 'Cherry Belle' (radish cultivar)
- 174 *Raphanus sativus* 'French Breakfast' (radish cultivar)
- 175 *Raphanus sativus* 'Red Meat' (radish cultivar)
- 176 *Sanguisorba minor*, syn. *Poterium sanguisorba* (salad burnet)
- 177 *Spinacia oleracea* 'Bloomsdale' (spinach cultivar)
- 178 *Spinacia oleracea* 'Vital Green' (spinach cultivar)
- 179 *Zea mays* 'Gotta Have It' (sweet corn cultivar)
- 180 *Zea mays* 'Japanese Hull-less' (popcorn cultivar)
- BONUS SEEDS**
- A *Actaea racemosa*, syn. *Cimicifuga racemosa* (black cohosh)
- B *Callistephus chinensis* 'Crego Mix' (China aster variety mix)
- C *Clitoria ternatea* (blue pea, butterfly pea)
- D *Collinsia heterophylla* (Chinese houses)
- E *Cuminum cyminum* (cumin)
- F *Dierama dracomontanum* (angel's fishing rod, wandflower)
- G *Euonymus americanus* (bursting-heart, strawberry bush)
- H *Hesperaloe parviflora*, syn. *Yucca parviflora* (red yucca)
- I *Kennedia prostrata* (running-postman, scarlet runner)
- J *Lycopersicon lycopersicum* 'Black from Tula' (tomato cultivar)
- K *Nemophila menziesii*, syn. *N. insignis* (baby blue eyes)
- L *Ocimum tenuiflorum*, syn. *O. sanctum* (sacred basil)
- M *Phormium tenax* 'Rainbow Striped Hybrids' (New Zealand flax hybrids)
- N *Sophora secundiflora* (mescal bean, Texas mountain laurel)
- O *Zea mays* 'Shades of Blue' (ornamental corn)

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- Please send me up to 15 seed packets, plus 5 bonus seed selections, the kneeling pad, the 2014 RAP brochure, and an *Old Farmer's Almanac* calendar for a donation of \$50 or more.

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Exp. date _____

Signature _____

Name on credit card _____

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(Use seed number only, please.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

A \$30 minimum donation is required to order more than 10 selections.

SUBSTITUTE SELECTIONS

1. _____
2. _____
3. _____
4. _____
5. _____

- Do not substitute any of my selections.

BONUS SEED SELECTIONS

(Use letter only, please.)

1. _____
2. _____
3. _____
4. _____
5. _____

SUBSTITUTE BONUS SELECTIONS

1. _____
2. _____
3. _____

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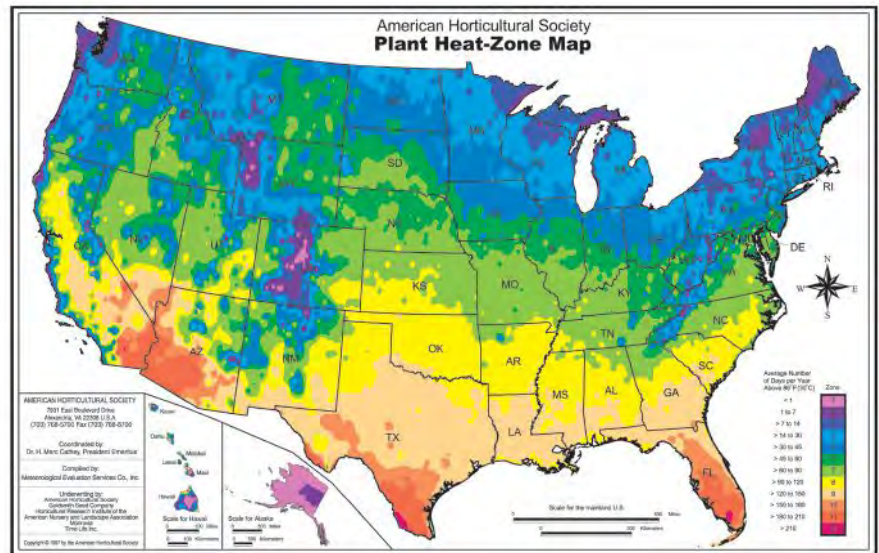
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PRONUNCIATIONS AND PLANTING ZONES

Most of the cultivated plants described in this issue are listed here with their pronunciations, USDA Plant Hardiness Zones, and AHS Plant Heat Zones. These zones suggest a range of locations where temperatures are appropriate—both in winter and summer—for growing each plant. USDA Zones listed are still aligned with the 1990 version of the USDA's map.

While the zones are a good place to start in determining plant adaptability in your region, factors such as exposure, moisture, snow cover, and humidity also play an important role in plant survival. The zones tend to be conservative; plants may grow outside the ranges indicated. A USDA zone rating of 0–0 means that the plant is a true annual and completes its life cycle in a year or less.



A–H

- Andropogon gerardii*** an-dro-PO-gon jeh-RAR-dee-eye (USDA Hardiness Zones 3–9, AHS Heat Zones 9–1)
- Angelica archangelica*** an-JEL-ih-kuh ark-an-JEL-ih-kuh (4–8, 8–1)
- Astrantia major*** uh-STRAN-tee-uh MAY-er (4–7, 7–1)
- Cotoneaster horizontalis*** ko-toh-nee-ASS-tur har-ih-zon-TAL-iss (4–7, 7–3)
- Cuphea cyanea*** KOO-fee-uh sy-AN-ee-uh (10–11, 12–3)
- C. glutinosa*** C. glew-tih-NO-suh (7–11, 12–6)
- C. hyssopifolia*** C. hiss-sop-ih-FO-lee-uh (11, 12–3)
- C. ignea*** C. IG-nee-uh (10–11, 12–6)
- C. micropetala*** C. my-kro-PET-uh-luh (7–11, 12–3)
- C. procumbens*** C. pro-KUM-benz (10–11, 12–8)
- C. xpurpurea*** C. pur-PUR-ee-uh (10–11, 12–3)
- Dionaea muscipula*** dy-o-NEE-uh mus-KIP-yew-luh (8–11, 12–1)
- Echinacea purpurea*** ek-ih-NAY-see-uh pur-PUR-ee-uh (4–9, 9–1)
- Emilia javanica*** ee-MEEL-yuh jah-VAH-nih-kuh (0–0, 9–1)
- Eryngium alpinum*** ee-RIN-jee-um al-PY-num (5–8, 8–4)
- E. giganteum*** E. jy-GAN-tee-um (4–9, 12–1)
- E. pandanifolium*** E. pan-dan-ih-FO-lee-um (8–10, 11–8)
- E. planum*** E. PLAY-num (5–9, 9–5)
- E. yuccifolium*** E. yuk-ih-FO-lee-um (4–9, 12–1)
- E. xzabelii*** E. zuh-BEL-ee-eye (4–8, 8–4)
- Festuca glauca*** fes-TEW-kuh GLAW-kuh (4–8, 8–1)
- Ficus costaricana*** FY-kus kos-tuh-ree-KAN-uh (min. 60 degrees F, 12–10)
- Hakonechloa macra*** ha-kon-eh-KLO-uh MAK-ruh (5–9, 9–2)
- Helianthus annuus*** hee-lee-AN-thus AN-yoo-us (0–0, 12–1)
- Hellebokus xericsmithii*** hel-eh-BOR-us eh-rik-SMITH-ee-eye (5–9, 9–5)
- Hosta sieboldiana*** HAHS-tuh see-bold-ee-AN-uh (3–8, 8–1)
- Hydrangea macrophylla*** hy-DRAN-juh mak-ro-FIL-luh (5–9, 9–5)

I–Z

- Illicium floridanum*** ih-LISS-ee-um flor-ih-DAN-um (6–9, 9–6)
- Lonicera caerulea*** lah-NISS-er-uh see-ROO-lee-uh (2–8, 8–1)
- L. periclymenum*** L. pair-ih-KLY-meh-num (4–8, 8–4)
- Lycium barbarum*** ly-SEE-um BAR-bar-um (5–9, 9–1)
- Magnolia grandiflora*** mag-NOLE-yuh gran-dih-FLOR-uh (6–9, 9–6)
- Mimosa pudica*** mih-MO-suh PEW-dih-kuh (min. 50 degrees F, 12–10)
- Myrrhis odorata*** MEER-iss o-doh-RAY-tuh (3–7, 7–1)
- Opuntia polyacantha*** o-PUN-shuh pah-lee-uh-KAN-thuh (2–8, 8–1)
- Osteospermum ecklonis*** os-tee-o-SPUR-mum ek-LON-iss (10–11, 8–1)
- Pennisetum alopecuroides*** pen-ih-SEE-tum al-o-pek-yew-ROY-deez (5–9, 9–1)
- Petunia xhybrida*** peh-TOON-yuh HY-brih-duh (0–0, 11–1)
- Pulsatilla vulgaris*** pull-suh-TIL-uh vul-GAIR-iss (5–7, 7–5)
- Punica granatum*** PYEW-nih-kuh gruh-NAY-tum (7–10, 10–6)
- Pyrus salicifolia*** PY-russ sal-iss-ih-FO-lee-uh (5–9, 9–4)
- Salix caprea*** SAY-lik KAP-ree-uh (4–8, 8–4)
- Sambucus canadensis*** sam-BOO-kus kan-uh-DEN-siss (2–9, 9–1)
- S. nigra*** S. NY-gruh (4–7, 7–1)
- S. racemosa*** S. ras-eh-MO-suh (3–7, 7–1)
- Scaevola aemula*** SKEE-vo-luh EE-mew-luh (0–0, 10–1)
- Tsuga canadensis*** SOO-gah kan-uh-DEN-siss (4–7, 7–3)
- Veronica spicata*** vur-ON-ih-kuh spy-KAY-tuh (3–8, 8–1)
- Waldsteinia fragarioides*** wald-STY-nee-uh fray-gar-ee-OY-deez (3–7, 7–1)
- Zinnia marilandica*** ZIN-ee-uh mair-ih-LAN-dih-kuh (0–0, 11–1)
- Zizia aptera*** ZIZ-ee-uh AP-tur-uh (4–9, 9–4)
- Z. aurea*** Z. AW-ree-uh (4–9, 9–3)

Waldsteinia fragarioides: A Great Native Groundcover

by Patricia Taylor

TWENTY YEARS ago, when conducting research for a book on native plants, I came across a groundcover called *Waldsteinia fragarioides* (USDA Hardiness Zones 3–7, AHS Heat Zones 7–1). It was described as being native throughout the eastern half of North America, evergreen, and featuring golden spring flowers. That sounded appealing, so I bought it and placed it under a deciduous shrubbery.

ATTRACTIVE AND DURABLE SPREADER

Although my book has, alas, long been out of print, the *Waldsteinia* still thrives in my Princeton, New Jersey, garden. Rabbits and deer have not bothered it, and it tolerates the occasional nibble of Japanese beetles and spider mites as well as the mildew and fungi that flourish in summer’s heat and humidity.

It has not only thrived, but looks good year round. From late spring to midsummer, its small five-petaled spring flowers glow on separate stalks against the three- to six-inch-tall, dark green, trifoliate leaves, which resemble those of strawberries. The attractive evergreen foliage often assumes decorative purple tones in winter. Its small, capsulelike fruits are inconspicuous and inedible.

Waldsteinia is reputed to sulk in the heat and humidity of the South. Well, where I live, we often experience 100 degree temperatures and 90 percent humidity in summer, and the extremes have not bothered the plant at all. The key, I



In the right garden site, barren strawberry makes a useful and attractive groundcover.

find, is to site it where it receives at least part shade in summer. Some references indicate it can be grown in full sun, but I suspect this would only be successful in regions with cooler climates than mine. It tolerates the infamous “dry shade,” but will do best in fertile, acidic, slightly moist soil. It will even tolerate light foot traffic.

NOT-SO-NOTEWORTHY NAMES

I tend to call this plant by its botanical name because I find its common names uninspiring. Its most familiar common name—barren strawberry—refers to the plant’s strawberrylike foliage and the fact that it rarely sets seed, instead spreading sedately by rhizomes (underground stems). But to my way of thinking, it’s difficult to praise a plant that is recognized for being “barren.” Another common name, Appalachian strawberry, seems to poorly represent the range in which the plant can successfully be grown.

As if common name woes are not enough, it now appears that even the

botanical name for the genus is up for grabs. In 2006, a researcher at Sweden’s Stockholm University published a paper saying that the plant—along with three or four other native species in the genus—should be classified in the genus *Geum*. Some American nurseries, as well as the Mt. Cuba Center in Delaware, are now using this designation. However, the U.S. Department of Agriculture and the International Society for Horticultural Science are sticking with *Waldsteinia*, at least for the time being.

I believe this name confusion—both common and botanical—is a contributing factor to the relative obscurity of this perennial. If you have a bare spot in a partly shaded area, I suggest you give it a try and call it whatever you like. You’ll find, as I have, that it is a handsome, almost no-care groundcover—one that will liven up your landscape through rain, shine, insects, and diseases for decades. ☺

Patricia Taylor is a freelance writer based in Princeton, New Jersey.

Sources

Bluestone Perennials, Madison, OH. (800) 852-5243. www.bluestoneperennials.com.

Triple Brook Farm Nursery, Southampton, MA. (413) 527-4626. www.triplebrookfarm.com.



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