



The American GARDENER[®]

The Magazine of the American Horticultural Society

January / February 2016

New Plants *for* 2016

**Broadleaved Evergreens
for Small Gardens**

The Dwarf Tomato Project

**Grow Your Own
Gourmet Mushrooms**

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NOTES FROM RIVER FARM

WITH THIS issue of *The American Gardener*, we mark the start of a new gardening year. All of us at the American Horticultural Society hope that your New Year is full of satisfying rewards, inspirational discoveries, and frequent opportunities to share your passion for plants and gardens. One plant at a time, one garden at a time, we are all making the world a better place!

As you map out your plans for 2016, remember to take advantage of some of the special opportunities that your AHS membership makes possible. For instance, this winter you can participate in our members-only annual seed exchange. You can get a glimpse of the seed offerings on page 57 of this issue. Look for the full catalog on the AHS website around the third week of January. This program is a great way to experiment with some new plants and broaden your garden palette.

Flower shows offer colorful excitement, especially in winter or early spring when—in most regions—our gardens are still dormant. Several shows across the country offer free or reduced admission to current AHS members showing a valid membership card; a few of the earliest ones are listed on pages 54 to 56 of this magazine.

In June, our attention turns to our headquarters at River Farm, where we present our annual Great American Gardeners Awards. We would be delighted to have you join us on June 2 as we celebrate the year's best in horticulture—a great incentive to visit the greater Washington, D.C., area and all the region's exceptional gardens.

The highlight of the summer will be our 24th annual National Children & Youth Garden Symposium, which will be held from July 14 to 16 in Columbia, South Carolina. Plans are well underway for the event and we are very excited about everything it will have to offer. One highlight will be a visit to Columbia's acclaimed Riverbanks Zoo and Garden and the chance to experience the brand new children's garden that is opening at Riverbanks this spring.

You'll find more details about all of these events and programs on our website (www.ahs.org), and in future issues of this magazine.

For now, this issue is packed with information and inspiration to whet your gardening appetite. It wouldn't be the New Year without our annual roundup of intriguing new plants and gardening trends, which starts on page 12. For bolstering the "bones" of your garden, don't miss suggestions for mid-size broadleaved evergreens from frequent contributor Andrew Bunting, now at the Chicago Botanic Garden. Those whose gardening proclivities extend to edibles will particularly enjoy the articles on a project to breed dwarf tomatoes and on growing gourmet mushrooms at home. All this and much more await you on the following pages.

We thank you for being a part of our AHS family and hope that our paths cross at one of our events in 2016!

Tom Underwood
Executive Director



Volunteers sort seed donations in preparation for the annual AHS seed exchange.

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CONTACT US

The American Gardener

7931 East Boulevard Drive

Alexandria, VA 22308

(703) 768-5700

EDITORIAL

E-MAIL: editor@ahs.org

ADVERTISING

E-MAIL: advertising@ahs.org

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SUCCESSFUL SCHOOL GARDEN

I read with great interest your article “Growing Good Kids through Gardening” in the September/October 2015 issue of *The American Gardener*. As a member of the American Horticultural Society living in London, I thought your readers might like to know about a gardening/food preparation program at the Charlton Manor School, a public primary school at which I volunteer.

The aim of the program is to show students where their food comes from and how food can make them healthy. The school garden is small, but room is found for chickens, beehives, and a pond. The students claim ownership of the garden in many ways, collecting the eggs for use in meal preparation and feeding the chickens with what is left from the school lunches. Any other waste they add to the compost heaps. The students also help harvest vegetables, fruits, and honey, and assist in using them to prepare school meals or be preserved.

Teachers also make full use of the garden as a teaching tool; recently I observed children using flower stalks as part of a project to learn how to measure in centimeters and millimeters.

The school has received many accolades and hosted well-known gardeners such as Peter Seabrook and chefs such as Raymond Blanc and Jamie Oliver. The students have appeared at the Chelsea and Hampton Court flower shows and have even been introduced to Queen Elizabeth. Anyone interested in learning more can visit the school’s website at www.charltonmanorprimary.co.uk.

*Renee Miller
London, United Kingdom*

CAPTION OMISSION

I noticed an omission in a photo caption in the otherwise very useful article about planting under trees, published in the November/December issue of the magazine. In the right-hand image on page 34 [shown], the foliage of the conspicuous groundcover is clearly lily-of-the-valley (*Convallaria majalis* var. *rosea*). However,



In the center of this photograph from the November/December issue, the pink flowers of Spanish bluebells (*Hyacinthoides hispanica*) rise above an expanse of lily-of-the-valley foliage.

the eye-catching pink flowers in the center of the photo are actually those of a pink selection of Spanish bluebells (*Hyacinthoides hispanica*). Since the Spanish bluebells were not identified, readers might mistake their flowers for the smaller pink ones on the lily-of-the-valley.

*Ella May Wulff
Philomath, Oregon*

MEADOW GARDENS

Thank you for publishing the article “The Grassman” in your November/December

We are looking for candidates for our “AHS Members Making a Difference” department, in which we profile current members who are using their gardening or horticultural skills for the greater good. If you have a story you’d like us to consider, e-mail a brief description of your efforts to editor@ahs.org or send a letter to us at the address listed at right.

issue. I appreciated the level of detail both on John Greenlee’s work and on the growing interest in meadow gardens. I was fascinated to learn about the thought process behind the use of grasses and other plants to emulate different African habitats at Disney’s Animal Kingdom in Florida.

For others with an interest in meadows, I recommend visiting the new meadow garden at Longwood Gardens in Kennett Square, Pennsylvania. When the garden opened last fall, I was fortunate to participate in a tour led by Tom Brightman, Longwood’s land steward, who recounted the fascinating process behind the 86-acre garden’s design and development.

*Carol Sandt
Pequea, Pennsylvania*

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

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 on www.ahs.org/rap. 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. 127, e-mail development@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 2016

PROGRAMS • EVENTS • ANNOUNCEMENTS

MEMBERS-ONLY SEED EXCHANGE

MEMBERS FROM almost every state submitted seeds for the American Horticultural Society's 2016 Seed Exchange. Combined with the numerous seeds donated by several seed companies, more than 200 varieties of annuals, perennials, vines, shrubs, trees, vegetables, and herbs are available to order this year. You can find a list of these seeds and an order form on pages 57 to 59, or go to www.ahs.org/seeds for the full catalog that includes descriptions for each of them. A number of the seed varieties are rare or available only in limited quantities, so ordering early is recommended. The deadline to order is March 5, and those who donated seeds to this year's exchange get first pick until February 19.



UPCOMING TRAVEL PROGRAM DESTINATIONS

A NEW YEAR presents new opportunities for experiencing the world's great gardens. The 2016 destinations for the American Horticultural Society's popular Travel Study program include "Gardens of Portugal: Lisbon, Sintra & the Island of Madeira" this spring and "Architecture & Gardens of the Veneto, Dolomites & Venice" in early September. The Italian trip has proven so popular that a second tour with a similar itinerary has been arranged from September 22 to October 1.



The gardens of Trauttmansdorff Castle in northern Italy

These trips to Italy and Portugal feature private tours of extraordinary gardens and estates that are not open to the general public. Participants also will meet and dine with many of the gardeners, designers, and owners, who tend these beautiful places with what AHS Executive Director **Tom Underwood** calls "true Old World passion." In addition to these memorable encounters, the itineraries include visits to world-famous museums and public attractions led by seasoned guides.

For more information and to reserve your place on one of these tours, call (800) 777-7931 or visit www.ahs.org/gardening-programs/travel-study.

SHOW OFF YOUR CITY

COMMUNITIES ACROSS the country have until February 28 to register for the 15th annual America in Bloom (AIB) competition. This friendly contest allows participants to showcase their beautification and environmental efforts in a national arena. Two judges visit each location for several days to give ratings in categories such as floral displays, heritage preservation, and environmental efforts.



The beautification efforts in Belpre, Ohio, were recognized in 2013 with the AIB's Outstanding Achievement Award for community service.

Cities, towns, townships, universities, business districts, military bases, and city boroughs are eligible. An AIB startup kit helps guide participants who are just beginning to reinvision their landscapes. Previous registrants have praised AIB as the most cost-effective way to get in-depth, expert comments on their efforts and for offering the rare opportunity to meet with dozens of other communities to exchange ideas. The AHS has a horticultural partnership with the AIB program and sponsors the organization's Outstanding Achievement Award for community service.

For more information, go to www.americainbloom.org.

COLONIAL WILLIAMSBURG GARDEN SYMPOSIUM

THE AHS is pleased to co-sponsor the 70th annual Colonial Williamsburg Garden Symposium, which will focus on contemporary garden trends. A number of horticultural luminaries will give presentations, including **Joe Lamp'1**, host of PBS's "Growing a Greener World"; **Kelly Norris**, an award-winning garden author who fuses pop culture with plants; **Brie Arthur**, a plant propagator and media personality; and **Kerry Mendez**, owner of Perennially Yours, a horticultural education company based in Vermont.

The symposium, scheduled for April 24 to 26 in Williamsburg, coincides with Historic Garden Week in Virginia, which allows attendees to see private gardens in the area that exemplify ideas from the symposium. AHS members are eligible for a discounted registration fee. Visit www.history.org/conted for more information.



Colonial Williamsburg

70th GARDEN SYMPOSIUM Gardens We Call Home: Insights from the Trailblazers and Trendsetters APRIL 24-26, 2016

Join us as we celebrate our 70th anniversary with gardening friends old and new. Trailblazing and trendsetting guest presenters include **Joe Lamp'1**, host of the TV garden show "Growing a Greener World"; author and lecturer **Kerry Mendez**; and horticulturists **Brie Arthur** and **Kelly Norris**.



Joe Lamp'1



Kelly Norris

Registrants can tour Colonial Williamsburg's gardens and those on the Historic Garden Week tour. One-day or three-day tickets are available.

www.history.org/conted
1-800-603-0948



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AHS 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.

- APR. 8 & 9. **Spring Garden Market at River Farm.** Alexandria, Virginia (Member's preview morning of April 8).
- APR. 16. **Great Gardens and Landscaping Symposium.** Woodstock, Vermont. (AHS partner event.)
- APR. 21-MAY 1. **Gardens of Portugal: Lisbon, Sintra and the Island of Madeira.** AHS Travel Study Program.
- APR. 23-30. **Historic Garden Week in Virginia.** (AHS partner event.)
- APR. 24-26. **Colonial Williamsburg Garden Symposium.** Williamsburg, Virginia. (AHS partner event.)
- MAY 17-21. **AHS President's Council Trip to Chicagoland area.** Illinois.
- JUNE 2. **Great American Gardeners and AHS Book Awards Ceremony and Banquet at River Farm.** Alexandria, Virginia.
- JULY 13-15. **The Gardeners of America/Men's Garden Club of America annual convention.** Green Bay, Wisconsin. (AHS partner event.)
- JULY 14-16. **National Children & Youth Garden Symposium.** Columbia, South Carolina.
- SEPT. 1-10. Italy: **Architecture and Gardens of the Veneto, Dolomites, and Venice.** AHS Travel Study Program. **SOLD OUT**
- SEPT. 17. **AHS Annual Gala at River Farm.** Alexandria, Virginia.
- SEPT. 22-OCT. 1. Italy: **Architecture and Gardens of the Veneto, Dolomites, and Venice.** AHS Travel Study Program.
- OCT. 6-8. **America in Bloom Symposium.** Grande Arroyo, California. (AHS partner event.)



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 and December 31, 2015.

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RIVER FARM SPRING GARDEN MARKET

ON APRIL 8 and 9, enjoy a once-a-year opportunity to shop for horticultural delights at River Farm, the AHS's scenic 25-acre headquarters overlooking the Potomac River in Alexandria, Virginia. The Spring Garden Market will feature vendors from across the mid-Atlantic region offering an array of plants as well as garden-related products, books, and accessories. One of the earliest and largest plant sales in the Washington, D.C. area, it has become a must-attend event for regional gardeners eager to kick off a new gardening year.

Current AHS members will have a chance to get first pick during the members-only preview on the morning of April 8 before the event opens to the general public. Parking is free for members and \$5 for non-members. Visit www.ahs.org for more details.

Written by AHS staff.



All kinds of plants will be available at the Spring Garden Market.

AHS MEMBERS MAKING A DIFFERENCE: Dale Sievert

by Benjamin Whitacre



Dale Sievert's garden in Wisconsin features about 50 species of mosses that he has collected.

WHEN DESIGNING gardens, Dale Sievert follows maxims that might elicit blinks of disbelief. Don't mix species, colors, or textures, for example. "It's like mixing plaid and stripes," he says. And don't select plants for their flowers. "Flowers are ephemeral but foliage lasts all season," he explains. But Sievert's most iconoclastic work involves mosses, particularly their use in formal gardens that in the Western tradition are typically the realms of roses and boxwoods.

Sievert's philosophy may seem to defy conventional garden design tenets, but his unapologetic views and expertise have made him one of America's most notable moss gardeners. Now retired from a career teaching economics, Sievert, who lives in Waukesha, Wisconsin, is frequently asked to propound upon his mossy methods. He gives presentations at places such as the Chicago Botanic Garden and has designed moss gardens at the Rotary Botanical Garden in Janesville, Wisconsin, and the Museum of Science and Industry in Chicago.

"Dale is doing unbelievable things with mosses," says Mark Dwyer, director of the Rotary Botanical Garden. "He is one of the people who are turning a 200-year tradition of moss as a weed on its head."



Dale Sievert

But Sievert, a rigorously logical septuagenarian with the wild ideas and enthusiasm of a teenager, very nearly missed out on his avocation.

SCIENCE AND ART

From childhood, Sievert dreamt of studying horticulture, landscape architecture, or forestry. All that faded when the Soviet Union launched Sputnik in 1957, and the young Sievert became obsessed with the Space Race. But he never stayed away from plants for long, applying his passion for science and art to his private study of horticulture. After he had already embarked on a career as an

economics professor, he was invited to become the first horticulture professor at Milwaukee Area Technical College, which he did for a year. While still teaching economics, Sievert also founded his own nursery and landscape contracting business.

But it wasn't until after he'd retired, in 2005, that Sievert realized the ornamental potential of moss. During a visit to the now-defunct Foxfire Botanical Gardens in central Wisconsin, Sievert encountered mosses growing on rocks in dappled shade. "That's where I saw this small intentional use of mosses and it was life-changing," says Sievert. "I said that's what I have to do."

Since then, Sievert's pursuit of mosses as ornamentals has taken him on a wide-ranging journey from the forests near his home in Waukesha to the grand moss landscapes of Japan and Sri Lanka.

MOSS EXPERIMENT STATION

Sievert's one-acre home garden is considered a masterpiece by those who experience it. Aside from representing his unusual but compelling design philosophy, it is a working experiment in moss cultivation. Sievert tries about 50 species of moss at any given time, though he admits that usually only those native to his region survive for long.

His collection grows rapidly. When prominent moss expert Annie Martin crowned Sievert "the king of moss container gardening" in *The Magical World of Moss Gardening*, published last summer, he had 250 containers of moss. Now he has 300 containers and 600 moss-covered rocks. His garden is often a featured stop for horticultural events ranging from the American Hosta Society's convention to local garden club tours.

"Moss gardening is really new in the field of horticulture as far as any discipline or managed concept," says Martin. "We have to build up a body of knowledge about how to use mosses in the garden and Dale's efforts are going a long way towards that." 🌿

Benjamin Whitacre is an editorial intern for The American Gardener.

Here's a selection of plants worth trying in your garden this year.

BY CHARLOTTE GERMANE

EACH JANUARY, we offer you a preview of some of the showstoppers, as well as the quietly useful plants that will appear in catalogs and garden centers in the coming year. Out of the scores of new varieties introduced this year, we selected these plants because they were successfully trialed in test gardens around the country, won industry awards, were favorites of their growers, or simply captured the imagination of gardening pundits.

Trends for 2016 include compact plants that tuck easily into small gardens, native plants that are naturally adapted to regional conditions, deer resistant plants, and plants that support pollinators. Sometimes the new plants are just plain fun, like a hydrangea that blooms in two colors at once, a celosia with brilliant red plumes, or a wacky grafted tomato and potato plant.

In assembling this list, we appreciated the learned feedback from horticulture professionals and garden writers in many areas of the country, including Denny Schrock, lecturer and Master Gardener coordinator at Iowa State University in Ames; Jane Berger, journalist and landscape designer in Woods Hole, Massachusetts; Linda Askey, garden writer in Birmingham, Alabama; Mark Dwyer, director of horticulture at Rotary Botanical Gardens in Janesville, Wisconsin; Jessica Walliser, garden communicator in Pittsburgh, Pennsylvania; and Julie Bawden Davis, garden writer in Orange, California.

Charlotte Germane is digital communications manager for the American Horticultural Society.

New Plants for 2016



'Burning Heart' caladium

Annuals & Tender Perennials

A novel red caladium, '**Burning Heart**', was Linda Askey's favorite plant this year; it also received good ratings in a University of Georgia trial. The bronze leaves with orange and pink spots grow up to two feet tall in sun or shade. "It did well in the Alabama sun as long as there was moisture in the soil," Askey says. "If it dried out, the color faded and the leaves crisped. In bright shade, the plants were elegant and grand all season long. The color is a velvety rusty red, unlike any others I have ever seen. It is not traffic-stopping color, but it is enriching in a garden border. It works very well with warm color combinations and serves as a coarse texture." USDA Hardiness Zones 9–11, AHS Heat Zones 12–4. Classic Caladiums.

ALL PHOTOS COURTESY OF THE RESPECTIVE COMPANIES LISTED IN CAPTIONS UNLESS OTHERWISE NOTED.



'Dragon's Breath' celosia

Light a fire in your late-summer garden with the feathery red spikes of *Celosia argentea* var. *cristata* (Plumosa group) 'Dragon's Breath', backed up by distinctive red-and-green foliage. Growing to two feet tall in full sun, this was a big hit with Mark Dwyer. Tolerates heat, humidity, and drought. Zones 9–10, 10–1. Sakata Ornamentals.

A colorful spiller that Mark Dwyer singled out is *Calibrachoa Superbells*® Holy Moly!™. Its petunalike yellow flowers splashed with cherry-red bloom all summer on



Calibrachoa Superbells® Holy Moly!™

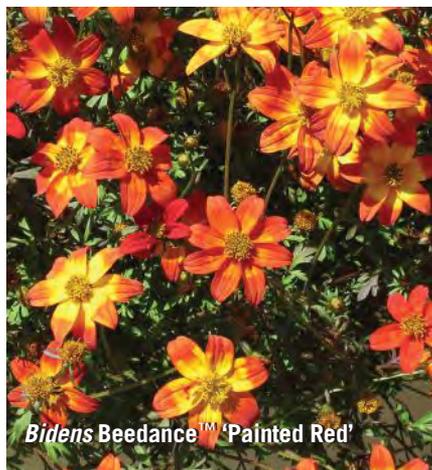
18-inch cascading stems, attracting hummingbirds. Adaptable to full or part sun. Zones 9–11, 11–1. Proven Winners.



Echeveria 'Wildfire'

Mark Dwyer pointed out the unusual coleus (*Solenostemon* sp.) called **Under The Sea**® **Copper Coral**, which has deeply-cut leaves with a shape that somewhat resembles a fish skeleton. The coloration of mottled red-orange and pink, with yellow edging and lime-green stems, makes a splash in a container, reaching 18 to 30 inches tall and spreading 12 to 18 inches wide in sun or shade. Zones 10–11, 12–1. Hort Couture.

Echeveria 'Wildfire', which forms a rosette of ruffled, red-edged foliage, captured the fancy of Linda Askey, who called it a



Bidens Beedance™ 'Painted Red'

“total delight.” She used this 10-inch-tall beauty in containers with other drought-tolerant succulents such as *Kalanchoe thyrsiflora* 'Flapjacks' and 'Fantastic', and trailing sedums 'Ogon' and 'Blue Spruce'. Zones 10–11, 12–10. Sprint Horticulture.

A heat-tolerant tickseed, *Bidens Beedance*™ 'Painted Red' is a staff favorite at Suntory for its fragrance and appeal to bees. Mounding to 11 inches and spreading three to four feet, these red-tipped yellow flowers can spill out of a container in full sun, blooming from spring to fall. Zones 9–11, 11–9. Suntory.

'Cherry Night', a variegated-leaf geranium (*Pelargonium × hortorum*), performed well in all areas of the country, earning an All-America Selections (AAS) National Flower Award. It has unusual bronze foliage with green edges, along with cherry-pink flowers. Use this in containers or garden beds, in sun or part shade. Zones 9–11, 11–1. Dümmen Orange.

For a long-blooming plant that attracts bees, butterflies, and hummingbirds, consider **Summer Jewel**™ **Lavender**, a new selection of scarlet sage (*Salvia coccinea*). An AAS Flower Award winner for the Southeast, Great Lakes, and Heartland regions, it grows up to two feet tall in full sun, blooming repeatedly from early summer until fall. Zones 8–10, 10–1. Takii & Co. Ltd.

Perennials

Expect chrysanthemum flowers year after year, in late summer and fall, with ***Dendranthema* 'Pumpkin Igloo'**. Denny Schrock was impressed by the “non-fading vibrant orange flower color on a compact branching plant that doesn’t need to be pinched.” Schrock also noted that new shoots emerging from the base of the plant in fall “were a good indication that it will survive winter well in USDA Zone 5.” Grow this 18-inch-tall plant in full sun. Zones 5–9, 9–5. Blooms of Bressingham.

Indigo Frost™ is a compact agapanthus with two-foot spikes of white-and-blue flowers that attract birds and butterflies. This drought-tolerant classic of Western



and Southern landscapes will bloom spring through summer in full sun to part shade. Zones 7–10, 10–7. Southern Living Plant Collection, Sunset Western Garden Collection.

High Country Gardens calls its orange-flowering ***Penstemon pinifolius* 'Luminous'** its 2016 Plant of the Year. This selection of the native evergreen pineleaf beardtongue grows to just 10 inches tall, making it a fine choice for edging in sunny, well-drained spots. Brilliant yellow-throated orange blossoms appear in late spring and early summer. Zones 5–9, 9–5. High Country Gardens.



Perovskia atriplicifolia 'Denim 'n Lace'

Grow your own vigorous white rock cress from seed with **'Pixie Pearls'** (*Aubrieta × cultorum*). The flowers open in early spring on six-inch mounds of evergreen foliage. Ideal for sunny or partly sunny rock gardens, walls, and paving crevices. Zones 4–8, 8–4. Jelitto Perennial Seeds.

Russian sage (*Perovskia atriplicifolia*) is a longtime garden favorite for its drought tolerance and deer resistance. Mark Dwyer was impressed by **'Denim 'n Lace'**, a new cultivar with shorter, upright stems that won't flop over. Choose a full-sun location for this 32-inch-tall plant and enjoy aromatic foliage and sky-blue flowers with amethyst calyxes from late spring to early fall. Zones 4–9, 9–4. Proven Winners.



Penstemon pinifolius 'Luminous'

An improved selection of North American native smooth oxeye (*Heliopsis helianthoides* var. *scabra*), **'Prima Ballerina'** brings sturdier stems to the middle or back of your sunny border. Drought tolerant and adaptable to clay soil, this will grow two feet tall in the first year and up to 40 inches in the second year. Its bright yellow daisylike flowers attract pollinators. Zones 3–9, 9–3. Jelitto Perennial Seeds.

Add stature to your dry garden or meadow with **'Thin Man'**, a six-foot-tall Indiangrass (*Sorghastrum nutans*) selection native to New Mexico. Heat and drought tolerant, 'Thin Man' has a narrow, upright growth habit. Birds and other wildlife will enjoy the bronze seedheads that ripen in late summer. Zones 4–9, 9–4. High Country Gardens.



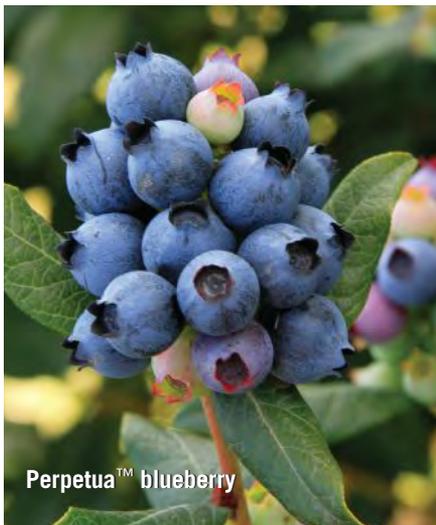
Heliopsis helianthoides var. *scabra* 'Prima Ballerina'

Edibles

Garden communicator Jessica Walliser extended her zucchini season this summer with a 2015 AAS National Award winner, **'Bossa Nova'**. "I loved the mottled light-and-dark green skin of this hybrid selection. The plants were a bit more compact than the other summer squash I grew, and 'Bossa Nova' was both the earliest producer and the latest! I had fruit from 'Bossa Nova' a full week before the other summer squash varieties in my garden, and it kept cranking out zucchinis almost until frost." Zones 0-0, 12-1. Park Seed.

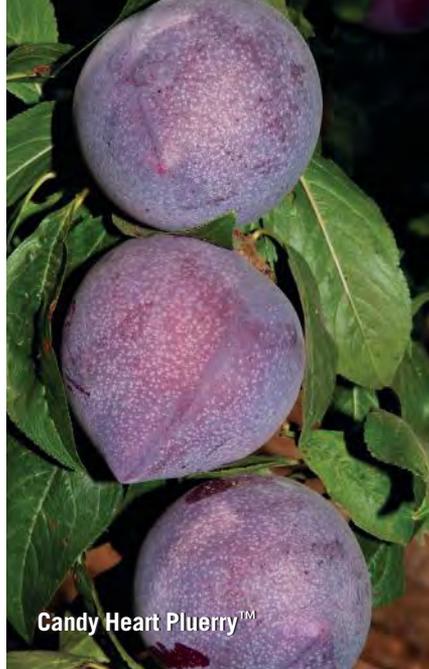


'Bossa Nova' zucchini



Perpetua™ blueberry

At last you can get two crops of blueberries in one year with **Perpetua™**, a true double-cropping bush. Part of the BrazelBerries® series, it sets fruit in midsummer and again in fall. Perpetua's dark green leaves grow in a twisted form and are flushed deep red in winter, while the new canes turn bright yellow and red. The berries are sweet and mild. Zones 4-8, 8-4. Fall Creek Farm & Nursery.



Candy Heart Pluerry™

Find red-purple notes for your edible landscaping with Japanese mustard (Mizuna) **'Red Kingdom'**. Mild flavor combines with more heat tolerance and less bolting than other Japanese mustards. Ready to harvest three to five weeks after direct sowing, this is a "cut-and-come-again" crop where a few outer leaves at a time can be picked, and the plant will grow more leaves for a total of three to four harvests. Its AAS National Award indicates it adapts well to many regions. Zones 0-0, 12-1. Asia Seed Co. Ltd.

Once you've tasted pluerry, a delectable cross between Japanese plum and sweet cherry, you'll want more. **Candy Heart Pluerry™**, the second release by the Zaiger family company, which cross-pollinates trees by hand to create novel and delicious

interspecific fruits, will be introduced this year. Ping-pong-ball-size fruit hangs on the tree for a month, reaching peak ripeness in mid- to late summer depending on region. Candy Heart needs 500 to 600 chill hours and grows on standard root stock. If you already have Sweet Treat pluerry, it will serve as a pollinizer for Candy Heart. Zones 6-9, 9-6. Zaiger Inc. Genetics.

Pepper **'Cornito Giallo'** is a petite sweet Italian hybrid pepper that received an AAS vegetable award for its outstanding flavor



'Cornito Giallo' pepper

and long growing season. This 24-inch-tall pepper blooms early and keeps on going into the fall; make your first harvest of bright yellow peppers 75 days after you set out the seedlings.

Zones 0-0, 12-1. Johnny's Selected Seeds.

Growing to only 18-inches tall, **'Mascotte'** is being hailed as the first "true" bush bean ideally suited for container culture. Purple blossoms herald the arrival of the slender, crisp beans in this sturdy, disease-resistant selection. Begin harvesting after 54 days. Plants will keep producing through the end of summer. Zones 0-0, 12-1. Renee's Garden Seeds.



'Mascotte' bush bean

Wholesale Nurseries/ Marketing Consortia

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

Asia Seed Co., Ltd., www.asiaseed.net/eng/sub/company/01.asp.

Bailey Nurseries,
www.baileynurseries.com.

Ball Horticultural Co.,
www.ballhort.com.

Blooms of Bressingham,
www.bloomsofbressingham.com.

Dümmen Orange,
www.dummenorange.com.

Fall Creek Farm & Nursery, Inc.,
www.fallcreeknursery.com.

Jelitto Perennial Seeds,
www.jelitto.com.

Hort Couture,
www.hortcoutureplants.com.

J. Frank Schmidt & Son Co.,
www.jfschmidt.com.

Monrovia, www.monrovia.com.

Proven Winners,
www.provenwinners.com.

Sakata Ornamentals,
www.sakataornamentals.com.

Southern Living Plant Collection,
www.southernlivingplants.com.

Sprint Horticulture,
www.sprinthorticulture.com.

Sunset Western Garden Collection, www.sunsetwesterngardencollection.com.

Suntory, www.suntorycollection.com.

Takii & Co. Ltd., www.takii.com.

UpShoot, www.upshoothort.com.

Retail Sources

Classic Caladiums, Avon Park, FL.
www.classiccaladiums.com.

David Austin Roses, Tyler, TX.
www.davidaustinroses.com.

High Country Gardens, Santa Fe, NM.
www.highcountrygardens.com.

Johnny's Selected Seeds, Winslow, ME.
www.johnnyseeds.com.

Park Seed, Greenwood, SC.
www.parkseed.com.

Renee's Garden, Felton, CA.
www.reneesgarden.com.

Territorial Seed Company, Cottage Grove, OR.
www.territorialseed.com.

W. Atlee Burpee & Company, Warminster, PA.
www.burpee.com.



Cotinus coggyria 'Old Fashioned'

COURTESY OF CHRISTINA SALWITZ

The oddball vegetable of the year has to be **Ketchup 'n' Fries™ TomTatos®**, a cherry tomato and potato grafted together to produce tomatoes above ground and potatoes below. The growers say you can expect more than 500 cherry tomatoes and over four pounds of potatoes from each plant. Zones 0–0, 12–1. Territorial Seed Company.

Shrubs, Trees & Vines

L.A. Dreamin™ bigleaf hydrangea (*Hydrangea macrophylla*) was a hit in the Southern California garden of Julie Bawden Davis. "It bloomed throughout the spring and summer months, on both old and new wood, producing long-lasting blue and pink blooms on the same plant without any adjustment of

the soil pH," says Davis. She grew the four-to five-foot-tall, five- to six-foot-wide plant in a container, and recommends a site with bright indirect light. Introduced in 2015, it will be widely available in 2016. Zones 6–9, 10–6. Ball Horticultural Co.

You might want to find room for one more rose. British rose breeder David Austin, who named **Rosa Olivia Rose Austin™** ('Ausmixture') after his granddaughter, calls it "possibly the best rose that we have introduced to date. It is also one of the most disease-resistant of all the roses we know." The three-foot shrub blooms prolifically and its pink, double/full old-rose style flowers give off a strong, fruity fragrance. Zones 5–9, 9–5. David Austin.



Olivia Rose Austin™ rose



Cercis canadensis Carolina Sweetheart™



Schizophragma elliptifolium
Lacy Hearts™

If 10- to 15-foot-tall smoke trees (*Cotinus coggryia*) don't fit in your small garden, try 'Old Fashioned', a six-foot-tall, deer-resistant beauty that has three seasons of interest with purple-flushed spring foliage that turns blue-gray in summer and red-orange in fall. Its plummy pink flowers bloom in summer. Full sun locations promote the best color. Zones 4-8, 9-4. UpShoot.

Jane Berger grew **Kodiak® Black** mountain bush honeysuckle (*Diervilla rivularis*) in New England and notes that "being drought tolerant and deer resistant, it's a winner." This native shrub selection boasts purple-black foliage in three seasons with red coloring in fall, and its yellow flowers attract a variety of pollinators. The four-foot-tall mounding habit works well in the landscape and in containers. For prime color, grow it in sun or part shade. Zones 5-7, 7-5. Spring Meadow Nursery, Proven Winners.

Hibiscus Summerific® 'Perfect Storm', a new compact rose mallow that bears pink and white flowers with red eyes, received plaudits from both Denny Schrock and Mark Dwyer. It tops out at three feet in full or part sun. The black-purple leaves form a mounding backdrop for the flowers. "Because it has so many stems/shoots, it blooms for a long time in summer and fall," says Schrock. Zones 4-9, 9-4. Proven Winners.



Summer Romance™ Double Pink
mandevilla

Bring the majesty of dawn redwoods (*Metasequoia glyptostroboides*) to your landscape with **Jade Prince™**, which is noted for its improved form, with upright, dense branching and a strong central leader. Mark Dwyer lists this as one of his favorites for 2016. The deciduous needles range from bright green in spring to rusty orange in fall. It will reach 70 feet tall and 25 feet wide at

maturity in 30 to 40 years in a site with full sun. Zones 5-9, 9-5. J. Frank Schmidt & Son Co.

Carolina Sweetheart™ is the newest selection of the classic eastern redbud (*Cercis canadensis*) with variegated foliage. The show begins in early spring when the small deep pink flowers open on the bare trunk and branches. The new foliage emerges maroon before turning green with white margins. It will reach 20 to 30 feet tall with equal spread in a site in full sun to part shade. Zones 4-9, 9-3. Star Roses & Plants.

Summer Romance™ Double Pink mandevilla (*Mandevilla ×hybrida*) won the Southern Nursery Association Retailers Award this year. This tender vine with double pink flowers grows quickly to 40 inches and doesn't mind heat and humidity. Plant in full sun, fertilize biweekly, and you'll be rewarded with blooms from late spring to fall. Zones 9-11, 11-5. Ball Horticultural Co.

Lacy Hearts™ ('MonHart') is a new selection of Chinese hydrangea vine (*Schizophragma elliptifolium*) with unusual variegated foliage that appears moonlit. In summer, clusters of airy white flowers reminiscent of lacecap hydrangeas add even more decorative effect. Plant this deciduous vine in part sun to part shade, and it will slowly climb to 10 or 15 feet. Zones 6-9, 9-6. Monrovia.

AREN'T WE tomato lovers fortunate? Thousands of varieties in all kinds of colors and flavors exist. Yet, until a few years ago, there were few selections suited to growing in small spaces or containers. Because many gardeners, especially those in urban areas, have limited growing space, varieties with a more compact habit have a great deal of appeal. And the ability to cultivate tomatoes in containers that can be placed wherever there is enough sun has obvious advantages. Now, thanks to the Dwarf Tomato Breeding Project, a collaborative effort between hobbyist tomato growers around the world, tomato lovers everywhere have some great new options.

CITIZEN SCIENTISTS TO THE RESCUE

The roots of the Dwarf Tomato Breeding Project trace back to 2006. What started as an online discussion between me—a tomato hobbyist in Raleigh, North Carolina—and Patrina Nuske Small, an Australian gardener, grew into an all-volunteer,



the worldwide dwarf Tomato Project

BY CRAIG LEHOULLIER

all-amateur, open-source (no secrets!), worldwide, non-profit breeding effort.

We assembled a team of backyard gardeners who were interested in tomato genetics and creating something new. Since the project began, more than 300 people from the United States, Canada, Mexico, Germany, and Australia have been involved. By growing in both the Northern and Southern Hemispheres we were able to cut the time of development in half—two generations of experiments could come to fruition in a single calendar year.

The goal was to develop great new dwarf tomatoes and give them freely to a seed company of our choosing for distribution, then watch the process of public opinion play out. (For more about how the project works, see the sidebar on the opposite page.)

SUNNY SPACE SOLUTIONS

The main project catalyst was the need for great tomatoes for space-challenged gardeners, as witnessed by the increasing requests each year from customers of my local seedling business—requests that were echoed by gardeners from across the country and beyond.

“Many of our customers garden in a very small space, like balconies,” says Tatiana Koucharevana, owner of Tatiana’s Tomatobase Seed Company, located near Vancouver, British Columbia. “And in our wet and cool climate, many people want tomatoes in pots, so they can move the pots under cover when it rains,” she says. What other qualities are they look-

ing for? “Sturdy and compact plants with high yields and colorful fruits, and great taste. That’s what the dwarf tomato project is all about,” says Koucharevana.

“I have had a few customers tell me they wouldn’t have room to grow tomatoes if not for the dwarf varieties,” says Steve McClaren, of Bonsall, California, who sells the dwarf varieties online through Heritage Seed Market (see “Sources,” page 22).

By growing tomatoes in containers, gardeners can take advantage of any sunny spot in the yard, even if that spot is on a patio, porch, rooftop, or driveway. “My backyard has little sun and is not a good place to grow tomatoes,” says Robert

The author harvests dwarf heirloom tomatoes from his North Carolina garden.

Mermelstein of Raleigh, North Carolina, who nonetheless successfully grows several of the new dwarf varieties in pots placed along his driveway.

Project participant Bill Yoder sells organically grown tomato plants to nurseries in and around Atlanta, Georgia. Many of his customers “are limited to container growing due to the amount of tree canopy in the yards throughout Atlanta,” he says. “The most gratifying parts of this

entire endeavor are the times when I am able to provide a plant to someone who may not have the ability to grow and care for a non-dwarf tomato plant.”

Yoder is quick to emphasize that he also has many customers who grow dwarf tomatoes in their regular garden space. “In either case, you are growing great-tasting, open-pollinated tomatoes that take up less space and are easier to take care of,” he says.

A DIFFERENT HABIT OF GROWTH

Tomato leaves, including those of dwarf varieties, are described either as regular leaf (with toothed edges) or potato leaf (with smooth edges). However, dwarfs have traits that distinguish them from other tomatoes. The texture and color of their leaves is crinkly and dark green—termed “rugose”—and the plants’ vertical growth is roughly half of the rate of indeterminate varieties, with a similar reduction in internode length.

DWARF TOMATO PROJECT LOGISTICS

In 2005, Patrina Nuske Small, an Australian gardener, and I decided to collaborate on a project that would be fun, informative, and—hopefully—result in some great new dwarf tomato varieties.

We needed a starting point, and an Isbell Seed Company catalog from 1912 provided a great clue. A tomato named ‘New Big Dwarf’ was described as the result of crossing the largest tomato of its time, the indeterminate variety ‘Ponderosa’, with ‘Dwarf Champion’, one of the few dwarf varieties. A few years of selecting for desired traits produced a stable, open-pollinated variety with large tasty fruit on a compact plant.

Small volunteered to kick off our effort by making the crosses between colorful, tasty, indeterminate heirloom tomatoes and whatever dwarf tomatoes she could acquire in order to provide some new hybrids as our starting points. We immediately ran into our first road block—a scarcity of dwarf options. We found, however, that a handful of available dwarfs—including ‘Golden Dwarf Champion’, ‘Dwarf Champion’, and ‘New Big Dwarf’ was adequate when combined with the genes from great heirlooms such as ‘Cherokee Purple’, ‘Paul Robeson’, and ‘Green Giant’. Some of our best releases, as it turned out, emerged from the first set of crosses.

Through the Internet, we found many volunteers willing to help us in our efforts. A tomato discussion board (Tomatoville.com)—launched in 2006—was the ideal format to share information among project participants. Results from project members, including photos, are regularly posted for discussion.

With Small and me acting as project managers, the process works like this: The initial crosses result in new hybrids

that are assigned a “family” name. Once the hybrid produces fruit, seed is saved and distributed to volunteers interested in working within that particular family.

Growing out the second generation seed is where the dwarf growth habit emerges, usually in 25 percent of the seedlings, and volunteers are encouraged to grow as many seedlings as they can manage.

“The nice thing about the project was that members could choose their level of involvement by the number of plants they grew out from their selections,” says project participant Dee Sackett, who gardens in northern Minnesota.

The range of possibilities that present themselves in each parent line is narrowed in subsequent generations. Depending upon the genetics of each variety, results demonstrate that at least six, and up to 10, generations are required to stabilize a new variety.

We enlist volunteers to grow seed for the seed companies who distribute the new varieties (see “Sources,” page 22). We chose companies that are interested in the project, appreciative of having a new exclusive variety, and would share information about our project so that customers would know how the variety came to be.

A few years ago, we had to modify our program because regulation changes made sharing seeds with Australia impossible without costly testing for specific tomato diseases. Fortunately, by that time we were well on our way to getting the project going.

And though we are now slightly limited in our ability to share discoveries freely, both the Northern and Southern Hemisphere project groups have plenty of material to take forward separately. We still share results, pictures, and the simple joy of discovery.

—C. L.



The author and Patrina Nuske Small, shown here at a tomato tasting, came up with the idea for the Dwarf Tomato Breeding Project.

favorite dwarf varieties

Here are a few of the dwarf varieties recommended by one or more of the project participants.



'Dwarf Emerald Giant'

strongly resembles the male breeding parent, 'Green Giant', in all respects, except for the dwarf growth character. This potato-leaf type is mid- to late season in maturity and most gardeners will find that it tops out at four feet by the end of the growing season. Fruit is in the eight- to 12-ounce range.



'Dwarf Kelly Green'

is an extremely prolific, regular-leaf dwarf that tops out at four feet tall, and begins to ripen its fruit relatively early. The tomatoes are round, three to five ounces in size and have green flesh when ripe. The clear skin creates a bit of a challenge for determining picking time; a slight pink blush at the blossom end of the fruit is a good indicator.

'Rosella Purple'

is a mid-season ripening dwarf with regular foliage. It is on the shorter end of the spectrum of our new releases, topping out at three feet. Its six- to 10-ounce, deep red fruit with a purplish cast produces few seeds; its flavor is similar to 'Cherokee Purple'. According to Alexandra Neale of Holly Springs, North Carolina, "Its flavor is very rich and screams 'tomato'."

ALL PHOTOS ON THIS SPREAD COURTESY OF MIKE DUNTON, VICTORY SEEDS, EXCEPT FOR 'DWARF EMERALD GREEN', COURTESY OF STEVE MCCLARE, AND 'DWARF MR. SNOW' BY CRAIG LEHOULLIER



'Dwarf Mr. Snow'

is a mid- to late-season ripening variety. A potato-leaf type, its stems are quite stout, and the plant grows to about four feet in height. The smooth, six- to eight-ounce, oblate fruit ripen to a lovely ivory color, often sporting a pale pink blush on the blossom end. The flavor is sprightly, balanced, full, and delicious.



'Fred's Tie Dye'

is a regular-leaf, mid-season variety that grows to about four feet in height. The purple fruit is striped with gold and green and averages five to six ounces. Interior flesh is deep crimson and has a rich, balanced flavor.



'Dwarf Blazing Beauty'

is an attractive potato leaf, mid- to late season producer that reaches around four feet tall. The medium to medium-large fruit is orange inside and out and has an intensely tart flavor. Project member Dee Sackett calls this her favorite dwarf variety due to its "assertive blast of flavor and beautiful orange color.



'Dwarf Sweet Sue'

is a potato-leaf variety that grows four to five feet tall. Its bright yellow fruit, which averages five to 10 ounces, ripens mid to late season, often displaying a pink blush at the blossom end. Its flavor is well balanced and very sweet. It's a favorite of Steve Nagar of Raleigh, North Carolina, who says, "Sweet Sue is the best one in my opinion in terms of taste, reliability, and yield, and is perhaps more disease resistant than some of the others." (For details on the breeding and selection of this variety see the web special linked to this article on the AHS website.)



'Uluru Ochre'

represents a new color in tomatoes. It ripens to an amber-orange-green on the outside and it retains some green pigment in its orange flesh upon ripening. This regular-leaf dwarf is compact, topping out at three feet, and very productive. The oblate fruit run quite large, averaging six to 12 ounces; the flavor is intense, rich, and smoky.



Left: Typical heirloom dwarf tomatoes like these thrive in containers. **Right:** At Mother Catherine Academy in Mechanicsville, Maryland, student Bradley McDermott and teacher Sarah Gascon tend ‘Dwarf Emerald Giant’ tomatoes growing in the school garden.

Since most dwarfs grow three or four feet tall—sometimes more—and get heavy with fruit, they need to be short-staked or caged. They thrive in five-gallon containers and need far less work than standard varieties to keep them vertical.

Project member Dee Sackett, who gardens in northern Minnesota, says, “The dwarf trait is usually easy to spot by the time of the first true leaves, and often before because the seedling is just short and chunky compared to normal seedlings.”

DWARF TOMATOES GO TO SCHOOL

The project has provided learning opportunities for gardeners beyond its active members. Last summer, Jerry Spence, the garden and agricultural liaison for the Mother Catherine Academy in Mechanicsville, Maryland, grew two of the project’s varieties, ‘Dwarf Sweet Sue’ and ‘Dwarf Emerald Giant’ in the school’s garden. He and the students also grew two of the varieties used in the original crosses. Students “were very interested in seeing the different traits in the dwarf tomatoes that were inherited from the parental lines,” says Spence.

Both dwarf varieties were productive, with harvest into the first week of October. “I highly recommend these varieties to the home gardener with limited space, or larger gardens where less training and pruning of the vines is desired,” Spence says.

RESULTS AND FUTURE PLANS

As of late 2015, the project has released

58 new dwarf tomato varieties. Many are potato-leaved, which makes the plants themselves quite attractive.

Maturity dates for dwarf varieties range from relatively early to relatively late, and from my experience, they flower and fruit until frost, like indeterminate varieties, though there is some variability.

Fruit colors include red, pink, purple, brown, yellow, orange, green, and white, plus a few swirls, and stripes. Fruits vary in size from an ounce or two to a pound or more. Some are round, some oblate, and a few are heart-shaped.

When it comes to flavor, the new dwarf varieties really shine, ranging from sweet and mild, tart and exciting, to full and intense. “There is now just about any combination of fruit size, shape, color, and flavor available to those ‘space challenged’ gardeners,” says Mike Dunton, founder of Victory Seeds. “Even folks with standard gardens will benefit from these new varieties.”

The project’s new dwarf tomato varieties are available to home gardeners through a small number of seed companies (see “Sources” on this page). “Many of the new varieties are also listed in the Seed Savers Exchange (SSE) Annual Yearbook, and are available to SSE members.

The project is far from finished. As breeding and selection continue, future objectives include development of great tasting and productive dwarf cherry and paste tomatoes, more heart-shaped tomatoes, and additional varieties with distinct stripes. But already, those who love the indeterminate heirlooms but lack the space needed to grow those sprawling giants can enjoy a similar taste experience from plants with a compact habit. As Dunton puts it, “Being able to provide choices for a broader base of gardeners is a good thing.”

A resident of Raleigh, North Carolina, Craig LeHoullier is the author of Epic Tomatoes and Growing Vegetables in Straw Bales (2015), both from Storey Publishing. Visit his blog at www.craiglehoullier.com.

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Broadleaved Evergreens for *mixed borders*

BY ANDREW BUNTING

Looking to add some winter color to a mixed border?
Try these small to mid-size broadleaved evergreens.

ABOUT A YEAR AGO, when I was working at the Scott Arboretum of Swarthmore College in the Philadelphia area, someone asked me about choices of small to medium-sized broadleaved evergreens for use in a mixed perennial and shrub border. I could quickly think of lots of large broadleaved evergreens—including rhododendrons, tea olives (*Osmanthus* spp.) and Indian hawthorn (*Raphiolepis* spp.)—useful for screening fences and utilities or for hedging. But it was more difficult to come up with diminutive ones that could be used in modest home gardens for low screening or to offer color at times of the year when most other plants have lost their leaves.

I continued to think about this question over the course of last summer, which happened to coincide with my transition from the Scott Arboretum (USDA Hardiness Zone 6b), where I had worked for over a decade, to a new position at the Chicago Botanic Garden (USDA Zone 5) in Illinois. As I adjusted to my new environment, I realized that some of the plants I would have named for use in Pennsylvania were not hardy enough to succeed in the Upper Midwest.

My interest was piqued enough that I decided to ask colleagues in different regions of the country to come up with short

lists of their own. The requirements for consideration included that the plant was evergreen year-round, that it reached between two and eight feet tall at maturity (or over a period of at least 15 years), and that it was readily available for home gardeners. To keep the list from getting too cumbersome, I excluded boxwoods (*Buxus* spp.), viburnums, and azaleas/rhododendrons, each of which is worth an article in its own right. Based on the feedback I received and my own experience, here are some recommendations that should work in a variety of situations and regions. Additional choices can be found in a chart on page 28.

HOLLIES AND GRAPE HOLLIES

Thousands of holly cultivars have been selected over the last century, so when Kevin Parris, director of the Spartanburg Community College Arboretum in South Carolina, tells me that *Ilex Liberty*[™] (USDA Hardiness Zones 7–10, AHS Heat Zones 10–6), a hybrid between ‘Mary Nell’ and ‘Red Delight’, is “the best of the best,” it’s high praise. This selection is perfectly pyramidal, growing slowly to a mature height of eight to 12 feet tall, so at the top end of my range for “medium.” Its lustrous green leaves are embellished with spiny margins, and in fall the branches become laden with

bright red berries that persist throughout the winter. As with many hollies, it thrives in both sun and shade.

Grape hollies (*Mahonia* spp.) have experienced a renaissance in the past decade. For years, the prickly Beale’s mahonia (*Mahonia bealei*) and the groundcovering Oregon grape holly (*M. aquifolium*) were the most commonly grown species. The former has proved to be invasive in the Southeast and Upper Midwest, but the latter is still worth considering. “Oregon grape holly offers several seasons of interest, few disease or insect problems, and will grow in light to heavy shade. It’s also deer resistant,” says Mark Miller, education manager at the Franklin Park Conservatory & Botanical Gardens in Columbus, Ohio.

Horticulturists have been breeding exciting new selections within this diverse genus. *Mahonia* ‘Soft Caress’ (Zones 7–10, 10–7), for instance, is a low-growing selection that reaches only four feet tall at maturity. Thought to be a seedling of *M. eurybracteata*, it was introduced by plantsman Ozzie Johnson of ItSaul Plants in Atlanta, Georgia. Its compound leaves, which have very narrow leaflets, create a fine-textured, almost fernlike effect. In late fall to early spring, spike-like inflorescences of striking golden-yellow flowers bloom above the foliage.

The fernlike foliage of *Mahonia* ‘Soft Caress’, a hybrid grape holly, adds an intriguing texture that contrasts well with other broadleaved evergreens.

'JC Raulston' (Zones 6–9, 9–6) was hybridized by Tom Ranney at North Carolina State University's Mountain Crop Improvement Lab in Fletcher. Named for the legendary plantsman JC Raulston, it produces an abundance of 12-inch-long panicles of clear yellow flowers, which contrast nicely with the spiny architectural foliage. This clone is thought to be generally infertile so it's not as much of an invasive risk as Beale's mahonia.

NEW KIDS ON THE BLOCK

Those who like to try new plants will want to experiment with the small to medium-sized broadleaved evergreen shrubs in the genus *Distylium*. Known either as distyliums or isu trees, these natives of China and Japan are in the witchhazel family (Hamamelidaceae). At the Scott Arboretum, we had a small isu tree (*D. racemosum*, Zones 6–9, 9–6) that existed in relative obscurity in the garden. The small burgundy flowers, borne on short racemes in late winter to early spring, are interesting, but not particularly ornamental. It has narrowly lance-shaped leaves and reaches approximately three feet tall at maturity in the mid-Atlantic, although it can get much larger—up to 10 feet tall and wide—in warmer regions.

Woody plant expert and author Mike Dirr started trialing isu trees at the University of Georgia at Athens (UGA) beginning in 1992. In the late 1990s, Dirr also acquired blueleaf isu tree (*D. myricoides*, Zones 6–9, 9–6), which has narrow blue-green leaves and inconspicuous reddish flowers, and began making crosses between the two species. The goal of his hybridization program was to develop stalwart broadleaved evergreens with cold and heat tolerance, drought tolerance, adaptability to sun or part shade, and smaller stature.

Now retired from UGA, Dirr continues his breeding and selection work for Plant Introductions Inc., a plant breeding and marketing group owned by Bailey Nurseries in Minnesota. The following are some of the best selections coming out of the distylium breeding program. 'Vintage Jade', which reaches two feet tall with a spread of eight feet, has lustrous dark green leaves with a layered branching habit that gives it an interesting textural look. Emerald Heights® ('PIIDIST-I'), a compact selection with a rounded habit to five feet



Clusters of small red flowers enhance the mid-winter appeal of blueleaf isu tree.

tall, is a great substitute for the ubiquitous cherry laurels (*Prunus laurocerasus*), which suffered considerable winter damage in many states during the winter of 2014–2015. Blue Cascade® ('PIIDIST-II') has a layered spreading habit with blue-green leaves and reaches only three feet tall at maturity.

Heavenly bamboo (*Nandina domestica*) is not new by any means, but it is a great evergreen because its finely dissected compound leaves give it an airy, bamboolike texture in the landscape. In recent years, it has been losing favor in the South because its attractive sprays of red or orange berries that brighten up fall and winter gardens have been seeding into natural areas. In this region, I recommend trying one of three new diminutive selections from the Southern Living Plant Collection that either rarely produce fruits or,

if they do, have sterile seeds. Obsession™ reaches three to four feet tall with an equal spread; its newly emerging foliage is bright red and fades to a soft pink over the summer. Flirt™, a sport of 'Harbor Dwarf', only reaches two feet tall. The new foliage is reddish purple, ultimately fading to green. Blush Pink™ has bright pink new growth.

EVERGREENS FOR WARMER CLIMES

During my tenure at the Scott Arboretum I experimented with many, many broadleaved evergreens, including some not typically considered hardy. In a lot of cases, the occasional very cold winter was enough to do them in. But, once in a while I would be surprised not only by the unexpected hardiness of some plants, but how their foliage would come through the winter virtually unscathed by winter burn.

One of my happiest surprises was *Choisya* 'Aztec Pearl', a member of the citrus family more commonly grown in the Southwest or on the West Coast. This hybrid between *C. ternata* and *C. arizonica* has glossy green leaves that are divided into three or five leaflets, giving this shrub a great textural quality in the garden. It will reach five to seven feet tall and is much more upright than spreading. In early spring, and sometimes again in summer, it is covered in quarter-sized, very fragrant, pure white flowers.

For warmer climates *C. ternata* Sundance™ (Zones 7–10, 10–7) is an interesting choice to brighten a dark corner. Its foliage looks bolder than 'Aztec Pearl' and maintains an incredible golden color for most of the year, especially if planted in part or dappled shade; too much sun will scorch the foliage and too much shade will dilute the color. Like 'Aztec Pearl', this six- to eight-foot-tall selection offers an abundance of fragrant, white to pale yellow flowers in spring and sometimes blooms again in summer.

Right: A new heavenly bamboo selection, Obsession™ has colorful foliage and is less likely to self-sow. Below: 'Aztec Pearl', a hybrid Mexican orange, offers not only evergreen leaves but fragrant white flowers in late spring to midsummer.



MORE BROADLEAVED EVERGREENS

Botanical Name (common name)	Ornamental Attributes	Height, Spread (feet)	Sun, Shade	Origin	USDA Hardiness, AHS Heat Zones
<i>Arctostaphylos</i> 'Sunset' (manzanita)	Dense, mid-green foliage; pinkish white flowers in early spring	5–8, 5–10	Sun to part shade	Hybrid	7–9, 9–7
<i>Daphne odora</i> 'Mae-jima' (fragrant or winter daphne)	Foliage green with yellow margins; fragrant pink and white flowers in late winter	3–4, 3–4	Sun to part shade	East Asia	7–9, 9–6
<i>Gaultheria mucronata</i> (gaultheria)	Glossy dark green foliage; white/pink flowers in spring; ornamental fruits	2–3, 2–4	Sun to part shade	South America	7–9, 9–5
<i>Ilex vomitoria</i> 'Carolina Ruby' (yaupon holly)	Small, dark green leaves; bright red fruits in fall, winter	3–4, 3–4	Sun	Southeast U.S.	7–9, 9–6
<i>Kalmia latifolia</i> 'Sarah' (mountain laurel)	Glossy, dark green foliage; red flower buds open pink in early summer	3–4, 3–4	Part shade to shade	East U.S.	4–9, 9–4
<i>Leucothoe axillaris</i> (coast leucothoe)	Glossy deep green foliage turns red in winter; white flowers in early summer	3–4, 4–6	Part shade to shade	Southeast U.S.	5–9, 9–5
<i>Myrica pensylvanica</i> (northern bayberry)	Dark green foliage fragrant to touch; gray fruits (female plants) in fall	5–10, 5–10	Sun to part shade	Northeast N. America	3–6, 6–3
<i>Pieris japonica</i> (Japanese pieris)	Glossy green foliage with red new growth; drooping white or pink flowers in early spring	4–12, 5–10	Part shade	East Asia	5–8, 8–5
<i>Sarcococca hookeriana</i> (Himalayan sweetbox)	Dark green foliage on suckering stems; fragrant creamy white flowers in early spring	3–6, 4–8	Sun to part shade	Central Asia	6–8, 8–5

Popular on the West Coast and in the Deep South is a mounding selection of Japanese pittosporum (*Pittosporum tobira*, Zones 8–11, 11–8) called 'Wheeler's Dwarf'. It grows three to four feet tall with a slightly broader spread, so it's ideal for massing or as a low hedge. The dense, dark green foliage provides a nice backdrop for perennials with variegated foliage. It produces clusters of fragrant, small white flowers in spring, followed by yellowish-green fruits. It tolerates full sun to dappled shade and handles drought and heat well.

Perhaps no garden plant is prized more for its sumptuous fragrance than the quintessential gardenia (*Gardenia jasminoides*, Zones 7–10, 10–7), which for decades was largely restricted to gardens in the Deep South and West. In recent years, however, strides have been made to introduce cultivars that are hardier and more compact, while still offering pure white, exquisitely fragrant flowers that emerge against a backdrop of lustrous dark green foliage.

One of the hardiest selections is 'Kleim's Hardy', a single-flowered selection that reaches two to three feet tall

***Pittosporum* 'Wheeler's Dwarf' forms low mounds of dense evergreen foliage.**

at maturity and has tolerated temperatures down to at least zero degrees Fahrenheit. For similar hardiness, but with a taller stature—six to eight feet at maturity—'Shooting Star' has larger leaves and blooms in the late spring to early

summer. 'Chuck Hayes' can be hardy in the upper areas of USDA Zone 6 with a little protection. This double-flowered form reaches four feet tall and blooms in summer with some repeat blooming in the fall.





Deer-resistant *Daphniphyllum humile* has a compact, rounded habit.

Double Mint™ reaches three feet tall with equal spread. The two-inch double flowers bloom in spring and then can rebloom sporadically in late summer to early fall.

In the Southwest, plants tend to be more evergray or eversilver than evergreen. “For the deserts of Arizona and New Mexico, I would suggest jojoba (*Simmondsia chinensis*, Zones 8–11, 12–8),” says Mary Irish, volunteer coordinator at the San Antonio Botanical Garden in Texas. “It has gray-green leaves, a rounded form that rarely needs pruning, and is as drought and heat tolerant as they come.” Irish, who is the author of *Trees and Shrubs for the Southwest* (Timber Press, 2008), also recommends Texas rangiers (*Leucophyllum* spp.), known as cenizo in Texas. Selections range from dark green ‘Green Cloud’ to the dusker selections like ‘Compactum’, ‘Lynn’s Legacy’, ‘Silverado’, and ‘White Cloud’. Most selections grow between four and six feet tall and wide, but the hybrid ‘Thundercloud’ is rarely over three feet tall. The majority are adapted to Zones 7 to 10, 10 to 6.

ODDS AND ENDS

In recent years I have become enamored of anise trees (*Illicium* spp.). In particular I recommend Florida anise (*I. floridanum*, Zones 6–9, 9–6), which is native to wooded areas throughout the Southeast but can tolerate some sun in garden settings. This multi-stemmed shrub grows slowly to eight

or 10 feet tall and bears curious spring flowers with narrow, straplike, maroon petals. Its stems and leaves have a somewhat medicinal or anise fragrance that may explain the genus’s lack of appeal to deer.

I first encountered *Daphniphyllum macropodum* (Zones 7–9, 9–6) some 15 years

Sources

Forestfarm at Pacifica, Williams, OR. (541) 846-7269.
www.forestfarm.com.

Gossler Farms Nursery, Springfield, OR. (541) 746-3922.
www.gosslerfarms.com.

Niche Gardens, Chapel Hill, NC. (919) 967-0078.
www.nichegardens.com.

Rare Find Nursery, Jackson, NJ. (732) 833-1965.
www.rarefindnursery.com.

Woodlanders, Inc., Aiken, SC. (803) 648-7522. www.woodlanders.net.

Resources

Dirr’s Encyclopedia of Trees and Shrubs by Michael A. Dirr. Timber Press, Portland, OR, 2011.

The Gossler Guide to the Best Hardy Shrubs by Roger, Eric, and Marjory Gossler. Timber Press, Portland, OR, 2009.

ago when we planted one at the Scott Arboretum. Initially considered more of a collectors’ plant, this east Asian native has become an important broadleaved evergreen. Its habit and glossy foliage are similar to rhododendrons, but the leaves are attached with bright red petioles (stalks) and the undersides have a silvery sheen. Relatively unremarkable flowers bloom in early spring, and blackish fruits form on female plants in summer. *Daphniphyllum* differs from rhodies in three key attributes: It is very tolerant of dry shade, it tolerates more sunny exposures, and—because of toxic alkaloids contained in its stems and leaves—it has proven resistant to deer browsing.

After more than a decade of experience with this plant, it turns out that at maturity *D. macropodum* can become almost treelike in stature, growing to over 20 feet tall and nearly as broad. For smaller gardens, its close relative *D. humile* (Zones 7–10, 10–7) is a better choice because it is more rounded and compact; a specimen at the Scott Arboretum is only six feet tall with an equal width after 15 years.

A great little evergreen shrub that can fill a niche in any garden is poet’s or Alexandrian laurel (*Danae racemosa*, Zones 6–9, 9–2). This finely-textured shrub grows to two to three feet at maturity, thriving in part to full shade. It will gradually spread to form a larger clump over time.

YEAR-ROUND BEAUTY

As you survey your garden this winter, you are likely to see a spot or two where a modest-sized broadleaved evergreen would brighten up a gloomy corner or add a splash of color in an otherwise drab landscape. That we now have so many choices to consider is a credit to the plant hunters, breeders, and others who have expanded the palette of classic broadleaved evergreens like gardenias, heavenly bamboos, and hollies, while also introducing exciting new plants such as the distyliums. As gardeners, it’s always gratifying to add interesting new options to our “tool box” of ornamental plants that can fill a variety of niches in the garden.

Andrew Bunting is assistant director and director of collections at the Chicago Botanic Garden in Illinois.



Weesie Smith:

*driving force
for native
plants*



A Chinese fringetree (*Chionanthus retusus*) is a majestic focal point in the spring garden of Weesie Smith (inset). The 88-year-old Smith is a lifelong advocate for plant conservation, an intrepid plantswoman, and a pillar of the Birmingham, Alabama, gardening community.

At 88, intrepid Alabama gardener and environmental activist Weesie Smith is still going strong.

BY ALLEN BUSH

I HAD JUST arrived at her Birmingham, Alabama, home last spring, and Louise Walker Goodall Smith was already downplaying the scope of her newest garden. As usual, the slender, agile 88-year-old, better known as “Weesie” to her friends, was being overly modest about her accomplishments, which run the gamut from identifying and introducing dozens of new plants to creative garden design, years of advocacy for conservation of native plants and natural areas, and a lifetime of volunteerism.

GARDEN ARTISTRY

Smith moved to her current home in Birmingham’s Forest Park neighborhood 15 years ago when she needed to downsize her garden from the five-acre gem on Pine Ridge Road she had tended for nearly 50 years—more on that later.

Her current garden may not be on the same scale as her earlier landscape, but it is colorful, creative, and fun. Walking around, she shows me the single bright yellow blooms on a kerria (*Kerria japonica*) which is underplanted with the evergreen Japanese holly fern (*Cyrtomium falcatum*). The white-flowered selection of Japanese roof iris (*Iris tectorum* ‘Alba’) and the durable spikemoss (*Selaginella braunii*) grow nearby.

Each turn of the pathway offers a reflection of Smith’s curiosity and her engaging personality; there is not a dull, unattended spot anywhere. In the back garden she points out two Southeast native trilliums—*Trillium lancifolium* and *T. pusillum*—I have never seen before and the mottled, heart-shaped leaves of native ginger (*Hexastylis shuttleworthii*).

PINE RIDGE ROAD GARDEN

The garden she repeatedly returns to in conversation, however, is her former garden on Pine Ridge Road. When she first moved to the five-acre property, set on a steep hillside in Birmingham’s Mountain Brook neighborhood, it was riddled with poison ivy and Japanese honeysuckle vines growing on hundreds of dying loblolly pine trees. Weesie laughs as she recalls dealing with the poison ivy. “For-

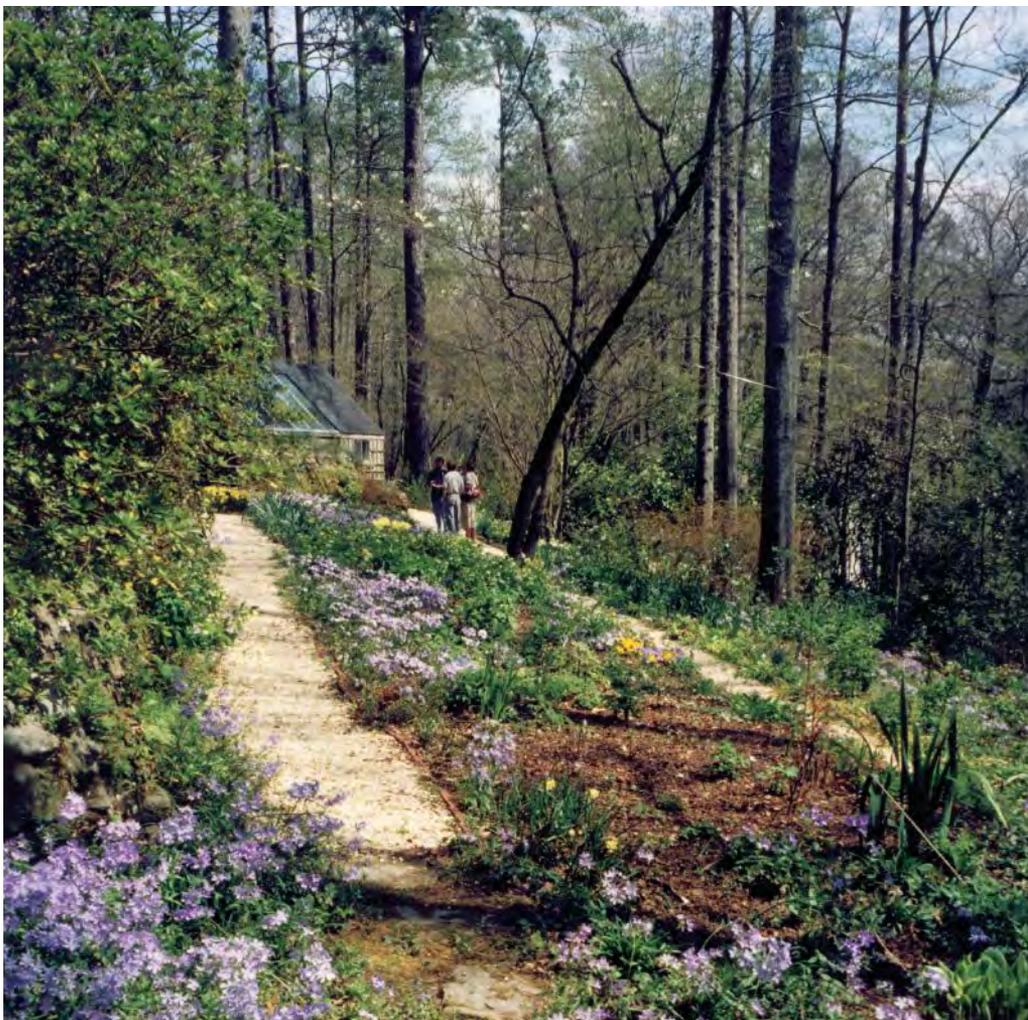
tunately I don’t get an allergic reaction, but my husband did, and it excused him from gardening,” she says.

After removing the vines and the dead trees, Smith planted thousands of native plants. Among them were trilliums, wild gingers (*Hexastylis* spp.), and lady slippers (*Cypripedium* spp.). The white-flowered fawn lily (*Erythronium albidum*) would be followed by yellow celandine poppies (*Stylophorum diphyllum*) and bright blue blooms of bluestar (*Amsonia tabernaemontana*). The garden included nearly a mile of winding paths, much of it lined with endless ribbons of blue-flowering woodland phlox and native azaleas. Over time, hickories, oaks, and beeches replaced the pines as the canopy

overhead. “The garden was an unbelievable masterpiece of native plants,” says D.D. Martin, a close friend and fellow Birmingham gardener.

There was a formal garden, too, where tulips, peonies, Iceland poppies (*Papaver nudicaule*), and white-flowering calla lilies prospered, and a winter garden, where the blooms of Christmas roses (*Helleborus niger*) heralded each new growing season. Her children played in an open area that became a moss garden when they grew up. And there was a terraced rock garden near the sun pit where she grew freesias that she donated for sale in the Birmingham Botanical Garden gift shop.

“Weesie is an intellectual gardener. She’d study what a plant needs. If it didn’t work in one spot, she’d try it in another spot,” says John Floyd, a long-time Birmingham resident who was formerly editor-in-chief at *Southern Living* and



Smith’s former five-acre garden on Pine Ridge Road, which she planted with thousands of shade-loving native bulbs, wildflowers, and shrubs, was a sought-after destination for garden tours.



Spring-blooming perennials such as woodland phlox (*Phlox divaricata*) and candytuft (*Iberis sempervirens*) welcome visitors to Smith's current garden.

currently writes about gardening for *Birmingham Gardening Today*, a website he co-founded.

Jan Midgley, owner of Wildflower nursery in Wilsonville, Alabama, visited Smith every Wednesday for seven years in the 1990s. On each visit, Smith would load her up with wildflowers that she dug with speed and efficiency from her garden. Midgley, who marveled at Smith's stamina, said it would take her all week back at her nursery to tuck in the plants.

JUST A DIRT GARDENER

I first encountered Smith in 1984 during the 50th anniversary celebration of the North American Rock Garden Society (NARGS), held in Asheville, North Carolina. She had driven to Asheville to mingle with other NARGS members and learn from many of the celebrity speakers, including trillium experts Roberta and Fred Case.

"It was an interesting meeting," she recalls, insisting her role there was merely as a gardener looking to expand her knowl-

edge. "I'm just a dirt gardener," she says. Once again, Smith is being modest. After meeting Smith, the Cases soon came to rely on her to take them to wild areas in Alabama where they could study the local trilliums under her guidance.

Smith, who wandered widely in the state's forests since she was a young girl and spends a lot of time driving up and down country roads, has a sharp eye for unusual native plants. Over the years, this has led her to make a number of notable discoveries. She recalls one trip she took with her late husband, Lindsay, to visit their son at college in Sewanee, Tennessee. "I saw something orange and I said to him, 'STOP!' When we got to Chattanooga, he said, 'Did you say something?' That was typical," she says with a laugh. Smith later drove back to find the plants, which turned out to be lilies. "I sent a sample to Joe Webb Thomas at the University of Alabama. He called up right away and was excited because it was a form of *Lilium canadense* that had never been reported in Alabama."

On another trip, driving in central Alabama near Haynesville, she spotted an intriguing-looking buckeye (*Aesculus* sp.) growing in a little depression along an embankment.

She was able to collect a specimen for identification. It turned out to be a low-growing form of the Ohio buckeye (*Aesculus glabra*), which typically grows into a tree. Noted woody plant expert Michael Dirr named it *A. glabra* var. *nana*. Others have speculated it could be from a disjunct population of Texas buckeye (*A. glabra* var. *arguta*), more commonly found west of Alabama.

Smith's buckeye didn't make much of a wave beyond a few avid plant collectors, but a native Alabama coral bell, *Heuchera macrorhiza*, has become a garden favorite across much of North America. Dick Lighty, founding director of the Mt. Cuba Center in Greenville, Delaware, saw the Alabama coral bell in Smith's garden for the first time more than 30 years ago.

Botanists and the gardening public have confused *H. macrorrhiza* with the better known hairy alumroot (*H. villosa*) for years—and in fact many references still regard them as synonymous—but the former has chartreuse leaves and white flowers that are larger than those of *H. villosa*. “Only a botanist who has never seen the plant in the garden would consider it conspecific with the widespread *Heuchera villosa*,” says Lighty, who started sharing seedlings with interested perennial growers.

Heuchera macrorrhiza was not a name that easily rolled off tongues. It wasn’t until a plant labeled with a specious culti-

var name ‘Autumn Bride’ was introduced that the plant gained widespread commercial interest. The plants, easily grown from seed, are identical to the ones that grew in Smith’s Birmingham garden. As usual, Smith doesn’t care about the fuss and is not interested in taking any credit for the plant’s popularity.

“Weesie is truly a phenomenal plantswoman,” says Tony Avent, owner of Plant Delights Nursery in Raleigh, North Carolina. “We have an amazingly vigorous form of *Phlox stolonifera* from her that we named ‘Weesie Smith’.” Avent notes that a southern maidenhair fern (*Adiantum capillus-veneris*) cultivar called

ent styles,” she says. “My grandmother Goodall, who lived on Glen Iris Circle, was a collector type. She had three different types of figs and wanted iris that bloomed every month of the year.” Smith remembers the excitement that built up when Goodall’s night-blooming cereus was ready to flower. “She’d call us over and we’d get to stay out until 10 p.m.”

Her other grandparents were the Jemisons. Robert Jemison developed Birmingham’s Mount Brook and Forest Park neighborhoods. When the Great Depression hit, the Jemisons moved to a 300-acre dairy farm, nine miles outside of Birmingham.

The farm and garden were an inspiration. “Grandmother Jemison was a real gardener,” she remembers. “Every day after breakfast she would cut flowers from the garden and make a fresh arrangement for each of the seven rooms in the house. She had big rose beds, and then she had what she called her ‘pretty garden.’”

When Smith graduated from high school, the farthest north she had traveled was North Carolina. She decided to attend Mount Holyoke College in South Hadley, Massachusetts, recalling the choice as “a great move to get to a different part of the country.” She graduated in 1948 with degrees in mathematics and economics.

She married Lindsay C. Smith, a career accountant, the following year, and they had five children in quick succession. This didn’t slow down her gardening. “You spent half your life driving kids here and there, but you could certainly be at home between driving groups,” she recalls.

In the South at that time, “the flower garden,” says Smith, “was one of the outlets open to women. Flower arranging was important, too.”

Another important outlet for Smith was the driving itself, a practice she learned from her mother. “If I took the kids, I was free,” she says. She would load the kids, a few of their friends, and one or two of her own pals, and drive off in the brown Dodge station wagon toward the wilderness. In the 1960s, Bankhead, a rich mixed hardwood forest in north Alabama, was one of her favorite destinations. “I took the car where it wasn’t supposed to go,” says Smith. “I had 18 flat tires but never had to sit for more than two or three min-



A self-taught botanist, Smith has been involved with the introduction of a number of new plant selections. Above: ‘Autumn Bride’ is a selection of a coral bell (*Heuchera macrorrhiza*) discovered growing in Smith’s garden. Left: This cultivar of creeping phlox (*Phlox stolonifera*) with lilac flowers is named ‘Weesie Smith’ in her honor.

‘Alabama Lace’ was also a Smith discovery. “I’m sure many of the plants we got from others actually were Weesie’s discoveries,” says Avent.

GARDENING ROOTS

Smith’s genetic code played a big role in her gardening life. “Both of my grandmothers were gardeners but of differ-

utes before someone came by and fixed the flat for me. That's Alabama for you."

ADVOCACY EFFORTS

Smith's affection for Bankhead was a catalyst for her involvement in conservation advocacy. In the late 1960s, Bankhead was targeted for loblolly pine timber production by the U.S. Forest Service. Smith vowed she would do everything she could to prevent it. Thanks in part to her work, within a few years, the U.S. Forest Service backed off.

Several years later, Smith got involved with an effort to preserve Bankhead's Sipsey Wilderness Area. She went to Washington, D.C., to testify at Congressional hearings on the future of the Sipsey Wilderness. Impressed by her testimony, Alabama Senator Jim Allen called Smith personally to promise that nothing would happen to Sipsey without him talking to her first. "You didn't get handed something on a silver platter," says Smith, "not when it was against what the banking, commercial development, and coal mining interests might take away forever."

Smith continued her advocacy efforts on behalf of Sipsey, and helped draft the legislation that became the Eastern Wilderness Areas Act when it was signed into law in January 1975. Sipsey was preserved later that year, becoming the first designated wilderness area east of the Mississippi.

Smith was one of the early proponents of the "Dig and Save Movement," which inspired people to transplant native flora from areas destined for development. Over several decades, she rescued thousands of plants that might have been drowned, bulldozed, or paved over. Many of them were stockpiled in her garden or those of other rescue participants. She also shared plants with public gardens, including the Birmingham Botanical Gardens.

When Smith started downsizing her Pine Ridge Road garden, the Mt. Cuba Center in Delaware also became a beneficiary of her rare plants. Having originally saved these plants from development, Smith wanted them widely distributed and preserved for years to come.

Smith is now widely respected for her activism, but it wasn't always that way. "Weesie was an environmental advocate at a time when this was not fashionable, making her *persona non grata* in many so-



Smith, left, offers author Allen Bush and another visitor seedlings from her garden.

cial circles," says Fred Spicer, director of the Birmingham Botanical Gardens.

THINKING GLOBALLY, ACTING LOCALLY

The Birmingham Botanical Gardens is one of many local organizations that have benefited from Smith's activism and gen-

erosity. She has volunteered at the gardens every week for more than 40 years, planting, weeding, and maintaining the Kaul Wildflower Garden, and assisting with the annual plant sale. In addition to that hands-in-the-dirt involvement, she served on the garden's Board for four years.

To honor Smith, a plaque was unveiled at the Gardens during the 2013 Central South Native Plant Conference. In paying tribute to Smith during the unveiling ceremony, Spicer emphasized her ability to relate to people from a wide range of backgrounds. "She befriended everyone with common interests—and they befriended her—from amateur gardeners to wizened botanical sages, from members of the Red Mountain Garden Club to academic professionals, from hillbilly planthunters to nationally known nurserymen."

"I don't know anyone living or in the past, here in Birmingham, who will leave a bigger gardening legacy," says John Floyd. Thousands of others throughout Alabama and beyond have been touched in one way or another by Weesie Smith, but most of them are completely unaware of it. Smith would just as soon keep it that way. 🌱



Taking a pause from a stint of volunteer gardening at the Kaul Wildflower Garden, Smith shares a light-hearted moment with the garden's curator, John Manion.

Allen Bush is the Director of Special Projects for Jelitto Perennial Seeds and a monthly contributor to the Garden Rant blog.



grow your own

Gourmet Mushrooms

Homegrown mushrooms bring a richer flavor to the kitchen than their store-bought kin.

BY CAROLE OTTESEN

Oyster mushrooms like this one are prized for their tasty, meaty, shell-like caps.



NOT VERY long ago, the white button mushroom reigned supreme as the most trusted and recognizable edible mushroom in American kitchens. Today, gourmet species formerly considered rare and exotic—shiitake, enoki, oysters—are offered side by side with the white buttons in supermarkets across the country.

Cooking shows and foodie magazines have fueled the demand for these gourmet mushrooms with their recipes. Those who cook with them soon learn that they are deliciously habit-forming—and also expensive.

One way to enjoy and afford gourmet mushrooms is to grow your own. Besides being economical, cultivating a known species of mushroom reduces the danger inherent in collecting: possibly misidentifying and ingesting poisonous mushrooms.

Neither plant nor animal, mushrooms belong to their own kingdom (Fungi). They are actually more closely related to animals than to plants, so, not surprisingly, cultivating them is a bit different from growing, say, tomatoes or radishes. It entails starting

Some edible mushrooms such as golden chanterelle, top, and enoki, bottom, need exacting conditions so can be challenging to cultivate.



with safe and certified spawn (a term for spores carried in a temporary substrate such as a wooden dowel or sawdust) and feeding the mycelium—the main body of the fungus made up of interconnected tubelike threads—appropriate organic matter. Once the mycelium starts producing the visible fruiting bodies that we call mushrooms, the harvest may continue sporadically for years.

KIT AND CABOODLE

To get a feel for mushroom cultivation, it's best to start with a commercial mushroom kit. These usually consist of a bag or box filled with sterile medium that is laced with spawn from the desired species. You simply place the container in appropriate indirect light, usually indoors, then mist daily with water and wait for pinhead-sized mushrooms to emerge. Once they appear, their rate of growth is precipitous. You could be enjoying a mushroom-filled omelet from your kit in just a couple of weeks.

It is also possible to make your own kit. Mike Smith, a retired ichthyologist in Sil-



Shiitake mushrooms take several months to appear from spawn implanted in a log.

ver Spring, Maryland, is a mushroom aficionado who cultivates them indoors and out. At one of his mushroom-cultivating parties, he showed me and his other guests how to use three-foot-long, clear polypropylene plastic bags to make our own kits. We filled the bags with layers of packed-down straw, still damp from having been steam sterilized. We alternated the straw with mushroom spawn that Smith doled out at an approximate ratio of one pound of spawn per quarter bale of straw.

We poked a few holes in our bags, and *voila!* Ten days later, a beautiful, bountiful crop of pinkish-white oyster mushrooms popped out of the holes.

Unfortunately, the number of mushrooms a kit will produce is limited. The mycelia stop producing mushrooms when the food in the kit is exhausted. This may occur after only one or two flushes. At that point, you can add the straw to your compost pile or use it to start an outdoor mushroom patch.



To use a freshly cut log for mushroom growing, it must first be drilled with holes to introduce spawn.

TAKE IT OUTSIDE

The ready-made kits are a great way to get started with growing your own mushrooms. A longer-term option is to purchase just the spawn of the type of mushroom you like, then create your own mushroom-growing setup outdoors.

Each fungal species has its preferred food, so the key to growing gourmet mushrooms is figuring out which food or substrate works best and providing enough of it to keep the harvest going.

“Most mushrooms can break down only very particular types of wood,” explains Tradd Cotter in *Organic Mushroom Farming and Mycoremediation* (see “Resources,” page 38). For example, shiitakes require hardwoods such as oak, hornbeam, and maple. And the logs must be fresh. Older logs may be too dry and may have already been colonized by a crop of “weed” fungi.

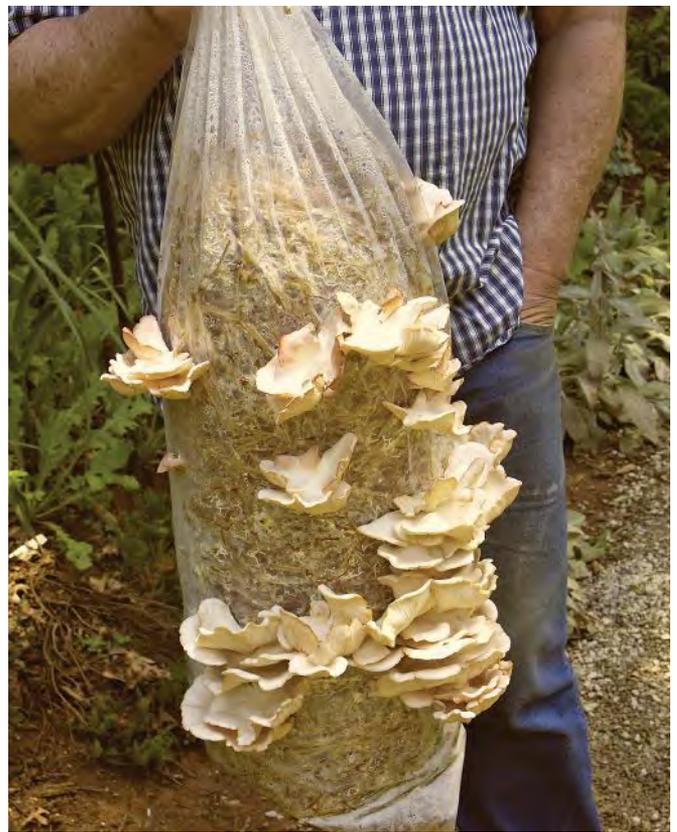
FUNGAL FACTS

- Mushrooms come in every color but green, though some species glow green in the dark.
- Like humans, mushrooms make their own Vitamin D when exposed to sunlight.
- Unlike plants, which are composed of cells formed of cellulose, the cells of mushroom mycelia are formed from chitin, which is also found in the exoskeletons of many insects.
- The largest organism in the world is a 2,400-year-old honey mushroom with a mycelium that covers more than 2,000 acres in Oregon’s Blue Mountains. —C.O.

(To learn more about growing your own shiitakes, see the “Homegrown Harvest” article that appeared in the January/February 2010 issue of this magazine.)

Rather than choosing a type of mushroom and then providing it with the food it needs, Cotter advises matching a mushroom species to the organic material you have available. Some kinds, like winecaps, can be grown on freshly chipped hardwood mulch and cardboard.

In addition to the growing material, consider the climate in your region when selecting mushroom species. Most species require a specific temperature range to



Left: Mushroom enthusiast Mike Smith, right, shows guests at a mushroom-growing party that cultivation can be as easy as stuffing clear plastic bags with clean, damp straw and mushroom spawn. **Right:** Several weeks later, these oyster mushrooms are ready for harvest.

grow and fruit. For example, pearl oysters, which are one of the quickest and easiest mushrooms to cultivate, are tropical and will die if exposed to freezing temperatures.

Mushrooms from temperate climates typically flush in spring and/or fall and stop producing in hot or very cold weather. This means that although you cannot

provide as steady a supply of gourmet mushrooms as the supermarkets, the seasonal flushes of a mushroom such as shiitake offer superior flavor. A shiitake that has spent a week under cellophane can't compete with the earthy taste of one that has been harvested minutes earlier from your very own log.

Above all, mushrooms require moisture. A location shaded from the desiccating sun is ideal for most species, though a few—like oyster mushrooms—can tolerate the occasional sunbeam as long as their growing material is kept moist. Winecaps have even been known to thrive in vegetable gardens between rows of chard or strawberries.

What will keep all mushrooms producing is an ample supply of their preferred food. However, don't be surprised if the mycelia spread out underground and find their own nutrients, sending up mushrooms where you least expect to find them.

Whether you try growing your own edible mushrooms inside or out, you will be well rewarded as long as you provide what they need. Start with one of the easy kinds to grow such as oysters. As you get the hang of it, you may find yourself experimenting with more challenging species. Fortunately, a wealth of workshops and books about cultivating all kinds of mushrooms are popping up like...well, you know.

Carole Ottesen is a contributing writer for The American Gardener.

Sources

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- Field and Forest Products, Inc.** (800) 792-6220. www.fieldforest.net.
- Fungi Perfecti.** (800) 780-9126. www.fungi.com.
- Mushroom Mountain.** (864) 855-2469. www.mushroommountain.com.
- The Mushroom Patch.** (567) 287-0037. www.themushroompatch.com.
- Territorial Seed Company.** (800) 626-0826. www.territorialseed.com.

Resources

- Growing Gourmet and Medicinal Mushrooms** by Paul Stamets. http://library.uniteddiversity.coop/Permaculture/Growing_Gourmet_and_Medicinal_Mushrooms.pdf.
- Mycelial Mayhem** by David and Kristin Sewak. New Society Publishers, BC, Canada, 2016.
- Organic Mushroom Farming and Mycoremediation** by Tradd Cotter. Chelsea Green Publishing, White River Junction, VT, 2014.



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Love Those Leeks!

by *Karan Davis Cutler*

CULINARY LEEKS (*Allium porrum*) date back to the ancient Egyptians, making them one of the world's oldest cultivated vegetables. Native to the Mediterranean and western Asia, these plants eventually found their way to Europe and then to North America with European colonists in the 1600s. For some reason, however, they have only recently begun to gain a fan base in this country. Perhaps their mild, faintly sweet flavor was too subtle for our ancestors, who preferred onions' pungency.

Unlike their bulb-forming allium cousins such as onions, garlic, and shallots, leeks are grown for the tender white cylindrical section of their lower stems, or shanks. Mature shanks measure an inch or more across and between four and 10 inches long, topped by another 10 inches or so of broad, flat, green or blue-green leaves. Although they are hardy biennials, leeks are grown as annuals and harvested before the plants flower.

PLANTING GUIDELINES

Leeks are informally divided into two groups: less hardy, short-season types and hardier, long-season leeks. Short-season varieties usually are planted in spring for a summer or fall harvest; long-season leeks are planted both in the spring, for a late fall or early winter harvest and, in warmer climates, in late summer or fall for a winter and spring crop.

All leeks prefer full sun, cool weather, and rich, loose, slightly acidic soil that drains well. Choose a site where you haven't grown alliums—leeks, onions, garlic, shallots, or chives—within the last three years to avoid disease and pest problems.



'Lancelot' is an open-pollinated selection.

Turn the soil to a depth of one foot, digging in a two-inch layer of compost to add nutrients and improve soil texture.

Small plants are sometimes available at your local garden center. These are convenient but are usually just labeled "leeks," with no information about their variety or

PLANTING BASICS

Getting Started Sow seeds a quarter-inch deep indoors 10 weeks before the last-frost date. Transplant outdoors after last hard frost.

Spacing Set seedlings three to six inches apart in rows one to two feet apart.

Days to Maturity 75 to 130 days, depending on variety. Immature plants can be harvested as "baby" leeks.

if they are long- or short-season types. For the greatest selection, and to know exactly what you're growing, start with seeds.

You can direct-seed leeks in the garden—one inch apart, then thinning to four inches—beginning two or three weeks before your last-frost date. However, I have had more success starting both short- and long-season leeks indoors, beginning 10 weeks before my last-frost date.

Sow seeds a quarter-inch deep in flats filled with a seed-starting mixture and placed on heat mats. Germination takes about a week. Once the seeds sprout, move the flats to a cool room (60 to 70 degrees Fahrenheit), set them under grow lights, and keep the soil evenly moist. When the seedlings are at least six inches tall and the danger of hard frost has passed, gradually acclimate them

to outdoor conditions before transplanting them into the garden.

MAINTENANCE TIPS FOR A FLAVORFUL CROP

The flavor of leeks is improved by blanching, which means excluding light to produce vegetables that are white rather than green. Blanching isn't mandatory, however, and even if you do nothing, you'll still get enough white shank to make growing leeks worthwhile.

To facilitate blanching and maximize the amount of white shank, I dig eight-inch-deep trenches, one to two feet apart, sprinkle in a balanced organic fertilizer, and set the transplants three to six inches apart in the trench. Don't crowd the plants, or they will only form skinny shanks. Add enough soil or compost to cover the seedlings just up to their leaves and water well.

Keep adding soil as the plants grow. Once the trench is filled, periodically



Pieces of plastic secured with twine are used to blanch the shanks of these leeks.

mound soil or mulch around the shanks. Mulching also helps thwart weeds and conserve water, which is important because leeks have shallow roots.

An alternative way to blanch leeks is to manually cover each shank, such as slipping lengths of plastic pipe or cardboard tubes from rolls of paper towels over the stems. Though time-consuming, this method yields cleaner shanks at harvest time.

Leeks need about an inch of water weekly, more in hot weather and in warm regions. And they are heavy feeders, so water every few weeks with a water-soluble fertilizer such as fish emulsion.

PESTS AND DISEASES

My leeks have been trouble-free, but pests and diseases that attack other onion family crops, such as onion maggot, downy mildew, and rust, may occur. Healthy soil, crop rotation, and avoiding wetting the leaves as much as possible will minimize problems; a few cultivars, such as ‘Tadorna’, ‘Megaton’, and ‘Bandit’, have some disease resistance.

RECOMMENDED VARIETIES

Only gourmants are likely to quibble about flavor differences between leek varieties; the key distinctions for gardeners are days to maturity and hardiness. For those who prefer heirloom or open-pollinated varieties to hybrids, I have noted this information.

‘American Flag’ Open-pollinated; 130 days; market standard

‘Bandit’ Open-pollinated, 120 days; extremely hardy; thick shanks

‘Bleu de Solarize’ (or ‘Blue Solaise’) Heirloom; 110 days; extremely hardy; large shanks

‘Gevaria’ F1 hybrid; 115 days; moderate hardiness; long shanks

‘Lancelot’ Open-pollinated; 100 days; moderate hardiness; long, thick shanks

‘Lexton’ F1 hybrid; 110 days; very hardy; long, thick shanks

‘Lincoln’ Open pollinated; 80 days; moderate hardiness; long, slender shanks

‘Megaton’ F1 hybrid; 90 days; moderate hardiness; medium long, thick shanks

‘Tadorna’ Open-pollinated; 100 days; moderate hardiness; long shanks

ENJOYING THE HARVEST

You can start harvesting leeks when the shanks have reached a useable size. I dig a few “baby leeks” when the shanks are scallion size, but wait until they reach full size for most of my crop. ‘Bandit’ and other hardy, long-season cultivars can stay in the garden until the ground freezes.

In fact, the garden is the best place to “store” leeks, as they last only about a week in the refrigerator. Prolong the harvest by mulching plants to delay soil freezing.



If protected by a layer of mulch, leeks can be left in the garden for harvest well into winter.

Sources

Fedco Seeds, Waterville, ME. (207) 426-9900. www.fedcoseeds.com.

Johnny’s Selected Seeds, Winslow, ME. (877) 564-6697. www.johnnyseeds.com.

Southern Exposure Seed Exchange, Mineral, VA. (540) 894-9480. www.southernexposure.com.

West Coast Seeds, Delta, British Columbia. (888) 804-8820. www.westcoastseeds.com.

LAUNDERING LEEKS

Soil is often trapped between the leaf layers that make up the leek shank, making cleaning difficult. To get rid of as much dirt as possible, rinse the leeks and trim off the roots and leaves. Then slice the shanks in half, lengthwise, before cutting them into desired-size pieces. Place the pieces in a large bowl of water and swish them around until the layers separate. Any grit on the pieces will be flushed out and settle on the bottom of the bowl.

—K.D.C.

Mulching also allows warm-climate gardeners to carry leeks through the winter and into spring. If you overwinter leeks, be sure to dig them before they flower and the shanks become pithy.

Low in calories and sodium, leeks contain no cholesterol or fat and have decent amounts of vitamins A, C, B6, and K, along with iron, and manganese. In the kitchen, leeks’ most famous partner is the potato. Together they star in the classic cold leek-and-potato soup called vichyssoise.

Leek leaves add great flavor to soup stock but are usually too tough to eat, so most of mine go into the compost pile. The shanks can be eaten raw but are more commonly sautéed in stews or omelets, baked in quiches and savory tarts, and grilled or roasted as sides to a main dish. Once you develop a taste for leeks, you will discover what Europeans have known for centuries: Leeks are easy to grow in the garden and absolutely delicious in the kitchen. 🍷

Karan Davis Cutler is a garden writer based in Bridport, Vermont.

Understanding Symbiotic Fungi and Soil Health

by Scott Aker

GREAT SOIL is the Holy Grail for all gardeners. Some are blessed with deep, fertile, well-drained loam, but I am not one of them. The clay soil in my Maryland garden is filled with rocks, and heavy rains sometimes leach nutrients from the upper layers of soil. Despite these shortcomings, my garden manages to be productive and beautiful because many plants are able to grow in less-than-ideal conditions, thanks in large part to the help of microscopic organisms normally found in soil.

Perhaps the most fascinating of the microorganism–plant relationships is mycorrhiza. This entails certain fungi living on or in plant roots in order to obtain carbohydrates. These fungi, in turn, help supply other nutrients and water to the plant and protect the roots from a variety of perils. (Note: The term “mycorrhiza” refers to this type of symbiotic relationship; it is not the name of the fungi.)

Mycorrhizal fungi can do this because their threads (called mycelia) can spread over an enormous surface area, making them very efficient in absorbing soil moisture and nutrients. They can also release compounds into the soil that make nutrients available to plants. Some may protect roots from toxins, while others can trap and kill destructive organisms such as root nematodes. Their mere presence is enough to occupy the space that diseases need to become established on roots.

Although scientists became aware of mycorrhiza in the mid-19th century, its importance was not fully understood until relatively recently. We now know that a majority of plant species host one or more species of mycorrhizal fungi, and some may form complex relationships with them that go beyond that of mutual benefit or symbiosis. For instance, mycorrhiza has even been determined to



Above: The fruiting bodies of a mycorrhizal fungus appear in a cluster aboveground. **Left:** Mycorrhizal fungi have a close relationship with plant roots, as shown on this sapling.

ships play a significant part in carbon sequestration—the capturing of carbon dioxide from the atmosphere and storing it in forms that are resistant to decay processes that return it to the atmosphere.

DO YOU NEED MYCORRHIZAL INOCULANTS?

Mycorrhizal inoculants in powder and granule forms became widely available to gardeners about 20 years ago. Numerous brands are sold, and a quick search of the Internet results in pages of testimonials extolling their virtues, suggesting they are necessary in every garden. In fact, native mycorrhizal fungi are present in nearly all soils, so there might be no significant benefit in using inoculants.

Inoculants might be effective in container gardens where the volume of soil is restricted and perhaps areas where soil has been sterilized by heat. However, when

aid in maintaining species diversity in Pacific Northwest forests by taking nitrogen from birches and moving it to Douglas firs and back to birches as the seasons shift. Some of these symbiotic relation-

applied to sterile soil, the fungi cannot persist if conditions are not hospitable to them—meaning the roots they form associations with must be present. Many plants are not likely to grow a great abundance of roots in soil that is inhospitable and infertile. Likewise, mycorrhizal fungi won't survive where roots aren't present.

Keep in mind, too, that commercial inoculants are not foolproof. There are thousands of mycorrhizal fungi, yet commercial preparations include just a few species, even though they tend to be generalist species with the ability to form associations with a great variety of plants. Next, preparing the fungi for a long shelf life is difficult, and ensuring they survive to the point of inoculation is not guaranteed.



Cover crops, such as buckwheat, which can be cut and turned back into the soil, both deter erosion and help create a favorable environment for mycorrhizal fungi.

In most gardens, the best approach is to maximize the benefits of existing mycorrhizal fungi by making the soil more hospitable to them.

HEALTHY SOIL, HEALTHY MYCORRHIZA

Healthy soils are always nicely layered, with decaying organic matter at the top. There are no sharp boundaries; instead, the rich humus of the upper soil layers gradually gives way to soil that has less organic matter the deeper it gets. Here are some tips for how to achieve this type of soil:

- Avoid turning your soil more than necessary, because this can destroy its structure (this is the same reason many farmers are turning to no-till agriculture). Incorporate organic matter by digging it in shallowly or by simply topdressing around plants. Don't apply more than a couple of inches of organic matter at a time, because too thick a layer may change the soil chemistry too quickly and adversely affect the soil microflora.

- Plant cover crops such as buckwheat and clover in garden beds that are empty over winter to prevent soil erosion and provide a hospitable soil environment for mycorrhizal fungi, which thrive in association with plant roots.

- Use fungicides and fertilizers judiciously. These may kill beneficial organisms

or inhibit their growth. Many fertilizers, even those considered organic, are high in salts, which may drastically change the soil chemistry, affecting both microflora and plant roots.

Remember that complex ecosystems take time to develop, so patience is a virtue. Healthy soil doesn't happen overnight, but once you have it, it will pay huge dividends in your garden for years to come.

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

Gardening Q&A with Scott Aker

PITTOSPORUM BRANCHES DYING

The leaves and bark at the ends of the branches of my mature pittosporums are covered with a white powdery and pasty substance, and the branch tips have withered and died. What is causing this?

The powdery substance sounds like an infestation of cottony cushion scale, but the dieback may be caused by fire blight, a bacterial disease to which pittosporums (*Pittosporum* spp.) are susceptible. Prune and destroy the dead branches during dry weather. Check for the presence of cottony cushion scale crawlers by tapping an infested branch over a sheet of paper. If you see the tiny red to orange insects, apply horticultural oil to the plant. There may be several generations of crawlers in a season, so check the plants every week for a year or two to get the problem under control.

POMEGRANATE BLOOMS SPORADICALLY

I have a four-year-old pomegranate that grows in a pot. How do I get it to flower regularly? I live in Boston, Massachusetts.

Pomegranates (*Punica granatum*) are native to Iran and northern India but can withstand freezing temperatures for brief periods. Leave your plant outdoors in fall long enough to lose its leaves. Then overwinter it in a location that's just above freezing, such as an unheated garage, so it can go dormant and experience a long cool period needed for proper flowering. Move the plant outdoors as soon as warm weather arrives in spring; if a late frost threatens, bring it inside overnight. Put it where it gets as much sunlight as possible during the growing season. Given enough heat, it may flower in mid- to late summer, but any fruit that develops won't ripen at your latitude. —S.A.

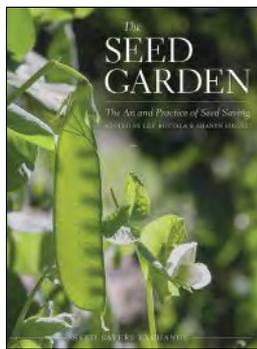
Send your gardening questions to Scott Aker at saker@ahs.org (please include your city and state with submissions).

Recommendations for Your Gardening Library

The Seed Garden: The Art and Practice of Seed Saving

Edited by Lee Buttala and Sharyn Siegel. Seed Savers Exchange, Inc., Decorah, IA, 2015. 390 pages. Publisher's price: \$29.95.

NEWS OF A likely merger of Dow Chemical and DuPont, titans of agrochemicals and genetically modified crops, makes *The Seed Garden: The Art and Practice of Seed Saving*—published by the Seed Saver's Exchange (SSE), the best-known seed-conservation organization in the United States—especially timely.



Any home gardener who saves non-hybrid seeds is already helping preserve the genetic heritage of open-pollinated varieties. Many of the varieties are generations old, each carrying stories of those who grew them, saved them, and passed them

on. Saving seeds for a few crops is pretty straightforward, but much more is required to ensure that the seeds you save are both viable and grow true-to-type. That's where this book comes in.

The book is divided into two sections. The first explores general plant botany—including propagation, genetic diversity, and life cycles—and provides an overview of harvesting, cleaning, and storing seeds. “Master Class” features delve into more specialized topics, such as genotypes and hand-pollination techniques.

The second section consists of crop profiles, which are arranged alphabetically by scientific name. Here you'll find the nitty-gritty of seed conservation. This includes information about flowering, pollination, and seed set; guidelines for variety maintenance and harvesting; and directions for cleaning and storing seeds.

Each entry delineates the different types within the category: for example, the genus *Cucurbita* is divided into winter squash, pumpkin, summer squash, and gourd. A helpful box highlights crop specifics such as plant family, life cycle, special requirements, flower type, isolation distances, numbers of plants needed for genetic preservation, expected seed life, and more.

One caveat: as the subtitle notes, this book is about how to harvest and save seeds, not how to grow plants. Gardeners seeking information about the best soil pH for cabbage or how to trellis cucumbers will need to look elsewhere. For gardeners who want to bank seeds for next year's garden—and help bank everyone's genetic heritage—*The Seed Garden* is exactly the book to have.

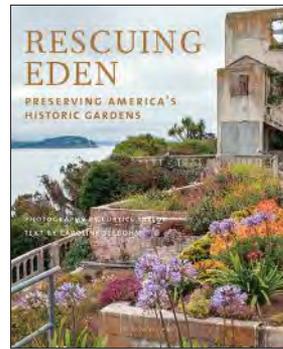
—Karan Davis Cutler

Based in Vermont, Karan Davis Cutler is the author of The Complete Vegetable & Herb Gardener, The New England Gardener's Book of Lists, and several other books.

Rescuing Eden: Preserving America's Historic Gardens.

Curtice Taylor and Caroline Seebohm. The Monacelli Press, New York, NY, 2015. 216 pages. Publisher's price: \$50.

AMERICA MAY be young compared to England, Japan, and other countries with a rich and storied garden heritage, but its own horticultural masterpieces are no less spectacular. Unfortunately, many of these treasures on private property have vanished over time or are under threat as current owners move on. Through Curtice Taylor's photographs and Caroline Seebohm's words, *Rescuing Eden* spotlights some of the gardens that were nearly lost forever before someone stepped forward to save them.



This book explores 30 such gardens from California to Maine. All of them now are open to the public, thanks to the organizations and volunteers who have preserved in these gardens a bit of America's landscape and cultural heritage.

The illustrations of each garden take center stage in the layout of the book. Taylor provides fine detail in his photographs of plants, garden accessories, stone, water, and pathways at each particular site. Seebohm in turn gives context to the images. She writes simply and clearly about the history and current status of each garden. The gardens themselves are fascinating, but I also enjoyed learning about the people who originally created them.

The properties are grouped by time period, from the 1740s to the 1990s, and represent different garden styles that typically reflect the era of their creation. For example, South Carolina's Middleton Place, which the book calls “the oldest surviving landscaped garden in North America,” is an 18th-century homage to the grand English and French estates of that time period, complete with extensive lawns. Madoo on Long Island, designed by artist Robert Dash beginning in 1967, provides a more contemporary experience, with a series of garden rooms filled with vivid colors that make the small spaces feel much larger.

Not every exceptional private garden had a champion, so this book will leave you grateful for the ones that have been preserved. Judging by the few of these gardens that I have visited, they are places worth experiencing, both in this book and in person.

—Thomas J. Mickey

Thomas J. Mickey is the author of America's Romance with the English Garden (Ohio University Press, 2013) and blogs about horticultural history at www.americangardening.net.

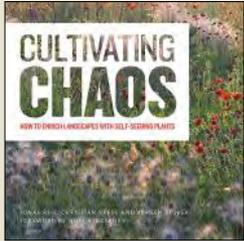
GARDENER'S BOOKS

Going Wild in the Garden

PERHAPS YOU are thinking of creating a meadow across several acres or adding spontaneity to a container garden. Nature may be your best guide, especially if you take cues from your local wild landscapes. The following books also can help, offering inspiring examples and tips for going wild in your own garden.

—Benjamin Whitacre, Editorial Intern

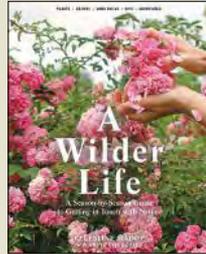
The only constant in a self-seeding garden is change, according to the authors of *Cultivating Chaos: How to Enrich Landscapes with Self-Seeding Plants* (Timber Press, 2015, \$40).



Through case studies of gardens across Europe and North America, Jonas Reif and Christian Kress make a compelling argument for

gardens with autonomy. Their in-depth practical advice and lists of ideal plants may inspire even the most skeptical readers to include a few chaotic specimens in their planting plans.

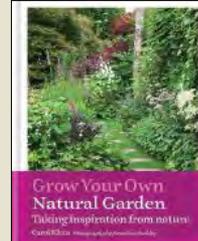
Part manifesto for millennials, part garden guide, *A Wilder Life: A Season-by-Season Guide to Getting in Touch with Nature* (Artisan, 2016, \$29.95), discusses how to stay connected with nature



through gardening and related activities. Celestine Maddy and Abbye Churchill from the quarterly magazine *Wilder* address topics on every-

thing from creating natural dyes from plants to using herbs in healing and for cooking. Sections are divided by season, so the book can serve as a year-round guide for what to do and when to do it.

Grow Your Own Natural Garden: Taking Inspiration from Nature (Mitchell Beazley, 2015, \$34.99), by Carol Klein, espouses a landscape where the gardener works with nature rather than



against it. Chapters on various ecosystems such as woodlands, seashores, and wetlands discuss how to harness the natural affinities between plants and

the environments. The book marries the best of practical how-to guides with the best of coffee-table beauties, creating a reading experience that often feels like a lively tour of unbelievable gardens.

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Horticultural News and Research Important to American Gardeners

LINK DISCOVERED BETWEEN SOIL FUNGI AND MONARCH BUTTERFLY HEALTH

In an effort to stem the declining populations of monarch butterflies in recent years, gardeners and environmentalists have been planting more milkweeds (*Asclepias* spp.), the only genus the insect lays eggs on and its favorite source of food. However, recent research suggests that the close relationship between these plants and the imperiled butterfly is more complicated than previously thought, going all the way down into the soil.



A monarch caterpillar feeds on milkweed.

Given options, monarchs select milkweeds with higher concentrations of cardenolides, a toxic steroid that helps the butterfly defend itself against parasitic protozoa that live on milkweed. The new fourth player in this drama is arbuscular mycorrhizal fungi, according to a recent study published in *Proceedings of the Royal Society B*. Higher or lower densities of the symbiotic soil fungi affected the amount of cardenolides stored in milkweed.

“The ecosystem is very complex. Even spatially isolated organisms can affect each other, and these interactions are very context dependent,” says Leiling Tao, a postdoctoral researcher at Emory Univer-

sity in Atlanta, Georgia, who headed the study. “To understand how an ecosystem works, we need to consider the ecological community as a whole...based on our results, for some milkweed species, the fungi helped the butterfly fight the parasite while in others it actually reduced the ability of the butterfly to fight against the parasite.”

Until the relationships between different milkweed species and mycorrhizal fungi are better understood, these results suggest that gardeners should avoid disturbing the naturally occurring soil ecology as much as possible when planting milkweeds. To learn more, visit rspb.royalsocietypublishing.org for the full text of “Disease Ecology Across Soil Boundaries.”

SEEDS MAKE A STINK TO AID DISPERSAL

Some flowers produce a carrion stench to attract insects that feed on dead animals, a deception that results in pollination. Scientists at the University of Cape Town in South Africa recently discovered that seeds, too, are capable of making a stink to get insects to do their bidding. The researchers had set out to document the mammal species they expected to disperse the nutlike seeds of *Ceratocaryum argenteum*, a grass endemic to South Africa. Instead of attracting mammals, however, the seeds repelled them. The researchers then noticed an unexpected creature taking on the job: dung beetles.

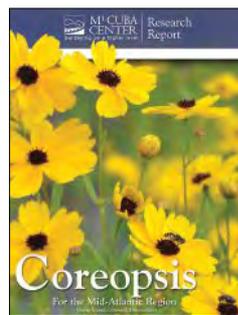
“In retrospect, it made sense because the seeds are unusually stinky,” says lead researcher Jeremy Midgley. Most observers describe the scent as a convincing mimic of animal droppings. The appearance of the seeds also bears a strong resemblance to the chunks of dung that the beetles roll into their burrows for food. All this deception is necessary to get the beetles to expend energy on the seeds. “Beetles get no reward. They can’t eat the hard seed, nor can their larvae,” explains Midgley. “The main reward for the plant is for the seeds to be buried away from the effects of fire.”

According to the research published in

the journal *Nature Plants* in October 2015, only the husk of the seed is malodorous. After removing the seeds from their husk, the small mammals the researchers originally expected to transport the seeds did so. The full paper and video of the dung beetles in action are available on www.nature.com.

TICKSEED TRIALS AT MT. CUBA

Tickseeds (*Coreopsis* spp.) have experienced a surge in popularity over the past few years due to renewed interest in native species. A coinciding profusion of new tickseed selections and hybrids has brought new colors and shapes to the prolific daisylike flowers. To help



gardeners select top performers, the Mt. Cuba Center in Hockessin, Delaware, has just released a report on a three-year trial of 94 tickseed taxa.

“We wanted to see which selections would reliably return year after year in the mid-Atlantic region,” says George Coombs, a research horticulturist at Mt. Cuba and lead author of the study. “Many of the most popular and colorful cultivars performed poorly due to problems with disease and winter survivability.”

The most reliably perennial tickseeds, Coombs and his colleagues found, were spreading, rhizomatous forms, whereas clumping selections often suffered from disease or lack of hardiness. Some of the highest rated performers turned out to be “hidden gems”, particularly selections of swamp tickseed (*C. palustris*), tall tickseed (*C. tripteris*), and fringeleaf tickseed (*C. integrifolia*). The highest overall rating for a perennial tickseed went to ‘Summer Sunshine’, a selection of swamp tickseed the report describes as “one of the most disease resistant plants from the entire trial.”

For the first time, Mt. Cuba also partnered with the University of Delaware to add an ecological component to the study. The two institutions are investigating how tickseed flower color, shape, and pollen production affect pollinator preference. Preliminary results show that tickseeds support a diverse community of pollinators ranging from bumble bees to hover flies.

To read the study, visit www.mtcuba.org.

RESEARCHERS UNRAVEL HOW PLANTS SURVIVE EXTREME DROUGHT

Plants that can survive extended droughts may hold genetic keys that could help major food crops like chickpeas and rice withstand global climate change. Researchers at Australia's Queensland University of Technology (QUT) in Brisbane recently reported that one of these keys has to do with a sugar compound.

In a paper published in *PLOS Genetics* in December 2015, QUT scientists analyzed resurrection grass (*Tripogon loliiformis*), a native to the Australian outback. This grass has the ability to withstand extended periods of drought before being al-



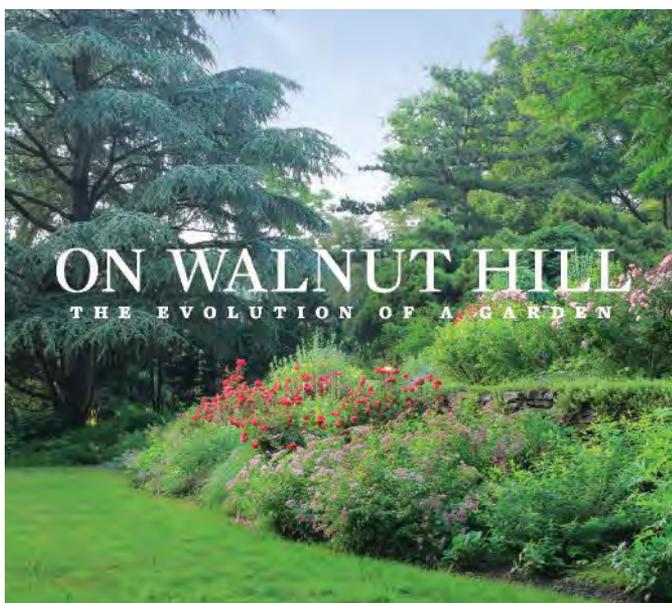
Left: The native Australian resurrection grass, top, can survive severe drought by cannibalizing its own cells. Even when it appears dead after a prolonged drought, middle, it can quickly revive when watered, bottom.

most miraculously revived by water. How it could survive losing up to 95 percent of its water content was unknown.

The study found that when hit by drought stress, the grass accumulates trehalose, a sugar compound. It then uses trehalose to trigger autophagy, a process that allows the orderly degradation and recycling of plant cells.

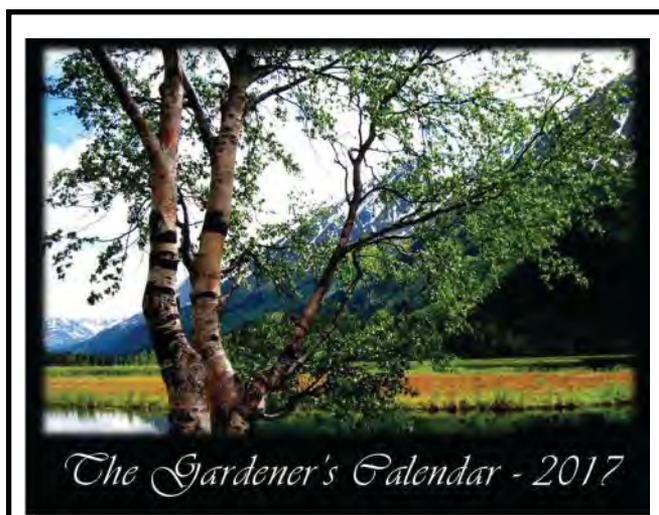
According to Sagadevan Mundree, a professor in QUT's Centre for Tropical Crops and Biocommodities and one of the study's authors, "the resurrection plant controls the levels of autophagy to prevent death upon drying. Presumably, once induced, autophagy promotes desiccation tolerance in the grass, by recycling nutrients and removing cellular toxins to suppress programmed cell death."

Brett Williams, another study participant, says the research "is an important step along a genetic path that we hope



On Walnut Hill: The Evolution of a Garden
Chronicling the garden of A.C. and Penney Hubbard
as designed by Kurt Bluemel

By Kathy Hudson, Foreword by Allen Bush,
Photography by Roger Foley
Available now at onwalnuthill.com



2017 "Gardeners" Calendar

One of the benefits that TGOA/MGCA offers its members is the opportunity for TGOA/MGCA and AHS members to participate in our annual photography contest. From these entries, photos are chosen for our annual calendar. We encourage all men and women to become a member of TGOA/MGCA and enjoy all the benefits of a worthwhile organization. For more information about TGOA/MGCA or to order calendars for \$7.00 postpaid, please call or email:

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The namesake tidal waterfront site of the Delaware Botanic Gardens at Pepper Creek will feature a garden boat launch, backed by gardens that incorporate the existing woodland.

will lead to scientists being able to develop more robust crop varieties that can withstand the uncertainty of climate change whilst still producing maximum yields.”

GRANT ENABLES GROUNDBREAKING FOR NASCENT DELAWARE GARDEN

Delaware Botanic Gardens at Pepper Creek is one step closer to leaping from the designer’s drawing sheets to the landscape, thanks to a \$750,000 grant from the Longwood Foundation. The grant will enable the garden to officially break ground this spring. The new garden will provide a public venue for horticulture education in southern Delaware.

The first phase of development of the 37.5 acre coastal site will include a meadow garden designed by acclaimed landscape architect Piet Oudolf and a visitor center. Other features that will be added over time include a conservatory, freshwater ponds and gardens, a children’s garden, an heirloom collection, a special needs garden, trails, and a boardwalk.

“Our approach has been to be environmentally and financially sustainable,” says Sheryl Swed, executive director of the gardens. “Once we have opened phase one and we begin to generate programs and visitors, we will be able to gauge the scope and speed of proceeding to next phases,” adds Swed. The garden is projected to open in 2017.

Visit www.delawaregardens.org for more information.

NEW LEADERSHIP FOR LADY BIRD JOHNSON WILDFLOWER CENTER

The University of Texas at Austin Lady Bird Johnson Wildflower Center in Texas, has appointed a new president and CEO



Patrick Newman

to further its education, conservation, and applied research programs. In January, Patrick Newman assumes the role after serving as director of programs for the University of Utah Red Butte Garden in Salt Lake City.

“The Wildflower Center has established itself as a national leader in landscape restoration, plant conservation, sustainability, and environmental education,” says Newman. “Mrs. Johnson’s conservation vision is still of paramount importance and I’m honored to join an organization with such an important mission.”

The 279-acre Wildflower Center, founded by First Lady Claudia “Lady Bird” Johnson in 1982, contains the largest library dedicated to wildflowers in the United States, an extensive collection of Texas native plants, and an online native plant database. Visit www.wildflower.org for more details.

Written by Editorial Intern Benjamin Whitacre with AHS staff.



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Starting New Plants

by Rita Pelczar



ONE OF my favorite indoor gardening activities in winter is starting new plants from seeds and cuttings. Most of my seeds won't be sown for a couple of months, but a few, such as celeriac and leeks, need to be planted in mid-February here in the mountains of North Carolina, so an early start is essential.

The **Seed Packet Organizer** from Gardener's Edge (www.gardenersedge.com) helps remind you when to sow each packet



of seed, whether you start them indoors or sow them directly in the garden. The attractive powder-coated steel box has monthly dividers for sorting seeds by season and includes five storage envelopes (more can

be ordered separately) for seeds you collect from your garden.

The limiting factor in starting seeds indoors is usually space. A compact seed-starting unit such as the **"Q" Plug System Kit** from Charley's Greenhouse & Garden (www.charleysgreenhouse.com) can help you maximize the real estate you have. The kit includes a 48-cell tray with "Q" plugs that fit into a waterproof flat topped



"Q" Plug System Kit

with a clear plastic dome. Seeds or cuttings are started in the plugs, which are made from composted tree bark. After soaking in water, they become spongy like peat, but they don't crumble. Insert the soaked plugs into the cells for a snug fit.

Rapid Rooter Plugs from Planet Natural (www.planet-natural.com) are also very easy to use for indoor propagation. Made from compost that is enriched with micronutrients and beneficial bacteria, they come in 50-plug packs and fit into the cells of the **Hot House Seed Starting System**, also from Plan-



Hot House Seed Starting System

et Natural. This kit includes a 72-cell seedling insert that fits into an 11-by-22-inch base tray, and an electric heat mat that speeds germination significantly. The seven-and-a-half-inch-high domed lid helps maintain humidity and provides good head space for the seedlings as they grow.

Peaceful Valley (www.groworganic.com) offers the **Speedling Transplant Tray**, a reusable polystyrene tray with pyramidal-shaped cells that provide excellent drainage and reduce transplant shock. Each cell is three inches square at the top and three inches deep. Trays are available with 32, 72, 129, 200, or 338 cells. The **Speedling Drain Tray** has ridges that hold the transplant tray above the bottom surface, exposing the cell bottoms to air. This



Speedling Transplant Tray

results in a natural “air” pruning of the taproots, which promotes the development of feeder roots.

The sturdy **Multi-Purpose Tray** from Charley’s Greenhouse & Garden makes it easy to transport lots of seedlings outdoors at one time. It is about 26 by 18 inches, three inches deep, and is constructed of heavy-duty molded plastic. The tray can also be used for capillary watering or serve as a humidity tray for indoor specimens.

This is also a good time of the year to start new houseplants from cuttings. For those that can be rooted in water, Gardener’s Edge offers a stylish option that accommodates multiple cuttings.



Cuttings Tubes Set

Its **Cuttings Tubes Set** features six two-and-three-quarter-inch long glass tubes held in a decorative steel rack. Place a cutting of your favorite houseplants in each tube. At only eight inches long and four-and-one-half

inches wide, the rack is small enough to set on a counter or a wide windowsill. You can also use the tubes as miniature vases for cut flowers from your garden.

Rita Pelczar is a contributing editor for The American Gardener.

Harry P. Leu Gardens

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Big Bugs Invasion!



January 15-April 15 – David Rogers’ Big Bugs
Gargantuan insect sculptures made from natural materials will be displayed throughout the gardens.

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Camellia Tours with Director Robert Bowden will be offered in January and February. Register at leugardens.org

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Quarryhill Botanical Garden: Preservation in the Pleasure Grounds

by Benjamin Whitacre



NESTLED IN one of California's famous wine regions, Quarryhill Botanical Garden combines the beauty of the Sonoma Valley with one of the world's most acclaimed collections of temperate Asian flora, which includes many endangered species.

The naturalistic plantings sprawl over the steeply sloping 25-acre site, a former stone quarry that has been converted into a garden with ponds and waterfalls. While the collection focuses on Asian plants grown from seeds brought back from Quarryhill's plant-hunting expeditions, the inclusion of North American species such as tulip poplar (*Liriodendron tulipifera*) with their closely related Asian counterparts demonstrates the botanical alliances between regions of the world that have similar climates.

Since the garden's founding in 1987, it has been credited with introducing several previously unknown species and shared germplasm of rare plants with research organizations and other gardens. It features collections of maples and magnolias ranked third and ninth, respectively, by a consortium of 200 gardens around the world. The rose collection earned Quarryhill a spot in the Great Rosarians of the World Rose Garden Hall of Fame in 2011 for its juxtaposition of 40-foot-tall wild roses with selections of their historic and modern hybrids.

"Visiting Quarryhill is an intellectual as well as a beautiful experience," says Scot Medbury, president and CEO of

An arching bridge over a waterfall adds charm to this naturalistic garden at Quarryhill.

the Brooklyn Botanic Garden in New York and advisor to Quarryhill. "The experience of going there is one of enchantment. It's an extraordinary introduction to the breadth of Asian flora and to their conservation status and stories."

Quarryhill's success as a premier conservation garden and a spell-binding visitor destination stems from a combination of Old World connections and American entrepreneurship.

MULTINATIONAL COLLABORATION

The garden's founder and principal sponsor, Jane Davenport Jansen, met Lord Charles Howick in 1986. The heiress to an American fast-food company and the storied British nobleman found they shared a common desire to create arboreta.



Left: An antique rose from the 1800s illustrates the impact of Asian species on rose hybridizing. Right: Quarryhill's world-class magnolia collection includes *Magnolia obovata*.

Soon thereafter, Howick arranged a joint expedition to China between Howick Hall Arboretum in Northumberland, England, the Royal Botanical Gardens Kew in London, and Jansen's as yet-unnamed garden. The plan was for each partner to grow the collected species at their respective sites to see how they would handle different environments.

The expedition also attracted William McNamara, a precocious young UC Berkeley-educated plantsman who had been working for Jansen as a landscape contractor. McNamara paid his own way on the trip and soon after was



Garden and sky are reflected on the tranquil surface of the Lower Pond.



hired as the first director of the garden, which Jansen named Quarryhill.

AN ARK FOR ENDANGERED SPECIES

The decision to make temperate Asian species the focus of the garden's collections was rooted in the awareness that many Asian countries, notably China, are undergoing rapid modernization that threatens the habitats of the native flora.

"Many botanist believe that if things don't change, we will lose half of our plant species in 100 years," says McNamara, now Quarryhill's executive director. "We are very concerned with conservation, and I think one of the key roles of botanic gardens is conservation education—making people aware of how important plants are and how threatened so many of them are in their wild habitats."

For McNamara, the cardinal virtue of Quarryhill as a home for Asiatic species is the climate. Summer and winter temperatures mimic the native range of the species growing there, while rainfall patterns are reversed—the Sonoma Valley has wet winters and dry summers. The dry summers prevent introduced plants from becoming invasive, according to McNamara, while the exceptional drainage of the soil on the former quarry site prevents the wet winters from rotting roots.

In addition to providing a safe haven for plants, Quarryhill heads efforts to preserve plants in or near their natural growing range. Its current flagship project focuses on

Additional Information

Quarryhill Botanical Garden,

12841 Hwy. 12, Glen Ellen, CA 95442.
(707) 996-3166. www.quarryhillbg.org.

- Open all year, Monday through Sunday, 9 a.m. to 4 p.m., except on holidays.
- Admission: Free to members. Non-members: Adults \$10, students (18 and over) \$5, 17 and under free. Seniors (65+) free on Tuesdays.
- QBG participates in the AHS Reciprocal Admissions Program. AHS members with a current membership card receive free admission, free parking, and discounts at the gift shop.

Other nearby sites to explore:

Luther Burbank Home & Gardens,
www.lutherburbank.org.

University of California Botanical Garden at Berkeley,

<http://botanicalgarden.berkeley.edu>.

Acer pentaphyllum, a maple species restricted in the wild to a single valley in China. Completion of a planned dam project will soon flood the valley, so without Quarryhill's intervention, the species is in danger of being wiped out. McNamara has worked with Chinese horticulturists to collect seeds of the maple, grow them out in nurseries, and plant them above the projected future water line so they remain as close as possible to the species' native range.

Back at Quarryhill, *A. pentaphyllum* selections thrive as part of the nearly comprehensive collection of maples, serving as a germplasm repository in case of need. Visitors to the garden can admire the tree's beauty at the same time they learn about Quarryhill's efforts to conserve it. Those inspired by the garden's work can even take a piece of it home with them; open-pollinated seeds gathered from the living collections are sold in the visitor center.

"If you've got any interest in plants at all, you must go," says Howick, who still leads the influential gardens and arboretum at Howick Hall. "It is without question the best collection of Asiatic plants in North America. It's a truly wonderful garden." ☺

Benjamin Whitacre is an editorial intern with The American Gardener.

REGIONAL HAPPENINGS

Horticultural Events from Around the Country

NORTHEAST

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

RAP JAN. 24. **Garden and Conservatory Highlights Walk.** Guided tour. Wave Hill. Bronx, New York. (718) 549-3200. www.wavehill.org.

RAP JAN. 30. **Starting Seeds Indoors.** Class. Tower Hill Botanic Garden. Boylston, Massachusetts. (508) 869-6111. www.towerhillbg.org.

RAP FEB. 18–21. **Connecticut Flower & Garden Show.** Connecticut Convention Center. Hartford, Connecticut. (860) 844-8461. www.ctflowershow.com.

FEB. 18–21. **Rhode Island Spring Flower & Garden Show.** Rhode Island Convention Center. Providence, Rhode Island. (401) 272-0980. www.flowershow.com.

RAP MAR. 21. **Apple Tree Pruning Workshop.** Hildene, The Lincoln Family Home. Manchester, Vermont. (802) 362-1788. www.hildene.org.

MID-ATLANTIC

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

JAN. 31. **Berries, Bark, and Buds Tour.** Scott Arboretum of Swarthmore College. Swarthmore, Pennsylvania. (610) 328-8025. www.scottarboretum.org.

FEB. 5. **Today's Horticulture.** Symposium. Professional Gardener Alumni Association of Longwood Gardens. Longwood Gardens, Kennett Square, Pennsylvania. (610) 388-5454. www.longwoodgardens.org.

FEB. 11–14. **New Jersey Flower & Garden Show.** New Jersey Convention Center. Edison, New Jersey. (732) 449-4004. www.macevents.com.

RAP FEB. 20. **Eco-Savvy Symposium: Water-wise Gardening.** Green Spring Gardens. Alexandria, Virginia. (703) 642-5173. www.greenspring.org.

RAP MAR. 5 & 6 & 11–13. **Maryland Home & Garden Show.** Maryland State Fairgrounds, Timonium, Maryland. (410) 863-1180. www.mdhomeandgarden.com/spring.

RAP MAR. 5–13. **Philadelphia Flower Show.** Pennsylvania Convention Center. Philadel-

phia, Pennsylvania. (215) 988-8800. www.theflowershow.com.

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.

Flower and garden shows that offer free or discounted admission to AHS members or present the AHS Environmental Award are designated by a **RAP** symbol. For details on the specific benefits offered, visit www.ahs.org/2016-flower-shows.

MAR. 10. **Land Ethics Symposium: Creative**

Approaches for Ecological Landscaping. Delaware Valley University, Doylestown, Pennsylvania. (215) 862-2924. www.bhwp.org/education/Land-Ethics-Symposium.htm.

RAP MAR. 17. **Bulb Gardening Workshop.** West Virginia Botanic Garden. Morgantown, West Virginia. (304) 376-2717. www.wvbg.org.

RAP MAR. 17–20. **Springfest 20th Annual Garden Show.** Sussex County Fairgrounds. Augusta, New Jersey. (973) 948-9448. www.springfestgardenshow.org.

SOUTHEAST

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

RAP FEB. 13. **Spring Cleansing.** Lecture. Birmingham Botanical Gardens. Birmingham, Alabama. (205) 414-3950. www.bbgbgardens.org.

Longwood Symposium Tackles Tough Topics

PUBLIC GARDENS offer visitors inspiration and a retreat. Yet as part of their higher calling as cultural institutions, they engage with controversial aspects of subjects such as environmental action, public policy, and civic responsibility. On March 4, the Longwood Graduate Program in Public Horticulture will host "Daring Dialogue: Public Gardens Engaging in Today's Tough Topics" at Longwood Gardens in Kennett Square, Pennsylvania. The day-long symposium will discuss how gardens and gardeners can have conversations on politically charged issues without alienating friends or guests.



Longwood Gardens, known for its artistic indoor and outdoor displays, will host the March 4 symposium.

"Poor communication ruins a lot of opportunities for constructive dialogue at gardens," says Mackenzie Fochs, a Longwood Graduate Fellow and co-chair of marketing for the symposium. "We often don't know how to address simple topics like pesticide use without risking conflict and making the garden a less inviting place."

The keynote address will be given by Paul Smith, secretary general of Botanic Gardens Conservation International, and will be followed by a mix of presentations and group forums. Symposium events will be live-streamed. Registration is open through March 4. Go to www.longwoodgardens.org for more details.

—Benjamin Whitacre, Editorial Intern

FEB. 26–28 & MAR. 4–6. Southern Spring Home & Garden Show. The Park Expo and Conference Center. Charlotte, North Carolina. (704) 376-6594. www.southernshows.com/sss.

RAP FEB. 27. The Inspired Gardener. Symposium. Atlanta Botanical Garden and the Georgia Perennial Plant Association. Atlanta, Georgia. www.atlantabg.org.

MAR. 1. Davidson Horticultural Symposium: Big Ideas for Small Gardens. Davidson College. Davidson, North Carolina. (704) 894-2000. www.davidsonsymposium.org.

MAR. 3–6. Nashville Lawn and Garden Show. State Fair Grounds. Goodlettsville, Tennessee. (615) 876-7680. www.nashvillelawnandgardenshow.com.

RAP MAR. 26 & 27. International Orchid & Bromeliad Show. Flamingo Gardens. Davie, Florida. (954) 473-2955. www.flamingogardens.org.

NORTH CENTRAL

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

FEB. 5. Midwest Perennial Plant Association Symposium: Inspired by Nature. Morton Arboretum and Perennial Plant Association. Lisle, Illinois. (630) 719-2468. www.mortonarb.org.

FEB. 5–14. The Great Big Home & Garden Show. Cleveland IX Center. Cleveland, Ohio. (216) 676-6000. www.greatbighomeandgarden.com.

RAP FEB. 6. Creating Wire Turtle Topiaries. Class. Boerner Botanical Gardens. Hales Corners, Wisconsin. (414) 525-5600. www.boernerbotanicalgardens.org.

RAP FEB. 23. Botanical Design Series: Succulent Kokedama. Class. Greater Des Moines Botanical Garden. Des Moines, Iowa. (515) 323-6290. www.dmbotanicalgarden.com.

RAP FEB. 27. Starting from Seed. Class. Chicago Botanic Garden. Glencoe, Illinois. (847) 835-8261. www.chicagobotanic.org.

RAP MAR. 3. Introduction to Plant Propagation. Class. Reiman Gardens at Iowa State University. Ames, Iowa. (515) 294-2710. www.reimangardens.com.

MAR. 12–20. Chicago Flower & Garden Show. Navy Pier. Chicago, Illinois. (847) 970-9160. www.chicagoflower.com.

SOUTH CENTRAL

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

RAP FEB. 2. Color with Camellias. Lecture. LSU AgCenter Botanic Gardens at Burden.

Baton Rouge, Louisiana. (225) 763-3990. www.burdenhorticulturesociety.com.

RAP FEB. 6. Cooking with Fresh Herbs. Workshop. Garvan Woodland Gardens. Hot Springs, Arkansas. (501) 262-9300. www.garvangardens.org.

RAP FEB. 6–MAR. 27. Orchid Show 2016: Where Wild Things Grow. Missouri Botanical Garden. St. Louis, Missouri. (314) 577-9500. www.missouribotanicalgarden.org.

FEB. 26–28. Arkansas Flower and Garden Show. Statehouse Convention Center. Little Rock, Arkansas. (501) 821-4000. www.argardenshow.org.

SOUTHWEST

AZ, CO, NM, UT

RAP FEB. 13. Planting a Spring Vegetable/Herb Garden. Class. Denver Botanic Gardens. Denver, Colorado. (720) 865-3500. www.botanicgardens.org.

RAP FEB. 23. Pruning Young Fruit Trees. Workshop. Santa Fe Botanical Garden. Santa Fe, New Mexico. (505) 471-9103. santafebotanicalgarden.org.

MAR. 4–6. Maricopa County Home Show. University of Phoenix Stadium. Phoenix,

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Welcome to
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April 6 -10, 2016

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View a Daffodil Show & Garden Tours of
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Sponsored by the American Daffodil Society
(ADS) and a worldwide community of daffodil
enthusiasts. For additional details visit our
website at wdc2016.stldaffodilclub.org

World Daffodil Convention in Missouri

FROM APRIL 6 to 10, daffodil lovers from around the world will convene in St. Louis, Missouri, for the World Daffodil Convention, one of the grandest displays of a cheery flower that has signified spring and renewal since before written history. The four-day event will feature a competition with approximately 3,000 cut flowers, tours of some of North America's most spectacular daffodil collections, and speakers from as far away as the Netherlands, Portugal, and Chile.

"Daffodil culture is different across regions and countries, but the show brings everything together in one place, in the middle of one of the U.S.'s great agricultural areas," says Lynn Slackman, convention chairperson. "This is an event where you can really drink at the fire hose and get exposed to flowers and experts you might only otherwise see in books."

The convention, which is held in the United States only once every 16 years, is hosted by the Greater St. Louis Daffodil Society and the American Daffodil Society. Early registration ends March 1. For more information and to register, visit www.stldaffodilclub.org/wdc2016.

Theodore Payne Native Plant Tour

ON APRIL 2 and 3, explore more than 40 low-maintenance, drought-resistant gardens that rival the beauty of the most demanding landscapes. Featuring a range of conditions more encyclopedic than those in many how-to books, the Theodore Payne Foundation's 13th Annual Native Plant Tour offers gardeners of every level of experience, budget, and taste an opportunity to gather ideas for their own gardens.

"We want to show people that they can have it all: flowers as beautiful as roses, low maintenance, and drought tolerance—all while supporting wildlife that has



This garden in Del Ray, California, features native apricot mallow and Cleveland sage.

an essential relationship with specific native plants," says Margaret Oakley Otto, coordinator of the tour.

This year, the tour features private gardens from Los Angeles to the San Gabriel Valley. All include at least 50 percent California native plants. Otto recommends that attendees select seven gardens to explore per day, focusing on those with soil, climate, and special challenges similar to their own.

"The designers are very generous about sharing information with those on tour," says Otto, "so you can get a hands-on feel for how to create your own beautiful native garden." For more information, visit www.theodorepayne.org.

—Benjamin Whitacre, Editorial Intern

Arizona. (602) 485-1691. www.maricopa-countyhomeshows.com.

RAP MAR. 9. **Hive Startup**. Class. The Hudson Gardens & Event Center. Littleton, Colorado. (303) 797-8565. www.hudsongardens.org.

WEST COAST

CA, HI, NV

RAP FEB. 6. **Water Symposium**. Descanso Gardens. La Cañada Flintridge, California. (818) 949-4200. www.descansogardens.org.

RAP FEB. 13. **Arboretum Phenology Walk**. Workshop. The UC Santa Cruz Arboretum. Santa Cruz, California. (831) 502-2998. www.arboretum.ucsc.edu.

RAP FEB. 19. **Orchid Culture & Growing Techniques**. Class. Lyon Arboretum. Honolulu, Hawaii. (808) 988-0456. www.manoa.hawaii.edu/lyonarboretum.

FEB. 25–28. **Pacific Orchid Exposition**. San Francisco Orchid Society. San Francisco, California. (650) 548-6700. www.orchidsanfrancisco.org.

✿ MAR. 16–20. **San Francisco Flower & Garden Show**. San Mateo Event Center. San Mateo, California. (415) 684-7278. www.sfgardenshow.com.

NORTHWEST

AK, ID, MT, OR, WA, WY

RAP JAN. 20. **Bodacious Borders: The Art of Making Plant Combinations**. Lecture. Belle-vue Botanical Garden. Bellevue, Washington. (425) 452-2750. www.bellevuebotanical.org.

RAP FEB. 3. **Conifers Close Up**. Class. Washington Park Arboretum. Seattle, Washington. (206) 325-4510. www.depts.washington.edu/uwbg.

RAP FEB. 4. **Pressed Plant Crafts**. Class. Kruckeberg Botanic Garden. Shoreline, Washington. (206) 546-1281. www.kruckeberg.org.

✿ FEB. 17–21. **Northwest Flower & Garden Show**. Washington State Convention Center. Seattle, Washington. (253) 756-2121. www.gardenshow.com.

RAP FEB. 24. **Planting for Pollinators Using Native Plants**. Class. Hoyt Arboretum. Portland, Oregon. (503) 865-8733. www.hoytarboretum.org.

CANADA

MAR. 11–20. **Canada Blooms**. Festival. Canada Blooms Horticultural Society. Toronto, Ontario. (416) 447-8655. www.canadablooms.com.

2016 AHS SEED EXCHANGE

This year's Seed Exchange, available only to American Horticultural Society members, offers over 220 kinds of seeds. For a quick reference, here is the list of seeds to choose from, with an order form on page 59. 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, AHS, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.**



KEY TO DESCRIPTIONS: CV(S)=CULTIVAR(S) SP. & SPP.=SPECIES SSP.=SUBSPECIES SYN.=SYNONYM VAR.=VARIETY

ANNUALS AND BIENNIALS

- 1 *Alcea rosea* (hollyhock mix)
- 2 *Alcea rosea* (hollyhock mix of pink and peach doubles)
- 3 *Alcea rosea* 'Black Watchman' (hollyhock cv.)
- 4 *Alcea rosea* 'Happy Lights' (hollyhock cv.)
- 5 *Amaranthus caudatus* (love-lies-bleeding, tassel flower)
- 6 *Amaranthus caudatus* (love-lies-bleeding, tassel flower; green-flowered variety)
- 7 *Amaranthus cruentus* 'Hot Biscuits' (amaranth cv.)
- 8 *Amaranthus cruentus* 'Intense Purple' (amaranth cv.)
- 9 *Ammi majus* (bishop's lace)
- 10 *Antirrhinum majus* (tall double snapdragon cv.)
- 11 *Antirrhinum majus* 'Magic Carpet' (snapdragon cv.)
- 12 *Celosia spicata* 'Cramer's Amazon' (celosia cv.)
- 13 *Centratherum intermedium* (Brazilian button flower, lark daisy)
- 14 *Ceratotheca triloba* (African foxglove, mix of white and pink varieties)
- 15 *Cerinthe major* 'Purpurascens' (pride of Gibraltar)
- 16 *Clarkia elegans* (mountain garland clarkia)
- 17 *Cleome hassleriana* (cleome, spider flower mix)
- 18 *Consolida ajacis*, syn. *C. ambigua* (larkspur, mixed colors)
- 19 *Consolida ajacis* 'Lilac Spire' (larkspur cv.)
- 20 *Consolida ajacis* 'Parisian Pink' (larkspur cv.)
- 21 *Coreopsis basalis* (goldenmane tickseed)
- 22 *Coreopsis tinctoria*, syn. *Calliopsis tinctoria* (plains tickseed)
- 23 *Cosmos bipinnatus* (cosmos mix)
- 24 *Cosmos bipinnatus* 'Bright Lights' (cosmos cv.)
- 25 *Cosmos bipinnatus* 'Sensation Mix' (cosmos mix)
- 26 *Cosmos bipinnatus* 'Snow Sonata' (dwarf cosmos cv.)
- 27 *Cosmos sulphureus* (orange cosmos)
- 28 *Dianthus barbatus* (sweet William mix)
- 29 *Eschscholzia californica* (California poppy mix)
- 30 *Gaillardia pulchella* (blanket flower, Indian paintbrush)
- 31 *Glebionis coronaria* (garland chrysanthemum)
- 32 *Gomphocarpus physocarpus* (swan plant)
- 33 *Gomphrena haageana* 'Mardi Gras Parade' (globe amaranth cv.)
- 34 *Helenium autumnale* (sneezeweed)
- 35 *Helianthus annuus* (sunflower mix)
- 36 *Helianthus annuus* 'Van Gogh' (sunflower cv.)
- 37 *Hunnemannia fumariifolia* (Mexican tulip poppy)
- 38 *Impatiens balsamina* (rose balsam, touch-me-not)
- 39 *Leonotis nepetifolia* (lion's ear)
- 40 *Lobelia erinus* 'Crystal Palace' (trailing lobelia cv.)
- 41 *Lobularia maritima*, syn. *Alyssum maritimum* (sweet alyssum, carpet of snow mix)
- 42 *Lobularia maritima* 'Summer Peaches' (sweet alyssum, carpet of snow cv.)
- 43 *Lunaria annua* (honesty, money plant)
- 44 *Mirabilis jalapa* (four o'clock mix, broken colors)
- 45 *Mirabilis jalapa* (four o'clock mix, solid colors)
- 46 *Moluccella laevis* (bells of Ireland)
- 47 *Monarda* 'Bergamo' (annual beebalm cv.)
- 48 *Myosotis* 'Azure Blue Birds' (forget-me-not cv.)
- 49 *Nicotiana glauca* 'Scented Jasmine' (flowering tobacco cv.)
- 50 *Nigella damascena* 'Mulberry Rose' (love-in-a-mist cv., **limited quantity**)
- 51 *Nigella damascena* 'Persian-Violet' (love-in-a-mist cv., **limited quantity**)
- 52 *Nigella papillosa* 'Bridal Veil' (love-in-a-mist cv.)
- 53 *Orlaya grandiflora* (white laceflower)
- 54 *Papaver rhoeas* (corn poppy mix; colors, singles and doubles)
- 55 *Papaver rhoeas* 'Legion of Honor' (corn poppy cv.)
- 56 *Papaver somniferum* (breadseed poppy)
- 57 *Portulaca grandiflora* (moss rose mix)
- 58 *Salvia coccinea* 'Lady in Red' (Texas sage cv.)
- 59 *Salvia farinacea* (mealycup sage mix)
- 60 *Scabiosa atropurpurea* (pincushion flower mix)
- 61 *Tagetes erecta* 'Crackerjack' (African marigold cv.)
- 62 *Tagetes patula* (French marigold mix)
- 63 *Tagetes patula* 'Dainty Marietta' (French marigold cv.)
- 64 *Tagetes* 'Starfire' (signet marigold cv.)
- 65 *Talinum paniculatum* (jewels of Opar)
- 66 *Tithonia rotundifolia* (Mexican sunflower)
- 67 *Tithonia rotundifolia* 'Yellow Torch' (Mexican sunflower cv.)
- 68 *Tropaeolum majus* (nasturtium, variegated mix)
- 69 *Tropaeolum majus* 'Cherries Jubilee' (nasturtium cv.)
- 70 *Tropaeolum majus* 'Empress of India' (nasturtium cv.)
- 71 *Tropaeolum majus* 'Moon Gleam' (nasturtium cv.)
- 72 *Tropaeolum majus* 'Vanilla Berry' (nasturtium cv.)
- 73 *Zea mays* (striped maize, ornamental corn)
- 74 *Zinnia elegans* (zinnia mix)
- 75 *Zinnia elegans* (zinnia fancy mix)
- 76 *Zinnia elegans* (zinnia mix, orange and green Benary's Giant)
- 77 *Zinnia elegans* 'Polar Bear' (zinnia cv.)
- 78 *Zinnia haageana* 'Persian Carpet' (Mexican zinnia cv.)
- 79 *Zinnia pauciflora* (small-flowered zinnia)

PERENNIALS AND GRASSES

- 80 *Aquilegia* spp. (columbine mix)
- 81 *Baptisia australis* (false indigo)
- 82 *Belamcanda chinensis*, syn. *Iris domestica* (blackberry lily)
- 83 *Coreopsis lanceolata* 'Sunburst' (lanceleaf tickseed cv.)
- 84 *Corynephorus canescens* 'Spiky Blue' (gray clubawn grass cv.)
- 85 *Crocsmia* 'Lucifer' (crocsmia cv.)
- 86 *Delphinium x cultorum* 'Pacific Giants' (delphinium mix)
- 87 *Digitalis purpurea* (common foxglove mix)
- 88 *Echinacea purpurea* (purple coneflower mix)
- 89 *Echinops ritro* (small globe thistle)
- 90 *Eryngium yuccifolium* (rattlesnake master)
- 91 *Erysimum perofskianum* 'Scented Gold' (wallflower cv.)
- 92 *Gaillardia x grandiflora* (blanket flower mix)
- 93 *Hemerocallis* spp. (daylily hybrid mix)
- 94 *Hibiscus coccineus* (scarlet rosemallow)
- 95 *Hibiscus moscheutos* (rosemallow)
- 96 *Hosta* spp. (hosta, hybrid selections)
- 97 *Iris sibirica* (Siberian iris)
- 98 *Liatris spicata* 'Floristan White' (dense blazing star, gayfeather cv.)
- 99 *Lilium formosanum* (Formosa lily)
- 100 *Lupinus perennis* (wild or sundial lupine)
- 101 *Oligoneuron album*, syn. *Solidago ptarmicoides* (prairie goldenrod)
- 102 *xPardancanda norrisii*, syn. *Iris x norrisii* (candy lily)

- 103** *Platycodon grandiflorus* (balloon flower)
- 104** *Ratibida columnifera* (Mexican hat)
- 105** *Rudbeckia fulgida* (orange coneflower)
- 106** *Rudbeckia hirta*, syn. *R. gloriosa* (black-eyed Susan, gloriosa daisy mix)
- 107** *Senna hebecarpa*, syn. *Cassia hebecarpa* (wild senna, American senna)
- 108** *Silphium perfoliatum* (cup plant)
- 109** *Solidago missouriensis* (Missouri or prairie goldenrod)
- 110** *Symphyotrichum novae-angliae* (New England aster)
- 111** *Verbena bonariensis* (purple-top vervain, Brazilian verbena)
- 112** *Verbascum chaixii* 'Album' (nettle-leaved mullein cv.)
- 113** *Yucca filamentosa* (Adam's needle)

VINES

- 114** *Cardiospermum halicacabum* (balloon vine, love-in-a-puff)
- 115** *Cobaea scandens* (cup-and-saucer vine)
- 116** *Ipomoea alba* (moonflower)
- 117** *Ipomoea* × *multifida* (cardinal climber, hearts-and-honey vine)
- 118** *Ipomoea nil* 'Kikyozaki Snowflakes' (Japanese morning glory cv., RARE, very limited)
- 119** *Ipomoea purpurea* 'Grandpa Ott's' (heirloom morning glory cv.)
- 120** *Ipomoea quamoclit* (cypress vine)
- 121** *Ipomoea tricolor* (morning glory, blue-flowered mix)
- 122** *Ipomoea tricolor* (morning glory, red-flowered)
- 123** *Ipomoea tricolor* 'Blue Ensign' (morning glory cv.)
- 124** *Lablab purpureus* 'Ruby Moon' (hyacinth bean cv.)
- 125** *Lathyrus odoratus* (bush sweet pea mix)
- 126** *Lathyrus odoratus* (sweet pea mix, heat-tolerant heirloom varieties)
- 127** *Lathyrus odoratus* (sweet pea mix, ruffled varieties)
- 128** *Thunbergia alata* (black-eyed Susan vine)

TREES AND SHRUBS

- 129** *Acer griseum* (paperbark maple)
- 130** *Cephalanthus occidentalis* (buttonbush)
- 131** *Cladrastis kentukea* (Kentucky yellowwood)
- 132** *Cornus amomum* (silky dogwood)

- 133** *Hibiscus grandiflorus* (velvet mallow)
- 134** *Hibiscus syriacus* (rose of Sharon)
- 135** *Rosa chinensis* 'Angel Wings' (miniature rose cv.)
- 136** *Styrax japonicus* 'Pink Chimes' (Japanese snowbell cv.)

HERBS

- 137** *Allium schoenoprasum* (chives)
- 138** *Anethum graveolens* (dill)
- 139** *Anethum graveolens* 'Dukat' (dill cv.)
- 140** *Apium graveolens* 'Amsterdam' (leaf celery cv.)
- 141** *Borago officinalis* (borage)
- 142** *Coriandrum sativum* 'Bac Lieu' (heirloom Vietnamese cilantro cv.)
- 143** *Foeniculum vulgare* (fennel)
- 144** *Hyssopus officinalis* (hyssop)
- 145** *Levisticum officinale* (lovage)
- 146** *Ocimum basilicum* (sweet basil)
- 147** *Ocimum basilicum* 'Mrs. Burns' Lemon' (lemon basil cv.)
- 148** *Ocimum basilicum* 'Spicy Globe' (bush basil cv.)
- 149** *Ocimum basilicum* 'Thai' (Thai basil cv.)
- 150** *Origanum vulgare* ssp. *hirtum*, syn. *O. heracleoticum* (true Greek oregano)
- 151** *Petroselinum crispum* var. *crispum* 'Triple Curled' (heirloom curly-leaf parsley)
- 152** *Petroselinum crispum* var. *neapolitanum* (heirloom Italian parsley, flat-leaf parsley)
- 153** *Porophyllum ruderale* (papalo)
- 154** *Salvia officinalis* (common sage)
- 155** *Trigonella foenum-graecum* (fenugreek)

VEGETABLES AND FRUITS

- 156** *Abelmoschus esculentus* 'Clemson Spineless' (okra cv.)
- 157** *Allium cepa* 'Ruby Red' (red onion cv.)
- 158** *Allium cepa* 'Texas Grano 502' (Vidalia onion cv.)
- 159** *Allium fistulosum* 'Sprint' (scallion cv.)
- 160** *Beta vulgaris* (beet cvs. 'Early Wonder Tall Top' or 'Ruby Queen')
- 161** *Beta vulgaris* var. *cicla* 'Ford-hook Giant' (Swiss chard cv.)
- 162** *Brassica oleracea* var. *acephala* 'Georgia Southern' (collards cv.)
- 163** *Brassica oleracea* var. *acephala* 'Lacinato' (dinosaur kale)
- 164** *Brassica oleracea* var. *botrytis* (cauliflower)

- 165** *Brassica oleracea* var. *capitata* 'Copenhagen Market' (green cabbage cv.)
- 166** *Brassica rapa* var. *rapa* 'Shogoin' (Japanese turnip cv.)
- 167** *Capsicum annuum* (jalapeño pepper)
- 168** *Capsicum annuum* (bell pepper cvs. 'Canary Bell' or 'Coral Bell')
- 169** *Capsicum annuum* 'Fish' (heirloom hot pepper variety)
- 170** *Capsicum annuum* 'Piment d'Espelette' (Basque pepper cv.)
- 171** *Capsicum annuum* 'Red Savina' (habañero chile pepper cv.)
- 172** *Capsicum annuum* 'Tabasco' (hot pepper cv.)
- 173** *Cichorium endivia* 'Florida Deep Hearted' (endive cv.)
- 174** *Citrullus lanatus* var. *lanatus* 'Sugar Baby' (watermelon cv.)
- 175** *Cucumis melo* (mix of orange-fleshed melon varieties 'Gallery', 'Earlidlew', 'Melone Retato Degli Ortolani', 'Solid Gold')
- 176** *Cucumis melo* (cantaloupe cvs. 'Hale's Best Jumbo' or 'Imperial 45')
- 177** *Cucumis melo* var. *flexuosus* (Armenian cucumber)
- 178** *Cucumis sativus* 'Garden Oasis' (cucumber cv.)
- 179** *Cucumis sativus* 'Marketmore 76' (slicing and pickling cucumber cv.)
- 180** *Cucurbita pepo* (pumpkin cvs. 'Jack-o-Lantern' or 'Spookie')
- 181** *Cucurbita pepo* (pattypan squash mix of green and yellow varieties)
- 182** *Cucurbita pepo* 'Cocozella' (summer squash cv.)
- 183** *Cucurbita pepo* (zucchini mix of 'Clarimore', 'Golden Dawn', and 'Raven')
- 184** *Cucurbita pepo* 'Ortolana di Faenza' (zucchini cv.)
- 185** *Cucurbita pepo* 'Summer Crookneck' (summer squash cv.)
- 186** *Cucurbita pepo* (spaghetti squash)
- 187** *Eruca vesicaria* var. *sativa* (arugula)
- 188** *Eruca vesicaria* var. *sativa* 'Wasabi' (arugula cv.)
- 189** *Fragaria vesca* 'Mignonette' (alpine strawberry cv.)
- 190** *Fragaria vesca* 'Pineapple' (alpine strawberry cv.)
- 191** *Lactuca sativa* (butterhead lettuce cvs. 'Buttercrunch' or 'Rhapsody')
- 192** *Lactuca sativa* 'Garden Babies' (butterhead lettuce dwarf cv.)
- 193** *Lactuca sativa* 'Parris Island Romaine' (lettuce cv.)
- 194** *Lactuca sativa* (red and green oakleaf lettuce cv. mix of 'Stardom' and 'Stealth')

- 195** *Lagenaria siceraria* 'Cucuzzi' (edible gourd cv.)
- 196** *Pastinaca sativa* (parsnip)
- 197** *Phaseolus coccineus* 'Scarlet Emperor' (scarlet runner bean cv.)
- 198** *Phaseolus vulgaris* 'Blue Lake' (pole bean cv.)
- 199** *Phaseolus vulgaris* (bush bean cv. mix of 'Bountiful' and 'Provider')
- 200** *Phaseolus vulgaris* 'Emerite' (French pole bean cv.)
- 201** *Phaseolus vulgaris* 'Roma Improved' (Italian bush bean cv.)
- 202** *Pisum sativum* 'Oregon Sugar Pod #2' (snow pea cv.)
- 203** *Pisum sativum* 'Sugar Daddy' (snap pea cv.)
- 204** *Raphanus sativus* (radish mix)
- 205** *Raphanus sativus* (radish cvs. 'Early Scarlet Globe' or 'Cherry Belle')
- 206** *Raphanus sativus* 'Pink Beauty' (radish cv.)
- 207** *Raphanus sativus* 'Watermelon' (radish cv.)
- 208** *Rheum rhabarbarum* (rhubarb)
- 209** *Solanum lycopersicum* 'Black Cherry' (indeterminate cherry tomato cv.)
- 210** *Solanum lycopersicum* 'Crimson Carmello' (indeterminate slicing tomato cv.)
- 211** *Solanum lycopersicum* 'Marvel Stripe' (indeterminate slicing tomato cv.)
- 212** *Solanum lycopersicum* (determinate orange-fruited heirloom cv. 'Nebraska Wedding' or 'Russian Persimmon')
- 213** *Solanum lycopersicum* 'Oxheart' (indeterminate slicing tomato cv.)
- 214** *Solanum lycopersicum* 'Red Grape Sugar Plum' (indeterminate grape tomato cv.)
- 215** *Solanum lycopersicum* 'Tangerine' (indeterminate slicing tomato cv.)
- 216** *Solanum melongena* (Asian eggplant mix)
- 217** *Spinacia oleracea* 'Bloomsdale Long Standing' (heirloom spinach cv.)
- 218** *Tetragonia tetragonioides* (New Zealand spinach)
- 219** *Vigna unguiculata* ssp. *sesquipedalis* (Indian yard-long bean; limited quantity)
- 220** *Zea mays* 'Precious Gem' (yellow hybrid sweet corn cv.)
- 221** *Zea mays* 'Sugar Pearl' (white hybrid sweet corn cv.)

OTHER

- 222** Four-Grass Mix for Cats. Blend of rye, oats, barley, wheat.

2016 AHS SEED EXCHANGE ORDER FORM

Order must be postmarked by March 5, 2016.

*You must be a current AHS member—but you do not need to donate seeds—to participate in the Seed Exchange.
Due to Federal regulations, seeds can only be shipped within the United States.*

- For questions about the Seed Exchange program, e-mail seeds@ahs.org.

Name _____

Address _____

City _____

State _____ Zip code _____

Daytime phone _____

E-mail _____

AHS member # _____

NOT A MEMBER? You must be a current AHS member to order seeds. If you would like to join the AHS, please select an annual membership level below and add the fee to your payment. Visit www.ahs.org/join to find out more about membership and its many benefits.

PAYMENT SUMMARY

I am not a member and would like to join the AHS:

- \$35 individual membership
 \$50 dual membership

Amount of membership dues \$ _____

**Donation for level of seed selection
from right column:**

- \$10 \$30 \$50

Amount of donation for seeds \$ _____

**I would like to make an additional
contribution to the AHS to support its
important educational programs:**

Amount of additional contribution \$ _____

TOTAL PAYMENT \$ _____

PAYMENT INFORMATION

- Please charge the total payment amount above to my
 VISA MasterCard AmEx Discover

- Check enclosed (payable to AHS).

Card # _____

Exp. date _____

Signature _____

Name on credit card _____

please print

SEED DONOR PRIORITY

- I donated seeds to the 2016 Seed Exchange and thus get first choice (**order due by 2/19/16**).

SEED SELECTIONS AND CONTRIBUTIONS

Use seed number only, please.

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

COMPLIMENTARY

- **FIVE** packets of seeds.

6. _____
7. _____
8. _____
9. _____
10. _____

\$10 DONATION

- **TEN** packets of seeds.
- 2016 AHS Reciprocal Admissions Program brochure (guide to 300 public gardens that offer free admission and other benefits to current AHS members).

11. _____
12. _____
13. _____
14. _____
15. _____

\$30 DONATION

- **FIFTEEN** packets of seeds.
- 2016 AHS Reciprocal Admissions Program brochure.
- Corona Curved Snips.

16. _____
17. _____
18. _____
19. _____
20. _____

\$50 DONATION

- **TWENTY** packets of seeds.
- 2016 AHS Reciprocal Admissions Program brochure.
- Corona Curved Snips.
- Set of seeding rulers.

SUBSTITUTE SELECTIONS

In case any of the selections you listed above are sold out, please indicate secondary choices below.

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

- Do not substitute any of my selections.
 Please send seed selections only. I do not wish to receive the eligible gift items for my order level.

Return this form to: Seed Exchange • American Horticultural Society • 7931 East Boulevard Drive • Alexandria, VA 22308-1300

Please allow 4 to 6 weeks for delivery. Order online at www.ahs.org/seeds for faster processing.

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–E

Acer pentaphyllum AY-ser pen-tuh-FIL-lum (USDA Hardiness Zones 7–9, AHS Heat Zones 9–7)
Adiantum capillus-veneris ad-ee-AN-tum kah-PIL-us-VEN-er-iss (7–10, 11–7)
Aesculus glabra ES-kyew-lus GLAB-ruh (3–7, 7–1)
A. glabra var. nana A. GLAB-ruh var. NAH-nuh (3–7, 7–1)
Aethionema grandiflorum ee-thee-o-NEE-muh gran-dih-FLOR-um (5–8, 8–1)
Allium porrum AL-ee-um POR-rum (7–10, 10–1)
Amsonia tabernaemontana am-SO-nee-uh tab-ur-nee-mon-TAN-uh (3–9, 9–1)
Asclepias tuberosa as-KLEE-pee-us too-bur-O-suh (4–9, 9–2)
Aubrieta × cultorum aw-bree-AY-tuh kul-TOR-um (4–8, 8–4)
Celosia argentea var. cristata seh-LO-see-uh ar-JEN-tee-uh var. kris-TAY-tuh (9–10, 10–1)
Cercis canadensis SUR-siss kan-uh-DEN-siss (4–9, 9–3)
Chionanthus retusus ky-o-NAN-thus reh-TOO-suss (5–9, 9–3)
Choisya arizonica CHOY-see-uh air-ih-ZOWN-ih-kuh (7–10, 10–7)
C. ternata C. ter-NAY-tuh (7–10, 10–7)
Coreopsis integrifolia kor-ee-OP-sis in-teg-rih-FO-lee-uh (6–9, 9–6)
C. palustris C. pah-LUS-triss (6–9, 9–6)
C. tripteris C. trip-TAIR-iss (3–8, 9–1)
Cotinus coggygria ko-TY-nus ko-JEE-gree-uh (4–8, 9–4)
Cyrtomium falcatum sur-TOH-mee-um fal-KAY-tum (6–11, 12–10)
Danae racemosa DAN-ay-ee ras-eh-MO-suh (6–9, 9–2)
Daphne odora DAF-nee o-DOR-uh (7–9, 9–6)
Daphniphyllum humile daf-nih-FIL-um HYEW-mih-lee (7–10, 10–7)
D. macropodum D. mak-ro-PO-dum (7–9, 9–6)
Diervilla rivularis dy-ur-VILL-uh riv-yew-LAIR-iss (5–7, 7–5)
Distylium myricoides dis-TILL-ee-um my-rih-KOY-deez (6–9, 9–6)
D. racemosum D. ras-eh-MO-sum (6–9, 9–6)
Erythronium albidum air-ih-THRO-nee-um AL-bih-dum (2–8, 8–1)

G–M

Gardenia jasminoides gar-DEEN-ee-uh jaz-mih-NOY-deez (7–10, 10–7)
Gaultheria mucronata gawl-THEER-ee-uh moo-kro-NAY-tuh (7–9, 9–5)
Heliopsis helianthoides var. scabra hee-lee-OP-siss hee-lee-an-THOY-deez var. SKAB-ruh (3–9, 9–3)
Helleborus niger hel-eh-BOR-us NY-jur (3–8, 8–1)
Heuchera macrorhiza HYEW-kur-uh mak-ro-RHY-zuh (4–8, 8–1)
H. villosa H. vih-LO-suh (4–9, 9–1)
Hexastylis shuttleworthii hex-uh-STY-lis shut-ul-WORTH-ee-eye (5–9, 9–4)
Hydrangea macrophylla hy-DRAN-juh mak-ro-FIL-luh (6–9, 10–6)
Iberis sempervirens eye-BEER-iss sem-pur-VY-renz (3–8, 8–1)
Ilex vomitoria EYE-leks vom-ih-TOR-ee-uh (7–9, 9–6)
Illicium floridanum ih-LISS-ee-um flor-ih-DAN-um (6–9, 9–6)
Iris tectorum EYE-riss tek-TOR-um (5–9, 9–3)
Kalanchoe thyrsiflora kal-an-KO-ee theer-sih-FLOR-uh (9–11, 11–1)
Kalmia latifolia KAL-mee-uh lat-ih-FO-lee-uh (4–9, 9–4)
Kerria japonica KAIR-ee-uh jah-PON-ih-kuh (4–9, 9–1)
Leucothoe axillaris loo-KO-thoh-ee ak-sih-LAIR-iss (5–9, 9–5)
Lilium canadense LIL-ee-um kan-uh-DEN-see (3–8, 8–1)
Liriodendron tulipifera leer-ee-o-DEN-dron too-lih-PIF-ur-uh (5–9, 9–2)
Mahonia aquifolium muh-HO-nee-uh ah-kwi-FO-lee-um (6–9, 9–6)
M. bealei M. BEEL-ee-eye (6–8, 8–3)
M. eurybracteata M. yew-ree-brak-tee-AY-tuh (7–9, 9–7)
M. lanceolata M. lan-see-o-LAY-tuh (7–10, 10–7)
Mandevilla × hybrida man-duh-VIL-luh HY-brih-duh (11–11, 11–8)
Metasequoia glyptostroboides met-uh-suh-KWOY-uh glip-toh-stro-BOY-deez (5–9, 9–5)
Myrica pensylvanica my-RIH-kuh pen-sil-VAN-ih-kuh (3–6, 6–3)

N–Z

Nandina domestica nan-DEE-nuh do-MES-tih-kuh (6–11, 12–4)
Onoclea sensibilis on-o-KLEE-uh sen-sih-BIH-liss (4–9, 9–1)
Osmunda cinnamomea ahz-MUN-duh sin-uh-MO-mee-uh (3–9, 9–1)
Papaver nudicaule puh-PAH-vur new-dih-KAW-lee (2–8, 8–1)
Pelargonium × hortorum peh-lar-GO-nee-um HOR-tor-um (9–11, 11–1)
Penstemon pinifolius PEN-steh-mon pin-ih-FO-lee-uh (5–9, 9–5)
Perovskia atriplicifolia peh-ROV-skee-uh at-rih-plih-sih-FO-lee-uh (4–9, 9–4)
Phlox divaricata FLOKS dih-vair-ih-KAY-tuh (3–9, 8–1)
P. stolonifera P. sto-lon-IF-ur-uh (4–8, 8–1)
Pieris japonica py-AIR-iss juh-PON-ih-kuh (5–8, 8–5)
Pittosporum tobira pit-toh-SPOR-um toh-BIR-uh (8–11, 11–8)
Prunus laurocerasus PREW-nus law-ro-SEH-rah-sus (6–9, 9–6)
Punica granatum PEW-nih-kuh gruh-NAY-tum (7–10, 12–1)
Quercus × warei KWER-kus WAIR-ee-eye (4–9, 9–4)
Salvia coccinea SAL-vee-uh kok-SIN-ee-uh (8–10, 10–1)
Sarcococca hookeriana sar-kuh-KOKE-uh hook-ur-ee-AN-uh (6–8, 8–5)
Schizophragma elliptifolium skiz-o-FRAG-muh ee-lip-tih-FO-lee-um (6–9, 9–6)
Selaginella braunii sel-ah-jih-NEL-luh BROW-nee-eye (6–9, 9–1)
Simmondsia chinensis sim-MOND-see-uh chy-NEN-siss (8–11, 12–8)
Sorghastrum nutans sor-GASS-trum NOO-tanz (4–9, 9–4)
Stylophorum diphyllum sty-lo-FOR-um dy-FIL-lum (5–8, 8–1)
Trillium lancifolium TRIL-ee-um lan-sih-FO-lee-um (6–9, 9–1)
T. pusillum T. pyew-SIL-um (5–8, 8–1)

GARDEN MARKET

CLASSIFIED AD RATES: All classified advertising must be prepaid. \$2.75 per word; minimum \$66 per insertion. Copy and prepayment must be received by the 20th of the month three months prior to publication date. Display ad space is also available. To place an ad, call (703) 768-5700 ext. 120 or e-mail advertising@ahs.org.

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Moisture-Loving Sensitive Fern

by *Barrie Collins*

A DECIDUOUS FERN native to swampy places and lowland forests in eastern North America, sensitive fern (*Onoclea sensibilis*) is one of those plants ideally suited for the shady, consistently moist sites that gardeners often find problematic. The plant's common name refers to the sensitivity of its fronds, which quickly turn brown if exposed to frost or drought.

Spreading by rhizomes, sensitive fern (USDA Hardiness Zones 4–9, AHS Heat Zones 9–1) forms upright clumps composed of sterile and fertile fronds. The triangular, pale green sterile fronds emerge first, growing two to four feet tall with ornately lobed leaflets on the upper two-thirds of each stipe, or stem. Emerging later in the summer, the shorter and narrower fertile fronds bear clusters of sporangia, which resemble tiny grapes or beads. Their shape spawned another of the plant's common names: bead fern. The sterile fronds darken to brown as they mature.

GROWING CONDITIONS

The only species within its genus, sensitive fern is broadly native from Quebec, Ontario, and Manitoba south to eastern Texas, the Gulf Coast, and the panhandle of Florida. Shady sites with moist, rich, slightly acidic soil are ideal in the southern United States, while in cooler northern regions, plants will tolerate some sun if enough soil moisture is available.

Sources

Fieldstone Gardens, Inc., Vassalboro, ME. (207) 923-3836.

www.fieldstonegardens.com.

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

Gardens of the Blue Ridge, Pineola, NC. (828) 733-2417.

www.gardensoftheblueridge.com.



Sensitive fern's ornately dissected fronds grow in upright clumps two to four feet tall.

Sensitive fern is best naturalized in woodland gardens, especially around ponds or streams. It also makes an excellent woodland groundcover, spreading quickly where it is happy.

Under ideal growing conditions in cooler parts of the country, such as New England and perhaps the Pacific Northwest, plants can spread aggressively by both rhizomes and spores. In his book *Native Ferns, Moss & Grasses*, William Cullina describes using a mower to tame colonies of sensitive fern on his New England lawn. However, in the Southeast, where I live, that's not likely to be a problem.

Because plants are late to appear in spring or early summer, it's a good idea to label or mark their locations to avoid inadvertently digging up the rhizomes.

BOLD IS BEAUTIFUL

Use sensitive fern's bold foliage to provide structure to a landscape. It can be successfully juxtaposed with other ferns and more finely textured perennials. Good companions are species with a similarly wild habit, such as cinnamon fern (*Osmunda cinnamomea*), also native to America's forested wetlands.

The fertile fronds add valuable form and interest to the garden in fall and winter, so they can be left in place until spring, when they can be cut back.

As long as you respect its need for consistent moisture, shade, and fairly rich acid soil, sensitive fern will flourish in your garden for years to come.

Barrie Collins is a landscape architect based in Atlanta, Georgia. He blogs at Garden Of Us.



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