



The American GARDENER®

The Magazine of the American Horticultural Society

September / October 2014

Gardenworthy Alliums

Poison Ivy's Role in
Ecology and Research

Meet Tom Burford,
Virginia's "Professor
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BY CHARLOTTE KIDD

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BY KYLEE BAUMLE

This year in Columbus, Ohio, participants from across the country gathered to share ideas for helping kids grow into lifelong learners and gardeners.

ON THE COVER: The flowers of 'Purple Sensation' ornamental onion are strikingly contrasted against a backdrop of 'Vossi' laburnum at the VanDusen Botanical Garden in British Columbia.

Photograph by Mark Turner

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NOTES FROM RIVER FARM

A HIGHLIGHT OF MY summer was our 22nd annual National Children & Youth Garden Symposium in Columbus, Ohio, this July. Many of our attendees from all over the country and even a few from abroad told me it was a highlight of theirs as well. I'm often asked what makes the symposium such a special event year after year, and the only way I can explain it is that the energy and passion of the participants creates an extraordinary atmosphere. There is something about sharing successes in engaging kids in gardening that does that.

One of our keynote speakers this year was Robin Moore, director of the Natural Learning Initiative at North Carolina State University. Robin has made an unparalleled contribution to the body of knowledge about the design of environments that are conducive to fostering a connection to nature and positive environmental attitudes. After his insightful presentation, I had a few moments to talk with him and one comment he made really stuck with me.

When I asked him how he felt about his experience at this year's symposium, he said it gave him hope. Hope. Well, the palpable sense of energy and enthusiasm among the attendees gives me hope, too, but it was very encouraging to hear some of Robin's stature and experience express a similar sentiment.

Robin's words also called to mind another person who had a keen understanding of the connection between plants and optimism—our late President Emeritus, Dr. H. Marc Cathey. During his many years with the American Horticultural Society, Dr. Cathey frequently reminded us that "green is the color of hope, and in the color of plants is our hope for the future." I'm sure that Dr. Cathey, who passed away in 2008, would have been proud of all the hope our symposium has inspired over the years. The dedication of our participants, partners, and other organizations to the next generation of American gardeners ensures a healthier, more beautiful world for all of us.

For a snapshot of what happened at the symposium—the gorgeous gardens, fun workshops, and amazing people—please turn to page 30. Also in this issue of *The American Gardener*, you will find a tribute to the Cooperative Extension Service as it celebrates its centennial this year, a selection of striking ornamental onions to try in your garden, and a not-to-be-missed primer on a pretty but perilous native—poison ivy. And you'll enjoy meeting Tom Burford, who has spent a lifetime rescuing heirloom apples from the brink of extinction. Be sure to check out his tips for making a perfect apple pie!

Happy gardening!

Tom Underwood
Executive Director



Tom Underwood

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HOW ABOUT HARDY SALVIAS?

While it was interesting to read about salvias that do well in areas that have hot and humid summers, most of the species mentioned in the article are only pot plants for those of us who garden in USDA Zone 5 and points north. I consider the genus *Sal-*



Salvia 'Lubecca'

via one of the best for perennial garden use, particularly several of the older cultivars that are now hard to find. I refer to 'Lubecca' and 'East Friesland'. These have been replaced by newer and more flashy varieties, but in my admittedly subjective view, these two particular old cultivars are hard to beat. How about an article on the more hardy salvias? It is a most interesting genus.

*Pat Macomber
Moors, New York*

NOT DIGGING THE PHOTO

I really enjoy your magazine—useful, educational, down-to-earth. Not much sense in looking at pretty pictures illustrating gardens that most of us could not afford. But on the educational side, I thought the photograph on page 52 of the July/August issue could have been improved. Digging through mulched

areas works better if you can park the removed soil on some surface or container to keep it separate from the mulch. And for digging in anything but really sandy soil, a garden fork works very nicely as the first step in loosening the ground. Garden forks, for reasons not clear to me, could use more publicity.

*Erica Jones
Newport, Virginia*

Editor's response: You are quite correct. A bit of forethought to keep the soil you're digging out of mulch really helps reduce clean-up. What the photo doesn't show is that our contributing editor, Rita Pelczar, was using an 11 gallon TubTrug to collect the soil from the planting hole and to mix it with a soil conditioner that was used for backfilling. A tarp or wheelbarrow would also have served well.


CORRECTIONS

The name of a scientist mentioned in "Creating Buzz for Pollinators' Plight" (*Gardener's Notebook*, July/August 2014) was rendered incorrectly. Jeffery Pettis is the co-author of the survey and research leader of the Agricultural Research Service's Bee Research Laboratory in Beltsville, Maryland.


The name of the Director of Limahuli Garden and Preserve, quoted in "50th Anniversary for National Tropical Botanical Garden," was rendered incorrectly. Kawika Winter is Limahuli's director.

A news article in the July/August issue, "Webinar Series on Sustainable Landscape Practices," incorrectly stated that Landscape for Life is a part of the Sustainable Sites Initiative. Landscape for Life is a program based on principles from the Sustainable Sites Initiative.

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.

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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.

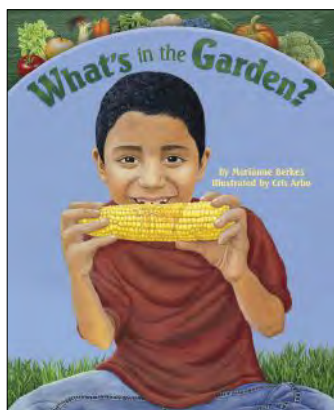
News from the AHS

September / October 2014

PROGRAMS • EVENTS • ANNOUNCEMENTS

“GROWING GOOD KIDS” CHILDREN’S BOOK AWARD WINNER REVEALED

THE WINNER OF the 2014 “Growing Good Kids” Book Award is *What’s in the Garden?* by **Marianne Berkes**. The award was presented in mid-July at the American Horticultural Society’s National Children & Youth Garden Symposium in Columbus, Ohio. Berkes’s cleverly written combination of rhyming riddles and simple, tasty garden recipes for kids are complemented by illustrator



Cris Arbo’s culturally diverse portraits of children growing, harvesting, cooking, or eating fruits and vegetables. The book was published by Dawn Publications in Nevada City, California.

“The Growing Good Kids award program was established to recognize and build awareness of children’s books that effectively promote an understanding of, and appreciation for, gardening or plants and the environment,” says **Randy Seagraves**, the curriculum coordinator for the International Junior Master Gardener Program, which co-founded and jointly administers the annual award with the AHS. “With its engaging story, illustration, and design, *What’s in the Garden?* was selected by our book awards committee for its all-around excellence.”

Nominations for the best children’s gardening books published in 2014 are being accepted through May 1, 2015. To nominate a book, visit www.jmgkids.us/bookawards/publisher-nomination-information/.

PHOTOGRAPHY CONTEST WINNER

THIS IMAGE of the stately spring ephemeral *Trillium grandiflorum*, captured by photographer **Richard States**, won “Best of Show” in the 2014 The Gardeners of America/Men’s Garden Clubs of America (TGOA/MGCA) photography competition.



The great white trillium is the official wildflower of Ohio, where States—who claimed his third consecutive “Best in Show” award—resides. A photograph of a yellow and pink dahlia, taken by **Karyn Chaffin** of Denver, Colorado, won second place.

Through a special partnership with TGOA/MGCA, AHS members are eligible to participate in this annual photography contest. The winning images from each year’s competition are featured in TGOA/MGCA calendars. For details on how to enter, visit www.tgoa-mgca.org.

BOTTOM: COURTESY OF TGOA/MGCA

HONEYBEES GET NEW HOMES AT RIVER FARM

TWO NEW honeybee hives were established at the AHS's River Farm headquarters over the summer, thanks to the efforts of **Ping Honzay**, a beekeeper who also works in the AHS member programs department, and her husband, Phil. **Phil Honzay** constructed a top-bar hive—a rectangular box in which honeycomb hangs from removable bars—for the first bee colony, which arrived in June. In August, the Honzays adopted another colony from a colleague in the Beekeepers Association of Northern Virginia. The second colony is housed in a more traditional Langstroth hive, which is a box with stacked frames. Both colonies contain a docile type of bee.




Phil Honzay, above, points out the entrance of the Langstroth hive, while Ping Honzay, left, evaluates honeycomb forming in a section of the top-bar hive. So far, the hives are thriving in a service area at River Farm.

Honey harvesting will have to wait a year so that the bee colonies have a chance to establish a winter food supply and become fully self-reliant. Harvesting honey is not the primary aim of beekeeping for the Honzays, who look instead to maintain healthy bee populations to encourage pollination. “As both gardeners and beekeepers, we’re attuned to the importance of healthy bee colonies,” says Ping Honzay. “Beekeepers have to think botanically in evaluating the seasonal sources of nectar and pollen for their bees. It gets you connected to the rhythms of the seasons.”

The bees can be seen gathering nectar and pollen from plants growing throughout River Farm. One particular favorite seems to be clustered mountain mint (*Pycnanthemum muticum*), which grows in the André Bluemel Meadow.


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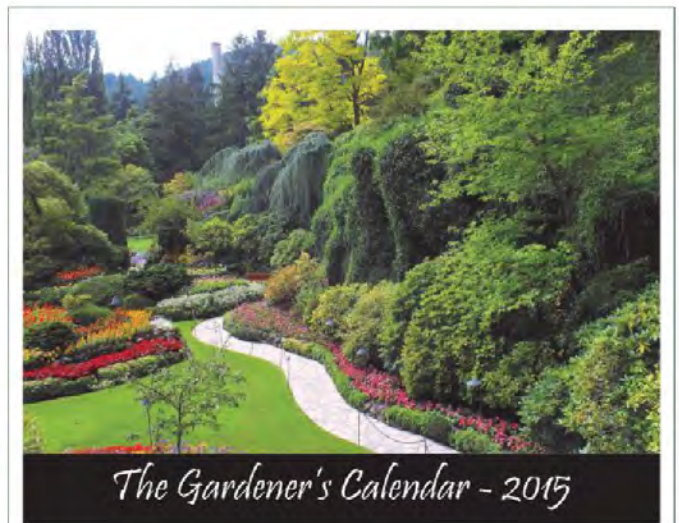
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The Gardener's Calendar - 2015

2015 “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 \$6.25 each postpaid, please call or email.

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Seed Exchange Deadline Reminder

November 15 is the last day to mail in seeds for inclusion in the 2015 AHS Seed Exchange, so remember to save seeds from your rare or favorite varieties to share with fellow gardeners across the country. Those who donate seeds get first pick of the complete list of seeds that will be posted on the AHS website in mid-January. For more details and a seed donation form, please turn to page 57 of this issue, or visit the AHS website at www.ahs.org.

GARDEN BOOK DISCOUNT FOR AHS MEMBERS

THROUGH A special arrangement with New-York-based publisher Phaidon, AHS members are eligible for a 30 percent discount on *The Gardener's Garden*, a cultural and historical compendium of public and private gardens from around the world. This beautifully illustrated, large format book profiles more than 250 gardens, including many acclaimed North American landscapes. It will be available in mid-October 2014.



“This book will allow the mind to wander, to travel, to be exposed to different contexts, to different principles of design or plant palettes,” says international designer **Madison Cox**, who helped select the gardens for this book, “and I think this book will also allow the reader to experience the vast richness that there is within the garden world, just as there is within the world of architecture or the world of art.”

AHS members can receive the 30 percent discount by ordering the book through a link on the AHS website. The discount will be available through December 31, 2014.

STRAW BALE GARDEN EXPERIMENT YIELDS BOUNTY

THIS YEAR at the AHS headquarters, River Farm Manager and Horticulturist **Sylvia Schmeichel** experimented with a novel technique for raised beds: straw bales. Using the book, *Straw Bale Gardens* by **Joel Karsten** as a guide, staff



and volunteers planted vegetables and fruits in more than two dozen straw bales. A promising solution for those with small spaces, poor soil, and limited budgets, the straw bales “can be composted at the end of the growing season,” adds Schmeichel. A feature article about the straw bale garden experiment will appear in an upcoming issue of this magazine.

Plantings in the straw bales included okra, squash, strawberries, and tomatoes.



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AHS NATIONAL EVENTS CALENDAR

2014

SEPTEMBER 10–OCTOBER 26. **6th Annual AHS Online Auction.** National.

SEPTEMBER 20. **AHS Annual Gala.** River Farm, Alexandria, Virginia.

OCTOBER 2–4. **America in Bloom Symposium and Awards.** Philadelphia, Pennsylvania.

DECEMBER 1–24. **Holiday Trees Display.** River Farm, Alexandria, Virginia.

DECEMBER 13. **AHS Holiday Open House.** River Farm, Alexandria, Virginia.

2015

JANUARY 10–FEBRUARY 1. **Gardens, Wine, and Wilderness: A Tour of New Zealand.** AHS Travel Study Tour. New Zealand.

APRIL 10–11. **AHS Spring Garden Market.** River Farm, Alexandria, Virginia.

APRIL 10–21. **Mediterranean Cruise.** AHS Travel Study Tour. Mediterranean.

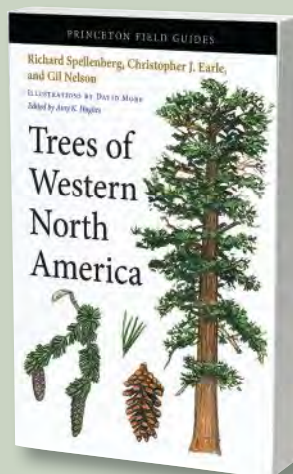


Stops during the President's Council trip included Dan Hinkley's private garden, Windcliff, top, and Chihuly Garden and Glass, above.

AHS PRESIDENT'S COUNCIL TOUR PROGRAM VISITS SEATTLE

THIS YEAR'S late-July trip for the AHS President's Council (comprised of members who donate at least \$1,000 a year to the Society) featured tours at many of the best-known public and private gardens in the Seattle, Washington, area. Highlights included a stop at Windcliff, the home of **Dan Hinkley** and **Robert Jones**, where the gardens overlook a panoramic view of the Puget Sound; the Chihuly Garden and Glass, where glassworks by artist **Dale Chihuly** are installed amid lush gardens; and the Washington Park Arboretum, where attendees toured Australia, China, Chile, and New Zealand through these countries' indigenous flora. AHS Board member and trip host **Marcia Zech**, and her husband, **Klaus**, held the farewell dinner at their scenic Mercer Island home and garden. For more information about the President's Council, e-mail development@ahs.org.

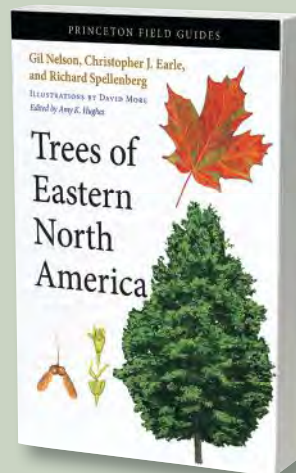
News written by Editorial Intern Sarah Miller.



Trees of Western North America

Richard Spellenberg, Christopher J. Earle & Gil Nelson
Illustrations by David More
Edited by Amy K. Hughes

560 pages, 200 color illus.
 422 maps.
 Paper Flexibound \$29.95
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 488 maps.
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- *Trees of Western North America* covers 630 species, more than any comparable guide, including all the native and naturalized trees of the United States and Canada as far east as the Great Plains, as well as treelike forms of cacti and yuccas
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Ornamental Alliums

For discerning gardeners, ornamental onions are indispensable additions to the spring and summer bulb display. And now's the perfect time to plant them.

BY CAROLE OTTESEN

SAY “BULBS” and the first ones that tend to pop into a gardener’s mind are tulips, daffodils, and crocuses. Alliums are an afterthought. In spite of remarkable attributes—showy flowers that attract bees, butterflies, and hummingbirds and are great for cutting and drying; easy culture; exceptional hardiness; and deer and vole resistance—alliums don’t get the recognition they deserve. Dilys Davies, author of *Alliums: The Ornamental Onions*, describes the genus as “undeservedly neglected...at-

tracting a smallish circle of enthusiasts, plus the odd fanatic.”

It’s hard to single out a reason why these spectacular bulbs are not more roundly appreciated, but perhaps it has something to do with their culinary associations. I grew culinary onions—chives, onions, shallots, and garlic—for years before I got around to trying the purely ornamental side of the family.

A star in any garden, ‘Globemaster’ allium produces eight- to 10-inch-wide flower heads.

I remember clearly that the first ornamental onion to come into my garden was a dim second choice. First choice had been the June-blooming giant alliums (*A. giganteum*) with their magnificent six-inch flower heads. I had dreamed of a flock of them, but when I learned how expensive a single bulb was, in a momentary paroxysm of parsimony, I opted for a dozen of the less-expensive Persian or “tall drumstick” alliums (*A. aflatanense*). Thus it was that on a brilliant October day, while popping in bulbs between clumps of fountain grass (*Pennisetum alopecuroides*)



Flowering in May, 'Purple Sensation' is one of the earliest-blooming big-headed alliums.

that instead of feeling euphoric, I fretted: Why hadn't I just bought what I had intended to buy in the first place? How could 12 bulbs that sold for the price of three be anywhere near as showy?

The following May proved those worries unfounded. Four-inch balls made up of hundreds of tiny purple florets rose on three-foot stalks through a groundcover of emerging fountain grass. Not only were Persian alliums a bargain, they were

spectacular. And combining them on a low mound with an ornamental grass turned out to be a stroke of dumb luck; I hadn't anticipated that the grass would camouflage bulb foliage that yellows just as the flowers appear. My Persian alliums are attractive, healthy, and have returned in greater numbers every spring for more than a decade, although the flowers have declined somewhat in size. And it's a combination that mystifies visitors to the gar-

den who ask, "What is that grass with those amazing flowers?"

BIG-HEADED ALLIUMS

Persian alliums (*Allium aflatunense*, USDA Hardiness Zones 4–8, AHS Heat Zone 8–1) belong to a group that I've come to think of as the "big-headed alliums," an unscientific but descriptive name that encompasses some showy types of horticultural origin and mixed parentage. (Because allium species freely hybridize with one another, identifying the parentage of selections can sometimes be problematic.)

One of these, 'Purple Sensation'—to my eye identical to Persian allium but for its deep, dark reddish-purple color—is often listed as a selection of *A. hollandicum*. It grows one-and-a-half to two-and-a-half feet tall and produces three-inch-wide flower heads in late spring to early summer. Crosses of Persian allium with other species have produced a bevy of beauties with attributes that blur the distinctions between species. 'Gladiator', most likely a hybrid of *A. aflatunense* and *A. macleanii*, also grows three to four feet tall and bears rose-purple flower heads in late spring to early summer that are almost four inches wide.

Allium 'Mars' is a spectacular hybrid that bears six-inch-wide, lavender-purple umbels. Three to four feet tall, it flowers in late spring. 'Mount Everest' produces six-inch-wide pure white snowballs.

Of course, the poster child of the big-headed alliums is *A. giganteum* (Zones 3–9, 9–5), the one I had originally lust-

PLANTING AND CARING FOR ORNAMENTAL ALLIUMS IN THE GARDEN

Fall is the perfect time to plant alliums, which, like most temperate-zone bulbs, require a period of cold dormancy to grow well and bloom. You can plant them anytime before the ground freezes, burying the top of the bulb at a depth three times its diameter.

Most alliums originated in regions that experience hot, dry summers and very cold winters. And many are native to steppe, scree, or mountain habitats where the soil is thin and porous. So it's hardly surprising to learn that nearly all alliums—particularly those with larger bulbs—grow best in free-draining soil. If all you have is wet clay, you'll have to create a raised bed for your alliums or amend vigorously with organic matter and/or chicken grit (you can find the latter at a farm supply store). A site in full sun is necessary for all but the woodland species.

If alliums are a bit demanding about drainage, they make up for it by withstanding extreme cold. I discovered just how hardy alliums are one summer during a visit to the botanical garden at the University of Turku, Finland's ancient capital. Giant allium, Turkistan allium, and cultivars such as 'Mars' and 'Purple Sensation' were thriving in this garden located north of 60 degrees northern latitude (approximately equivalent to the border between the Canadian provinces and the Northwest Territories).

A number of alliums, such as *A. aflatunense*, *A. cristophii*, *A. giganteum*, and *A. sphaerocephalon*, have foliage that yellows as flowers appear. Planting these among lower-growing perennials, such as hostas, keeps the bed looking trim.

Propagate alliums by dividing them in spring or fall. Most species need to be divided every few years to prevent overcrowding and maintain vigor.

—C.O.



Low-growing Turkistan allium is especially suited for the front of borders. In this mixed bed with a cool, predominantly blue color scheme, it harmonizes well with other blue-leaved plants such as *Euphorbia* sp., blue fescue (*Festuca glauca*), *Sempervivum tectorum*, and *Artemisia* sp.

ed after, smitten by a catalog photo of a softball-sized flower atop a tall scape that dwarfed the small child beside it. The fall after my success with Persian alliums, I made haste to the garden center and spent a small fortune on giant alliums.

Significantly larger than Persian alliums, giant alliums have celebrity presence. In the June border, six-inch balls of dark lavender florets on four-foot stems float majestically above lower-growing perennials. An equally attractive white form, ‘White Giant’ (which, depending on sources, may actually be a selection of *A. stipitatum*) is also available.

While Persian alliums provide big, bold additions to late spring bouquets, giant alliums are bouquets in themselves. Blooming slightly later than Persian alliums, giant alliums extend the display and cutting season. If you plant both, you’ll have two months of terrific cut flowers that bring long-lasting substance to bouquets and even preserve well as dried flowers.

These two species flower in concert with the late-spring-to-summer crowd, including Virginia bluebells (*Mertensia* spp.), late daffodils and tulips, bleeding

hearts (*Dicentra* spp.), columbines (*Aquilegia* spp.), *Brunnera* spp., peonies, and oriental poppies (*Papaver orientale*). After bloom, the seed heads remain attractive while discreet foliage—amazing in plants that make such an impact—departs with courteous dispatch and little mess.

The star of Persia (*A. cristophii*, Zones 3–9, 9–5) bears eight-inch balls of loose, shaggy, metallic blue-violet florets on



Unlike the dense flower heads of most big-headed alliums, those of *Allium schubertii* are open and skeletal.

rather disproportionate 15-inch stems. Thriving in a hot spot, it prefers alkaline soil and, like most alliums, demands excellent drainage. Star of Persia is one parent, along with *Allium macleanii*, of ‘Globemaster’, a Guinness Book candidate with blooms eight to 10 inches across.

Bigger, but skeletal in flower, is *A. schubertii* (Zones 4–10, 10–1), which seems too outrageous to be real—an explosion of rosy florets caught in mid-air on an 18-inch stem. I always think of this one as “the tumbleweed allium,” after I read that in its native places—North Africa and central Asia—the dried flower heads eventually break off the withered stems and, blown by the wind, cast their seeds abroad as they roll. Drainage is critical for this summer-dormant allium; I have lost several to wet summers. More prudent souls might lift these bulbs after flowers have faded and replant them in fall.

The Turkistan allium (*A. karataviense*, Zones 3–9, 9–5) hails from a land-locked region in central Asia characterized by harsh high desert plateaus, semi-arid steppes, and the world’s tallest mountains. Finicky about drainage, but excellent in the

Sources

Brent and Becky's Bulbs, Gloucester, VA, (804) 693-3966. www.brentandbeckysbulbs.com.
High Country Gardens, Santa Fe, NM. (800) 925-9387. www.highcountrygardens.com.
John Scheepers, Inc., Bantam, CT, (860) 567-0838, www.johnscheepers.com.
Klehm's Song Sparrow Perennial Farm and Nursery, Avalon, WI. (608) 883-2221. www.songsparrow.com.
Longfield Gardens, Lakewood, NJ. (855) 534-2733. www.longfield-gardens.com.
Odyssey Bulbs, South Lancaster, MA. <http://odysseybulbs.com>.
Plant Delights Nursery, Raleigh, NC. (919) 772-4794. www.plantdelights.com.
Wayside Gardens, Hodges, SC. (800) 845-1124. www.waysidegardens.com.
White Flower Farm, Litchfield, CT. (800) 503-9624. www.whiteflowerfarm.com.

Resources

Alliums: The Ornamental Onions by Dilys Davies, Timber Press, Portland, OR, 1992.
Bulbs (revised edition) by John E. Bryan, Timber Press, Portland, OR, 2002.
Herbaceous Perennial Plants (3rd ed.) by Allan Armitage. Stipes Publishing, Chicago, IL, 2008.
North American Rock Garden Society, www.nargs.org. (Has lots of hard-to-find species in its annual seed exchange.)
Pacific Bulb Society, www.pacificbulbsociety.org.

rock garden, the Turkistan allium's elegant appearance belies its robust constitution.

Of all the alliums, this one has the finest foliage, arguably more attractive than the flowers. Two or three elegantly-curved, broad leaves appear in May. They are rigid and ridged, with pale purple stripes on matte blue-green leaves. The six- to eight-inch-wide silvery pink flowers on eight-inch stems are also lovely when dried. To my eye, 'Ivory Queen', a white-flowered form, contrasts more smartly with the leaves.

Old garden favorites include three-foot-tall *A. rosenbachianum* (Zones 4–10, 10–1), which has five-inch-wide pinkish-purple flower heads starred with white stamens, and *A. nigrum* (Zones 5–8, 9–1) has four-inch-wide flower heads comprised of white florets with green eyes on stems up to three feet tall.

THE SMALL-HEADED ALLIUMS

Smallish alliums make up the preponderance of the estimated 800 to 1,000 allium species worldwide. While small-flowered alliums can be easily lost in the garden unless they are massed, many of them multiply quickly. In fact, given the right growing conditions, some may become invasive, so it's a good idea to check with your local Extension Service or public garden to find out which ones might show aggressive tendencies in your region.

Happily, several outstanding selections produce sterile or semi-sterile seeds. One of the most popular is 'Millenium', introduced by Massachusetts allium breeder

Mark McDonough. A hybrid of *Allium nutans* (Zones 3–9, 9–1), a species native to Siberia, 'Millenium' produces two-inch-wide lavender-colored flower heads in late summer on compact, one-foot-tall plants with an equal spread.

McDonough also introduced 'Sugar Melt', a hybrid of *A. senescens* ssp. *glaucum* (also listed as *A. senescens* var. *glaucum* and *A. senescens* 'Glaucum'), a species native to Siberia and Mongolia.

Tony Avent of Plant Delights Nursery in Raleigh, North Carolina, notes that 'Sugar Melt' "is head and shoulders above any other alliums we grow." Compact plants grow only 14 to 16 inches tall and produce a profusion of light pink flower heads for about a month in late summer.

Another hybrid derived from *A. senescens* is 'Pink Planet', which features three-inch-wide pale pink or lavender flower heads in mid- to late summer. Plants grow eight to



'Millenium' is considered one of the best selections to come along in years, and for good reason—it blooms profusely, its flowers last for about a month, and it won't reseed and become invasive.

18 inches tall with gray-green foliage and are drought resistant.

‘Summer Beauty’ is a selection of *A. angulosum* (Zones 4–9, 9–1), a native of central Europe and northern Asia. Introduced by Roy Diblik of Northwest Perennial Farm in Wisconsin, it grows 16 to 18 inches high and has an attractive mounding habit. Soft lavender or pink flower heads are one-and-a-half to two inches wide and bloom from late June to late July.

Among the smaller allium species worth searching for are *A. zebdanense* (Zones 4–9, 9–3), a rock garden candidate with inch-wide demure white flowers on 15-inch stems and drumstick allium (*A. sphaerocephalon*, Zones 4–II, 12–I), which has egg-shaped, dark cerise flower heads that bloom in early to midsummer on plants that grow one to three feet tall. Blue garlic (*A. caeruleum*, sometimes listed as *A. azureum*, Zones 2–7, 7–1), bears one- to two-inch flower heads in late spring or early summer that are the steel blue of a stormy sky. Its 18-inch-tall flower scapes are especially wonderful coming up through and around low, sprawling plants such as sage, veronica, and creeping phlox. This species spreads by setting seed and/or multiplying bulbs—just enough to make a good show in my garden, but it might be more aggressive in other regions, so plant with care.

Lily leek (*A. moly*, Zones 3–9, 9–1), a hardy southerner with cheerful, clear yellow, two-inch flower heads that bloom in May to June on one-foot stems, will naturalize in part and even dry shade. ‘Jeanine’ is a form that usually produces two flower stalks instead of one.

While lily leek is hardy far north of its Iberian origins, the loose-flowered white Naples garlic (*A. neapolitanum*, Zones 7–9, 9–7) isn’t. Native to sunny, dry soils in Portugal and around the Mediterranean, its bulbs will rot in wet clay, but will thrive in a baking “hell-strip.” Reaching 15 inches tall, its loose, white flower heads exude a sweet fragrance, atypical for alliums. (This species can be invasive where the climate is mild; it is on California’s noxious weed list.)

If you are looking for a shorter species, try *A. thunbergii* ‘Ozawa’ (Zones 3–8, 9–1),

Native to much of North America, nodding onion gets its name from its downward-facing flower heads, which grow atop 15-inch stems.



The foliage of drumstick allium turns yellow before the plant finishes flowering, creating a muted background for its deep red blossoms.

old garden form with deep rosy pink, two-inch-wide shuttlecock-shaped flowers on four- to 12-inch stems.

NATIVE ALLIUMS

About 100 alliums, primarily small-flowered, are native to North America. Of these, the easiest to procure and, perhaps, to grow is the nodding onion (*A. cernuum*, Zones 3–9, 9–5), which blooms in July. True to its name, this onion’s flowers in all shades of pink droop over as if their 15-inch stems are too weak to hold them up. The cultivar ‘Wine Drop’, introduced in 2013 by Illinois-based Intrinsic Perennial Gardens but not yet widely available to home gardeners, features pink flowers with pedicels that are a contrasting dark red in cool weather.

Another easy-to-find native is American prairie onion, also as known as autumn onion and glade onion (*A. stellatum*, Zones 3–9, 9–3). McDonough describes this spe-



A QUICK GUIDE TO SELECTED ALLIUMS

Name (botanical and common)	Height (feet)	Flower color	Bloom period	USDA/AHS Zones
<i>A. aflatanunse</i> (Persian allium)	2½–4	purple	May	4–8, 8–1
* <i>A. cernuum</i> (nodding onion)	1–1½	pink	July to August	3–9, 9–5
<i>A. cristophii</i> (star of Persia)	1–1½	metallic violet	May to June	3–9, 9–5
<i>A. flavum</i>	1	yellow	July to August	4–10, 9–1
<i>A. giganteum</i> (giant allium)	4	purple	June	3–9, 9–5
'Gladiator' (hybrid)	4	rose-purple	June	4–8, 8–1
'Globemaster' (hybrid)	3½	purple	May to June	4–8, 8–1
<i>A. karataviense</i> (Turkistan allium)	½–1	silvery pink, white	May	3–9, 9–5
'Mars' (hybrid)	3–4	lavender-purple	May to June	4–8, 8–1
'Millenium' (hybrid)	1	lavender	July to August	3–9, 9–1
<i>A. moly</i>	1	bright yellow	May to June	3–9, 9–1
<i>A. neapolitanum</i> (Naples garlic)	1–1½	white	April to June	7–9, 9–7
<i>A. nigrum</i>	1½	white and green	May	5–8, 9–1
<i>A. oreophilum</i>	1	deep rose	May to June	4–9, 9–1
'Purple Sensation' (hybrid)	1½–2½	reddish purple	May to June	4–9, 9–1
<i>A. rosenbachianum</i>	3–4	rose and white	May to June	4–10, 10-1
<i>A. schubertii</i>	1½–2	silvery pink	June	4–10, 10-1
<i>A. sphaerocephalon</i> (drumstick allium)	1½–2	maroon to purple	June to July	4–11, 12–1
* <i>A. stellatum</i> (American prairie onion)	1–2	pink to lavender	variable, July to October	3–9, 9–3
* <i>A. texanum</i>	1½	white	July	5–9, 9–5
<i>A. thunbergii</i> 'Ozawa'	½–1	rose-pink	September to October	3–8, 9–1
* <i>A. unifolium</i>	1–1½	lavender-pink	May to June	4–9, 9–1
<i>A. zebdanense</i>	1½	white	May to June	4–9, 9–3

*Alliums native to North America

cies as “highly variable, but always a lovely summer-blooming plant.” Plants bloom from late summer into mid-fall and grow one to two feet tall. Three- to four-inch-wide flower heads range in color from deep pink to pale lavender.

Other native alliums are harder to find but can be obtained through specialty nurseries and the seed exchanges of the North American Rock Garden Society and other plant societies (see “Resources,” page 15). These include species such as Douglas’ onion (*A. douglasii*, Zones 6–9, 9–6) from the Northwest, which has pretty pink and white flowers; *A. bolanderi* (Zones 8–9, 9–6), a compact species from the Siskiyou Mountains with dark, rose-red flowers; and Drummond’s onion (*A. drummondii*, Zones 4–10, 9–4) from the Great Plains with white, pink, or red flowers.

One-leaved onion (*A. unifolium*, Zones 4–9, 9–1) is native to cool, moist coastal ranges of California and Oregon and thus more tolerant of moisture than most alliums. Despite its name, it has two



The flower heads of one-leaved onion are comprised of 15 to 35 lavender-pink flowers.

or three leaves above which nodding lavender-pink flowers on 15-inch stems appear in early summer.

A plant’s place of origin gives valuable clues to its care and placement in the garden. When a friend brought me bulbs of *A. texanum* (Zones 5–9, 9–5), an 18-inch

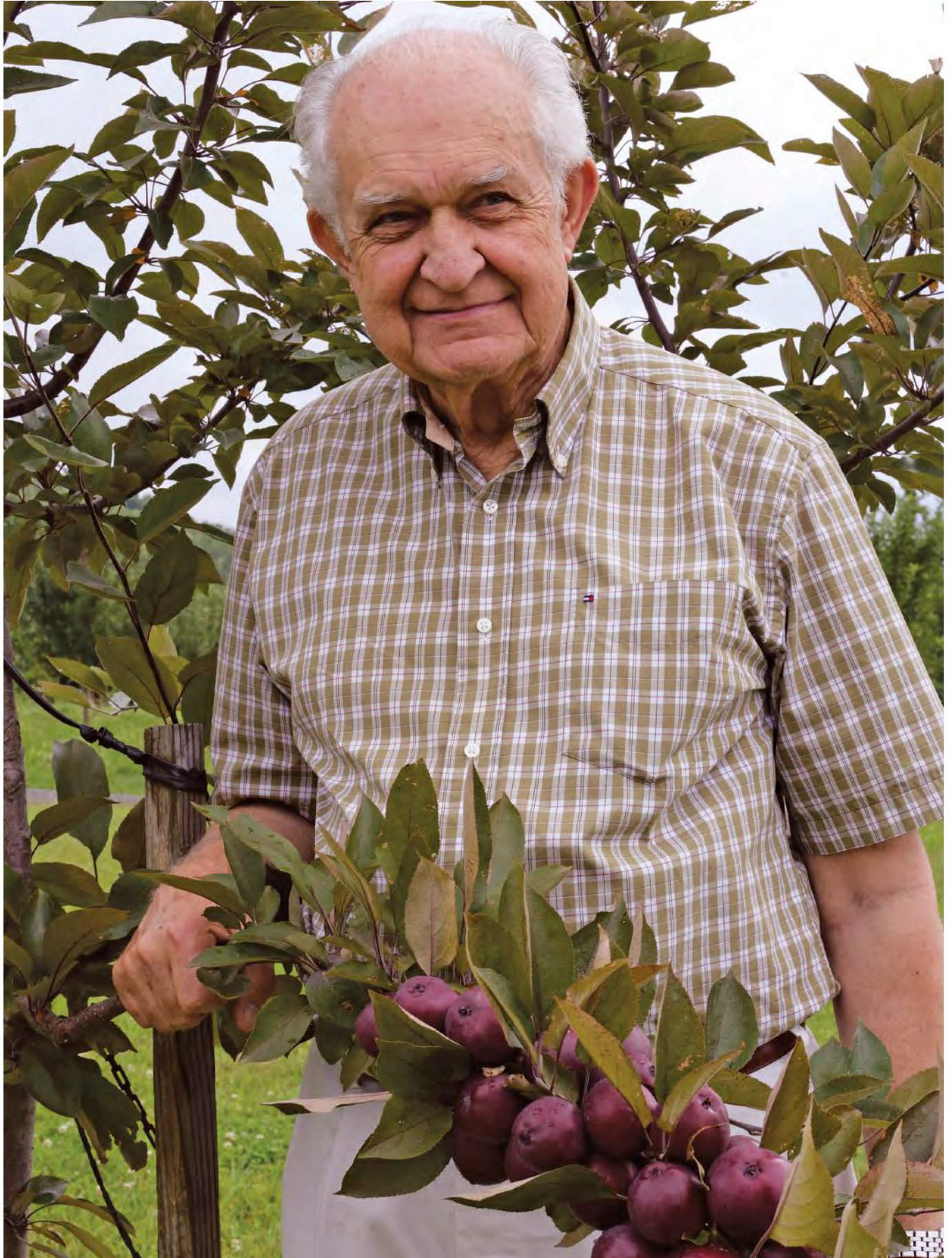
white-flowered species from Texas, I planted them on a sun-baked, rocky hill where, with good drainage, they have prospered.

FINALLY GETTING SOME RESPECT?

Perhaps it is because I am attuned to them and becoming one of the “odd fanatics” Davies describes, but it seems more and rarer species of ornamental alliums are becoming available commercially. I like to think the real reason for their popularity is because they are finally getting the recognition they deserve. Most are very hardy, reproduce handily, are easy to grow, and exit quietly after blooming—

without endlessly-photosynthesizing, floppy foliage. Just the fact that they are gorgeous and deer resistant elevates them to star status in my garden.

Carole Ottesen is a contributing editor of The American Gardener. This is an updated and revised version of an article that was originally published in the September/October 2003 issue of The American Gardener.



CATRIONA T. ERLER

virginia's “Professor Apple”

By rescuing heirloom varieties from the brink of extinction and teaching others about them, Tom Burford has spent a lifetime preserving America's diverse apple heritage.



A HUNDRED YEARS ago, there were as many as 17,000 named apple varieties in the United States. Each offered a unique blend of colors, flavors, textures, and aromas. Today the number of varieties grown commercially, selected more for “eye appeal” than for taste and texture, represents a small fraction of this number. Thousands of others have slipped quietly into extinction, or would have if it weren't for the herculean efforts of heirloom apple enthusiasts like Tom Burford from southern Virginia.

Left: His lifelong devotion to apples has earned Virginia native Tom Burford—shown here with ‘Geneva Crab’ apple—the nickname “Professor Apple.” **Above:** The unique, red-tinged flesh of ‘Geneva Crab’ gives applesauce and cider a rosy color.

Burford's infectious passion for this fruit has fueled a lifelong mission to preserve as much of its rich genetic diversity as possible. Also known as “Professor Apple,” he has spent the better part of his eight decades on earth sleuthing out “lost” varieties, promoting their use, and imparting to others his passion for heirloom apples.

GERMINATION OF A LIFETIME MISSION

Burford's all-consuming devotion to apples runs in his blood. His ancestors emigrated from the Cotswold village of Burford, England, to Virginia in the late 1600s, bringing apple seeds with them to grow trees for cider making.

Fast forward a couple of centuries in the Burford orchards to 1935, when according to family lore, Tom was almost born under an apple tree; his mother managed to scurry inside from the orchard in the nick of time. Apples and other tree fruit were the warp and woof of Burford's early years, but the incident that first ignited his passion for preserving apple diversity occurred when he was nine years old.

During a ramble in the Virginia countryside with his father and older brother, Russell, they “came upon seven snags of trees growing on the crest of a ridge,” Burford says. “They were no more than eight feet tall with tiny apples.” His father explained that they were ‘Fameuse’ or ‘Snow’ apples, a variety thought to have been brought to Canada from

France in the early 1700s. These particular trees had been planted during the Revolutionary War in 1778.

“Father said, ‘Remember this because soon they will be gone,’” Burford recalls. Seeing those gnarled old trees made a deep impression on Burford’s young mind. He began his professional career a year later at age 10, when he and his brother went to work in earnest in their family’s orchards after their father became bedridden by arthritis.

REDISCOVERING LOST APPLES

After graduating from the University of Virginia with a degree in philosophy, Burford returned to the family orchard business. In the 1970s, he and his brother also started their own nursery, which offered more than 500 varieties of heirloom apples. Many of these owed their existence to the brothers, who had sought them out in abandoned or old orchards around the country, painstakingly identified them, and then propagated them. Though the nursery closed in the late 1990s after Russell’s death, many of these heirloom varieties are still offered by vintage apple nurseries throughout the country.

A few even bear the Burford name, like the ‘Burford Redflesh.’ Burford found it on the estate of Sarah Winston Syme Henry, mother of American patriot Patrick Henry, in Amherst County, Virginia. An apple with tart, bright red flesh, it adds a rosy color to cider and sauce.

Part of Burford’s success in finding apple varieties believed to be lost forever is his singular ability to identify them. With his extensive hands-on experience, wide reading on the history of the apple, and his remarkable memory, he can recognize most varieties on sight.

By cutting open individual apples, Burford can discern the minute variations in traits that give each its unique identity. He looks at the seeds, noticing their color and shape, the shape of the carpel (the compartment that holds each seed), the depth of the basin where the stem joins the apple, the color of the stem, and the color and aroma of the flesh.

REVIVING ARTISANAL CIDER

Saving a tree from extinction is one thing, popularizing it to create demand is another. Burford also has played the latter



Top: ‘Burford Redflesh’ originated in the orchard of Patrick Henry’s mother, where Tom Burford found it. Above: Charlotte Shelton, co-owner of Albemarle CiderWorks in Virginia, takes a cider break with Burford, who serves as a consultant for the business.

role for several apple varieties suitable for cider making, especially 'Harrison'. This apple was widely recognized in the 19th century as one of the finest cider apples. In his recent book, *Apples of North America: Exceptional Varieties for Gardeners, Growers, and Cooks*, Burford notes that it makes an "extremely dark, rich cider with an exceptional mouth-feel." It also produces more juice per fruit than most other varieties, making it an especially profitable one to grow for cider.

The rising popularity of beer in the early 1900s, followed by Prohibition and the emergence of carbonated soft drinks, killed the cider industry. With it went once-prized cider apple varieties like 'Harrison', as orchards were abandoned or bulldozed. Before it vanished forever, 'Harrison' was rescued by Paul Gidez, a Vermont fruit detective who in 1976 took cuttings from one ancient tree he found growing in Livingston, New Jersey. From those cuttings, he

propagated 250 trees. Shortly after he took the cuttings, the tree was cut down.

Ever since its rediscovery, Burford has been lauding the merits of 'Harrison' and distributing cuttings to fledgling hard cider makers and orchardists who seek his help. One of these is Diane Flynt, founder of Foggy Ridge Cider in Dugspur, Virginia. When she was researching varieties for her cider orchard in the 1990s, she realized many of the highly flavored apples she wanted had not been grown commercially in the area for generations. These included 'Harrison' and several other varieties that were popular in Colonial America.

Her research led her to Burford, who helped her acquire scion wood and taught her how to graft apples so she could create her own stock. Today Foggy Ridge Cider produces ciders that are drawing acclaim from food critics around the country.

"Anyone who interacts with Tom in a business or advisory capacity quickly turns

into his friend," says Flynt. "He's a treasure, and very generous with his knowledge."

Nearby Albemarle CiderWorks, founded in 2009, also can trace its beginnings to Burford. When siblings Chuck and Charlotte Shelton in North Garden, Virginia, wanted to create an heirloom orchard for both eating and cider apples in the early 1990s, their first trees came from Burford Brothers Nursery.

Inspired and guided by Burford, the Sheltons' orchard continued to expand until they opened Vintage Virginia Apples in 2000 and added their cidery in 2009. Today, they grow scores of heirloom and rare varieties of apples, offering both the fruit for sale when in season and seven kinds of hard cider. "Tom is a link between our 19th-century American apple heritage and its future," says Charlotte.

ORCHARD CONSULTANT EXTRAORDINAIRE

Given his prodigious expertise, Burford

GROWING YOUR OWN APPLES

Whether you'd like to plant a few trees or a whole orchard, your "choice of apple varieties is critical," says Tom Burford. He suggests planting varieties that are not available in the grocery store or offered at local farmers' markets. Next, he advises considering the mature size of your trees.

Because apple varieties do not come true from seeds, they must be grafted onto rootstock that will control the overall size of the tree. Options include dwarf, which will grow eight to 12 feet tall, semi-dwarf that tops out at 12 to 18 feet tall, and standard, growing as tall as 20 or 30 feet. While standard trees take up more room and are harder to harvest, they generally are more vigorous than the shorter trees and can live for 100 to 150 years. That age span is halved with semi dwarf trees, and a dwarf tree lives for about 25 years.

Finally, for the best chance of success, Burford says it's important to "choose varieties that are suited to your part of the country, and if possible, buy trees from a nursery in your region." Locally or regionally grown trees will be better adapted to your soil and climate.

For a new orchard, Burford says it usually takes about five years to bring the trees to production. The first year, start with six or 12 trees; during the second year he recommends taking grafting classes and experimenting with your own trees; the third year, focus on the final shaping of your trees for production through selective pruning; the fourth year is the time to add a few new varieties if you are so inclined and continue experimenting with grafts. Depending on how well you've done in the first four years, by the fifth year the orchard enterprise will either soar or fizzle, says Burford.



Growing your own apple trees like these allows you to enjoy uncommon varieties.

—C.T.E.

Resources

Apples of North America by Tom Burford. Timber Press, Portland, OR, 2013.

Apples of Uncommon Character: 123 Heirlooms, Modern Classics, & Little-Known Wonders by Rowan Jacobsen. Bloomsbury USA, NY, 2014.

Cider, Hard and Sweet (3rd ed.) by Ben Watson. Countryman Press, Woodstock, VT, 2013.

The Fruits and Fruit Trees of Monticello by Peter J. Hatch. University of Virginia Press, Charlottesville, VA, 1998.

Sources for Heirloom Apples

Big Horse Creek Farm, Lansing, NC. (336) 384-1134.

www.bighorsecreekfarm.com.

Boyer Nursery, Biglerville, PA. (717) 677-8558.

www.boyernurseries.com.

Cummins Nursery, Ithaca, NY. (607) 592-2801.

www.cumminsnursery.com.

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

Maple Valley Orchards & Nursery, Gillett, WI. (920) 842-2904. www.maplevalleyorchards.com.

Raintree Nursery, Morton, WA. (360) 496-6400.

www.raintreenursery.com.

St. Lawrence Nurseries, Potsdam, NY. (315) 265-6739.

www.sln.potsdam.ny.us.

Thomas Jefferson Center for Historic Plants, Monticello, Charlottesville, VA. (434) 984-9818.

www.twinleaf.org.

Trees of Antiquity, LLC, Paso Robles, CA. (805) 467-9909.

www.treesofantiquity.com.

Urban Homestead Nursery, Bristol, VA. (276) 466-2931.

www.oldvaapples.com.

Vintage Virginia Apples/Albemarle CiderWorks, North Garden, VA. (434) 297-2326.

www.albemarlecederworks.com.

Weston's Antique Apple Orchards, New Berlin, WI. (262) 679-2862.

www.westonapples.com.

is a sought-after consultant for everything from selecting apple varieties and designing orchards to propagation techniques. Consultation projects have taken him to Europe, Asia, Australia, and South Africa, as well as all over the United States. But one of the most historically significant projects Burford has assisted with is close to home: Starting in the early 1980s he helped recreate the orchard at Monticello in Charlottesville, Virginia, as Thomas Jefferson knew it.

"We were so lucky to have someone with such knowledge of fruit growing

"I come to garden history from a scholarly vantage," says Hatch. "I rely on documentary evidence; Tom relies on his personal experience. No one tells a story as well as Professor Apple, but of course he makes most of it up," he adds with a laugh.

Teasing aside, apple-tasting for Burford is an important, multi-sensory experience akin to wine-tasting. In *Apples of North America*, he advises, "when the slice is in the mouth, concentrate on the mouth feel and the flavor. It may immediately enliven the taste buds or slowly unfold its complexity. Analyze the sug-



After working closely together to restore Monticello's historic orchard, Tom Burford and Peter Hatch (now retired) also initiated a popular apple-tasting event at Thomas Jefferson's estate.

and history of fruit varieties," says Peggy Cornett, Monticello's curator of plants. "We got many of the apples for Monticello from Tom's nursery."

As a way to expand appreciation for Monticello's historic apple collection, in 1991, Burford collaborated with Peter Hatch, then-director of gardens and grounds at Monticello, to inaugurate an annual heirloom apple-tasting event at Monticello. Now in its 23rd year, this mid-October apple celebration is among Monticello's most popular events. Before Hatch's retirement from Monticello in 2012, the two men often would enliven their presentations about the origins and history of each apple with friendly sparring that audiences loved.

ar, tannin, acid, and aroma of what you taste and if it is elusive do not despair; the magic of the taste of a particular variety may be its elusiveness. If given full attention, the act of eating an apple can become a mind-expanding experience."

NEVER-ENDING QUEST

Thanks to Burford's efforts, hundreds of apple varieties have been saved from extinction, the public has been reintroduced to the rich diversity of once-lost or rare apples, and the apple industry is blossoming in response. But he isn't one to rest on his laurels. His busy schedule as a consultant and speaker keeps him on the road a good deal, and he's working on four book projects.

SECRETS FOR MAKING THE MOST OF FRESH APPLES

Spend any length of time around Tom Burford and you're bound to come away more enlightened about apples than you were before. Here are a few of his tips for enhancing your enjoyment of this fine fruit.

When buying apples in the supermarket, never buy the ones on sale.

The produce manager has calculated the shelf life of the fruit on display and will reduce the price to entice customers to purchase them a few days before they begin to degrade in flavor, texture, and appearance. Unless you want them for making applesauce or baked goods, keep walking.

Look at the seeds to determine the ripeness of an apple.

Every apple has its quintessential moment of ripeness. The way to discover a truly ripe apple is to slice it from stem to basin to reveal the seeds. If they are white or whitish, you have sliced an unripe apple. If the seeds are tan, brown, purple, black, red with streaks or dots of a contrasting color, then the apple is ready to devour fresh or to be made into a delectable dessert.

The way you store apples matters.

Apples store well around 35 degrees Fahrenheit (F) with about 50 percent humidity. They ripen twice as fast at 45 degrees F. You can imagine what happens to them at room temperature! A sensible storage method is to fill an empty plastic bag full of apples, tie the end, then punch a series of holes through the bag with your thumb before placing them in your fridge. These holes allow some ethylene gas, which the apples release and causes them to ripen, to escape while the bag holds enough moisture to keep the fruit from shriveling.

To make the perfect apple pie, you need a combination of varieties.


Few apple varieties by themselves can provide a good enough balance of acid, tannin, sugar, and aroma for best flavor. Try making a pie with ripe 'Jonathan' (acid and tannin), 'Idared' (sugar, acid, and tannin), and 'Grimes Golden' (sugar). Don't be afraid to experiment with other combinations. With the right selection, you can forget the camouflaging agents of lemon juice, granulated sugar, and spices typically added to compensate for insipid apples. —C.T.E.



Tom Burford often teaches classes, like this one on apple tree pruning at Vintage Virginia Apples, to help others successfully grow their own fruit.

There is also one apple Burford has yet to find, known as the 'Taliaferro'. Thomas Jefferson praised it as "the best cyder apple existing," producing cider "more like wine than any other liquor I have tasted which was not wine." Other historic descriptions of the apple are meager, making positive identification virtually impossible. Nevertheless, Burford has not given up hope.

"Tom has that stubborn streak we all have in the community of apple preservationists," says Ben Watson of New Hampshire, author of *Cider, Hard and Sweet*. "There is always that optimism that he'll find that variety and get those cuttings. It's always, 'Next year I'll find it! Next year!'"

Aside from the thrill of discovery, when asked what drives him, Burford asserts, "I want to make a difference." Given the legions that he has converted into heirloom apple aficionados, there's no doubt he has done just that. 

Catriona Tudor Erler is a freelance garden writer and photographer who lives in Charlottesville, Virginia.



a larger perspective on **Poison Ivy**

BY CHARLOTTE KIDD

Poison ivy and its relatives are universally loathed by gardeners and hikers, yet these plants have an intriguing history and an important ecological role.

MANY OF US who spend a lot of time outdoors have experienced the itchy, oozy, annoying, sometimes severe rash that is the downside of direct contact with poison ivy, poison oak, or poison sumac (*Toxicodendron* spp.). Yet, if you can stop scratching long enough to sift through the myths and folklore surrounding this pariah among native plants, you'll find it has an intriguing history and long established connection with humans.

There are also larger perspectives regarding the plants in this frequently reviled genus. One is its ecological role in the wild, primarily as a source of cover and food for wildlife. Another is ongoing research into the genus's commercial potential, which includes consideration of it as a natural replacement for petrochemicals.

Viewing the genus in a more positive light may be necessary, given that research indicates poison ivy is one of several climbing plants that appear to be thriving in response to climate change. A study by Duke University researchers, published in the *Proceedings of the National Academy of Sciences* in 2006, found that poison ivy grew more rapidly—and produced more potent urushiol—when exposed to artificially increased levels of carbon dioxide.

NATURAL HISTORY

Poison ivy, poison oak, and poison sumac are all part of the genus *Toxicodendron*, which translates to “poison tree.” The

Eastern poison ivy, seen here attached to a tree, can be recognized by its distinctive “leaves of three” and by the hairlike roots, just visible in the upper left, that form on its climbing stems.

genus, which is native to North America, Central America, South America, and Asia, is a member of the cashew family (Anacardiaceae), which includes sumacs (*Rhus* spp.) and smoke trees (*Cotinus* spp.) familiar to many temperate region gardeners, along with more exotic species, such as cashews, mangoes, and pistachios. Thirty-two of the 82 genera in the cashew family contain oleioresins—a combination of an oil and a resin—that can trigger an allergic reaction, writes Susan K. Pell, an American Association for the Advancement of Science Fellow based in Washington, D.C. In the genus *Toxicodendron*, the active ingredient is an oleioresin known as urushiol, which is present in all parts of the plants (for more on the mechanism of the allergic reaction, see the sidebar on page 27).

The genus's unusual chemical constituents have long been familiar to humans. "It has been used for probably thousands of years for various things," says Pell. "Urushiol's been extracted from the plant for industrial uses for lacquer ware, lubricants, and brake linings," she lists.

The genus's lush, bright green foliage and rich fall hues ranging from burgundy to bright orange have caught the eye of plant lovers for centuries. Poison ivy was one of many North American plants sent to Europe by early explorers, and was reportedly growing in the London garden of renowned plant collector John Tradescant by the mid-1600s.

Botanist John Bartram, who collected and propagated plants at his garden in Philadelphia in the 1700s, took a shine to poison sumac. "[It] was one of the most beautiful of all the plants John Bartram grew in his garden," says archaeologist Joel Fry, the current curator of Bartram's Garden.

Bartram and his son, William, supplied poison sumac to European scientists and well-off collectors. "Any new American plant was extremely valuable in the 1730s," Fry says. "Even something

like poison ivy. People were willing to pay a great amount, kind of like it was the rarest plant in the world."

AMERICAN SPECIES

According to Pell, a biologist who is a co-author of the cashew chapter in *Flora of North America*, a 30-volume series that is still in progress, four *Toxicodendron* species are native to the United States and Canada.

The most widespread species is poison ivy (*T. radicans*), which includes five sub-



Eastern poison ivy has long been admired for its colorful fall foliage, left. Western poison ivy, above, tends to develop a more shrublike habit than its eastern relative, but its drooping foliage has the characteristic three leaflets.

species. Poison ivy "grows pretty much all over the United States," notes Pell, its range overlapping somewhat with that of poison oak, she adds.

While the words of the old adage "leaves of three, let it be," are a good aid to recognizing the plant's characteristic three green leaflets per stem, poison ivy has many leaf variations that make identification harder—including occasional cases where there are four, five, or seven leaflets. Each *T. radicans* leaflet, which is usually pointed at the tip, can be ovate, elliptic, or oblong. The leaf margin can be smooth, lobed, crenate, or sinuate. The leaflet surfaces can be shiny or dull; hairy or hairless.

Poison ivy's tiny greenish-yellow flowers bloom in axillary clusters in early to

poles, and rock faces. Once the plant begins the process of growing vertically, it starts moving toward its mature, flowering phase. Growth can be so large and leafy, extending horizontally from the trunks of trees, that it is sometimes mistaken for part of a tree's foliage. Aerial roots sprout from the plant's primary stem as it climbs, eventually forming a dark brown hairy mass attached to tree trunks or other supports. At maturity, individual plants can be more than 100 feet tall and have a six-inch diameter trunk.

The other major subspecies is Western, or Rydberg's, poison ivy (*T. radicans* ssp. *rydbergii*), which is a shrublike plant growing from eight inches to 10 feet tall and has broad, drooping leaves. Rydberg's poison

ivy grows in fields, woodland edges, and beaches in the northern, midwestern, and western United States, as well as southern Canada.

The other subspecies have relatively limited natural ranges and are thus not encountered as often as common poison ivy. *Toxicodendron radicans* ssp. *eximium* is limited to Texas; *T. radicans* ssp. *divaricatum* is primarily found in Arizona; and *T. radicans* ssp. *verrucosum* is confined to regions of Arkansas, Kansas, Oklahoma, and Texas.

POISON OAK

There are two species of poison oak, western or Pacific poison oak (*T. diversilobum*) and eastern or Atlantic poison oak (*T. pubescens*).

Pacific poison oak is native to California, Nevada, Oregon, and Washington. According to Glenn Keator, a botanist, teacher, and author specializing in California native plants, Pacific poison oak is very adaptable in coastal, inland, and forest habitats, but is seldom found above 4,000 feet. “It can be a groundcover a few inches tall where it’s windy, a shrub up to 14 feet, and a woody vine climbing a tree,” says Keator.

Each Pacific poison oak leaf usually has three lobed leaflets that resemble oak tree leaves. Keator describes the leaves as “almost always shiny, with crenations, scallops along the edge.” On rare occasions, Keator has spotted a variant that produces five leaflets instead of three.

Atlantic poison oak (*T. pubescens*) is a shrubby plant native sporadically from Delaware south to the Gulf Coast and west to Illinois, Kansas, and Texas. Typically found growing in sandy soils, it has oaklike leaflets similar to those of Western poison oak.

POISON SUMAC

Poison sumac (*T. vernix*) thrives in very wet soils—swamps and bogs—and is widely distributed in the eastern United States and Canada, says Tara Johnson, a New Hampshire-based field biologist who runs Naturedigger, an e-learning company. Because of its inhospitable habitat, it doesn’t tend to be encountered nearly as much as poison ivy or oak.

A large shrub or small tree, it grows six to 20 feet tall. It has compound leaves composed of seven to 13 alternating oblong,



Pacific poison oak, shown here growing under and on oak trees, has glossy leaves that turn red in autumn. Its leaflets have scalloped edges that resemble oak leaves.

ovate, or elliptic leaflets, somewhat like its relative, smooth sumac (*Rhus glabra*). The leaflet edges aren’t serrated like staghorn and smooth sumac, notes Johnson. Distinguishing poison sumac from its nonpoisonous cousins is easiest when the plants are flowering or fruiting. Poison sumac’s flowers and fruits form in the leaf axils, while those of true sumacs form in terminal clusters. And poison sumac’s fruits are white, unlike the red, conelike fruit clusters of its relatives. Johnson, who has been scouting the United States for photos and informa-

tion about poisonous plants for nearly seven years, has created an app to help people recognize them (see “Resources,” page 28).

AVOIDING EXPOSURE

To avoid exposure, it’s important to be able to recognize poison ivy and poison oak plants at all stages of growth. You can find helpful images and descriptions in the websites and books listed in the “Resources” box on page 28.

Keep an eye on areas where poison ivy or poison oak may be growing in your garden

or community. Hedges, naturalized areas, and woodland edges are likely sites, especially those where birds tend to congregate.

Even barely touching *Toxicodendron* leaves, stems, or roots can leave traces of urushiol on skin. If you are garden or hike where you might come in contact with poison ivy or oak, wear long-sleeved shirts and pants. Wear thick gloves that cover your wrists if you are going to be handling poison ivy.

Urushiol easily spreads to objects it comes into contact with, so launder clothing and carefully wash shoes, tools, and other objects with detergent and water to remove the oil. Other common sources of exposure are from string trimmers, mower blades, and grass clippings, not to mention pets.



Poison sumac grows as a shrub or small tree. Unlike true sumacs (*Rhus* spp.), which have reddish fruits in conelike terminal clusters, poison sumac has white fruits that develop from leaf axils.

Carefully monitor wood or kindling being added to camp fires, wood stoves, and “burn piles” to make sure they don’t have dried vines or roots attached. Contact with soot or ashes from burning poison ivy or oak can cause very severe, allergic reactions, notes Dr. Ellen L. Smith, a physician and outdoor enthusiast who teaches a Wilderness Medicine Field Course at state parks in Maryland. “Urushiol attached to flying ashes can set off wheezing and severe asthma. Eyelids and the eye’s inner red rims can get swollen.”

REACT QUICKLY

Urushiol starts to bind to skin on contact. According to experts, once you have urushiol on your skin, there’s about a 10-minute window to remove it before it binds and starts triggering an allergic reaction. So if you think you’ve come into contact with any of the *Toxicodendron* species, act quickly. “Try to flush off the oil immediately with water. Then lather up with dish soap or anything that will break up the oil,” instructs Smith. Rinse thoroughly.

The rash may appear anytime from a few hours to a week or more after exposure. The rate of healing varies, but most of the itching, redness, and blistering should disappear within three weeks.

Most of the time, exposure to poison ivy, oak, or sumac results in fairly mild allergic reactions that can be treated with over-the-counter medications that relieve itching and dry up the blisters. In the event of a severe allergic reaction, especially in cases where urushiol may have been inhaled, seek medical attention immediately.

CONTROL IN GARDENS

Despite their spectacular fall foliage and wildlife value, poison ivy and poison oak are unwelcome garden residents. Plants

THE ROOTS OF THE RASH

The itching, oozing, blistering rash people get from exposure to poison ivy and its relatives is the result of an immune system response to urushiol, the irritating oleioresin found in the genus *Toxicodendron*. Only primates experience an allergic response to urushiol; other animals such as cats, dogs, deer, and goats are immune, although they can pass along urushiol to humans via their fur.

Researchers estimate that 80 to 90 percent of the population is susceptible to developing an allergic reaction to the compound. Typically, most people don’t exhibit an allergic response the first time they come in contact with urushiol.

“Urushiol itself doesn’t give you the rash,” explains Susan K. Pell, an American Association for the Advancement of Science Fellow based in Washington, D.C. “The urushiol binds to skin cell proteins. That attachment causes our immune system to recognize our skin cells as foreign,” says Pell. “[The rash is caused by] our own immune system attacking our skin cells. The more exposure you have, the more your immune system is going to react.”

The rash, called allergic contact dermatitis, usually shows up within one to four days after contact, says Dr. Kate Margo of the Perelman School of Medicine at the University of Pennsylvania in Philadelphia. Contrary to some reports (see “Debunking Poison Ivy and Oak Myths,” page 29), the oozing fluid associated with the allergic reaction does not spread the rash. “It’s mostly white cells and serum—inflammatory cells from our bloodstream,” says Margo.

While the allergic reaction is most commonly caused by contact with foliage, urushiol can be picked up from all parts of the plants, including the vining stems and hairy roots. The irritant can remain on the plant long after it is dead. “I’ve heard of people getting rashes from 20-year-old herbarium samples,” says Pell. “I’ve also heard lots of stories of people getting rash from gardening tools they haven’t used for a few years.” —C.K.

rapidly develop a deep and extensive root system, so unless you discover seedlings soon after germination, completely eliminating either species from a garden requires arduous hand removal or treatment with an appropriate herbicide.

For physical removal, it's critical to dig up and remove the entire root system. Donning protective clothing is a must and, if you are highly susceptible, it's probably best to hire someone to remove it. To reduce the risk of anyone coming in contact with urushiol, dispose of all debris in a plastic bag placed in the trash.

If you opt for using an herbicide, select a weed-and-brush killer designated for poison ivy or poison oak. Complete eradication may require multiple applications. Following removal by either method, check throughout the season and into the following year for regrowth.

ECOLOGICAL MAINSTAY

While poison ivy and poison oak are not welcome in most gardens, they play a significant ecological role in the wild. "We're just now awakening to the wonder and power of one of North America's truly keystone plants," says Umar Mycka, a professional horticulturist who owns a poison ivy removal company in Philadelphia, Pennsylvania. "It provides seed food for birds in the cold winter months, nesting material for paper wasps, and snakes shed their skins on the raspy vines."

Mycka has been fascinated with the plant since he got an allergic rash as a youngster. Now, he's often surrounded by eastern poison ivy in his daily work.

Curiosity spurred Mycka to study one patch of seven male and six female



Poison ivy and its kin attract all kinds of wildlife, from squirrels feeding on the fruits, above, to bees feeding on the flowers' nectar, left.

plants for nearly 12 years. He's watched in autumn as praying mantids perch on poison ivy fruits for hours, waiting for wasps—their meal—to land. While collecting poison ivy seed in spring, he's seen ants climbing on tender poison ivy buds. When the vines leaf out, he's spotted caterpillar and deer browse damage.

Come summer, he's seen bees on the vine's yellow-green flowers.

In fall, the plant's scarlet leaves draw in some 50 species of migrating and local birds that devour the female plant's nutritious, waxy, white fruits. Birds flit from fruit cluster to fruit cluster, picking the ripest ones.

Pacific poison oak also offers important habitat value for birds, native bees, and other wildlife, says Mike Evans, owner of Tree of Life Nursery in San Juan Capistrano, California. Evans propagates and sells Pacific poison oak plants under contract to biologists and conservationists doing habitat restoration on private, state, and federal land. "As a general rule," says Evans, "the natural areas would be riparian areas, intermittent stream beds, banks of creeks. Typically anywhere you'd find the plant anyway."

Resources

Anacardiaceae website (maintained by Susan K. Pell), www.anacardiaceae.org. "Biomass and toxicity responses of poison ivy (*Toxicodendron radicans*) to elevated atmospheric CO₂," by Jacqueline E. Mohan et al, *Proceedings of the National Academy of Sciences*, Vol. 103, no. 24.

Naturedigger iPhone App, "Rash Plants," A Comprehensive Poison Ivy, Oak and Sumac Identification Resource by Tara Johnson. www.naturedigger.com/apps/rashplants.

Plant Resins: Chemistry, Evolution, Ecology and Ethnobotany by Jean H. Langenheim, Timber Press, Portland, OR, 2003.

Poison Ivy Citizen Science Project, www.poisonivyresearch.ppws.vt.edu.

Poison Ivy, Poison Oak, Poison Sumac and Their Relatives by Edward Frankel. Boxwood Press, Pacific Grove, CA, 1991.

PUTTING POISON IVY TO USE

Another person willing to argue the merits of poison ivy is John Jelesko, an associate professor of plant pathology, physiology, and weed science at Virginia Polytechnic Institute in Blacksburg. Jelesko believes compounds in the genus *Toxicodendron*, especially urushiol, have the potential for use in a variety of commercial applications, including as an environmentally smart replacement for the petrochemicals used to make paints and industrial coatings.



DEBUNKING POISON IVY AND OAK MYTHS

Scratching the rash will spread it onto other body parts.

Urushiol binds to the skin rapidly following contact. That means, once the oil attaches, it does not move from those skin cells. That bond happens long before the rash and itching begin. After the rash peaks, urushiol exfoliates with dead skin cells. When secondary outbreaks occur a day or so later, the delay could be because of skin thickness. Urushiol may irritate thin, sensitive skin, such as on the ankle and stomach, sooner than thicker, weathered skin as on the arm. Secondary outbreaks can also be caused by unknowingly coming back into contact with urushiol on clothing, pets, tools, or whatever originally touched the poison ivy or oak.

The fluid oozing from the poison ivy or poison oak rash has poison ivy oil in it.

Not so. The fluid emanating from blisters caused by the allergic reaction is composed mostly of white blood cells and serum produced by our bodies.

If a person over a certain age has never developed an allergic reaction to poison ivy or poison oak, she or he never will.

According to Susan K. Pell, between seven and 10 percent of us have a lifetime immunity to poison ivy. “The rest of us are just enjoying a long period of our immune system building up a reaction to it, or we have been lucky enough not to come in contact,” she explains.

You can get a rash from just walking near, but not touching, poison oak or poison ivy.

Not so, say all the medical experts, researchers, and chemists I spoke with. Even when it’s burned, urushiol does not vaporize, although it can be carried on airborne soot and ash. “It’s such a ubiquitous plant,” says Pell, “that you come into contact with it more than you think.”

A person can get poison ivy or poison oak rash from another person.

According to experts, once a person has bathed, neither urushiol nor the rash it causes can spread from one person’s skin to another. However, it’s possible to pick up urushiol from someone else’s clothing, gloves, towels, or tools.

I got a case of poison ivy from my cat or dog.

While dogs and cats are not allergic to poison ivy or poison oak, they can carry urushiol on their fur and transfer it to us during petting or rubbing against our skin.

Allergic reactions to poison oak are worse than those from poison ivy.

Scientists are learning that poison oak contains a slightly different form of urushiol than poison ivy, but there is no evidence that the two plants differ in the allergic response. “The severity of a rash doesn’t necessarily say anything about the plant that you came in contact with,” Pell explains. “It likely says more about your immune system—how many times you’ve been exposed and the extent of exposure.”

Poison ivy or poison oak gave me an infection.

Urushiol does not contain any bacteria or viruses that can cause an infection. However, explains Dr. Ellen L. Smith, who teaches a Wilderness Medicine Field Course in Maryland, “Any secondary infection is likely caused by scratching broken skin.”

Herbal remedies can reduce or eliminate a person’s susceptibility to getting the poison ivy rash.

Every medical expert I spoke with discouraged experimenting with pre- or post-exposure herbal treatments, especially those that involve consumption of any form of the plants. —C.K.

“There’s archeological evidence that urushiol has been used for over 4,000 years in Asia,” Jelesko notes. “Asian lacquer ware, bowls, chopsticks, furniture are all coated with urushiol, which cures into a hard, waterproof, natural coating that’s no longer allergenic. As our oil resources decline, we’ll need to look elsewhere for chemicals to make paints and coatings. The chemistry of urushiol makes it a great polymer.”

Jelesko and his team are growing poison ivy for use in their laboratory research. They’ve made impressive discoveries so far about physical aspects of the plant, its

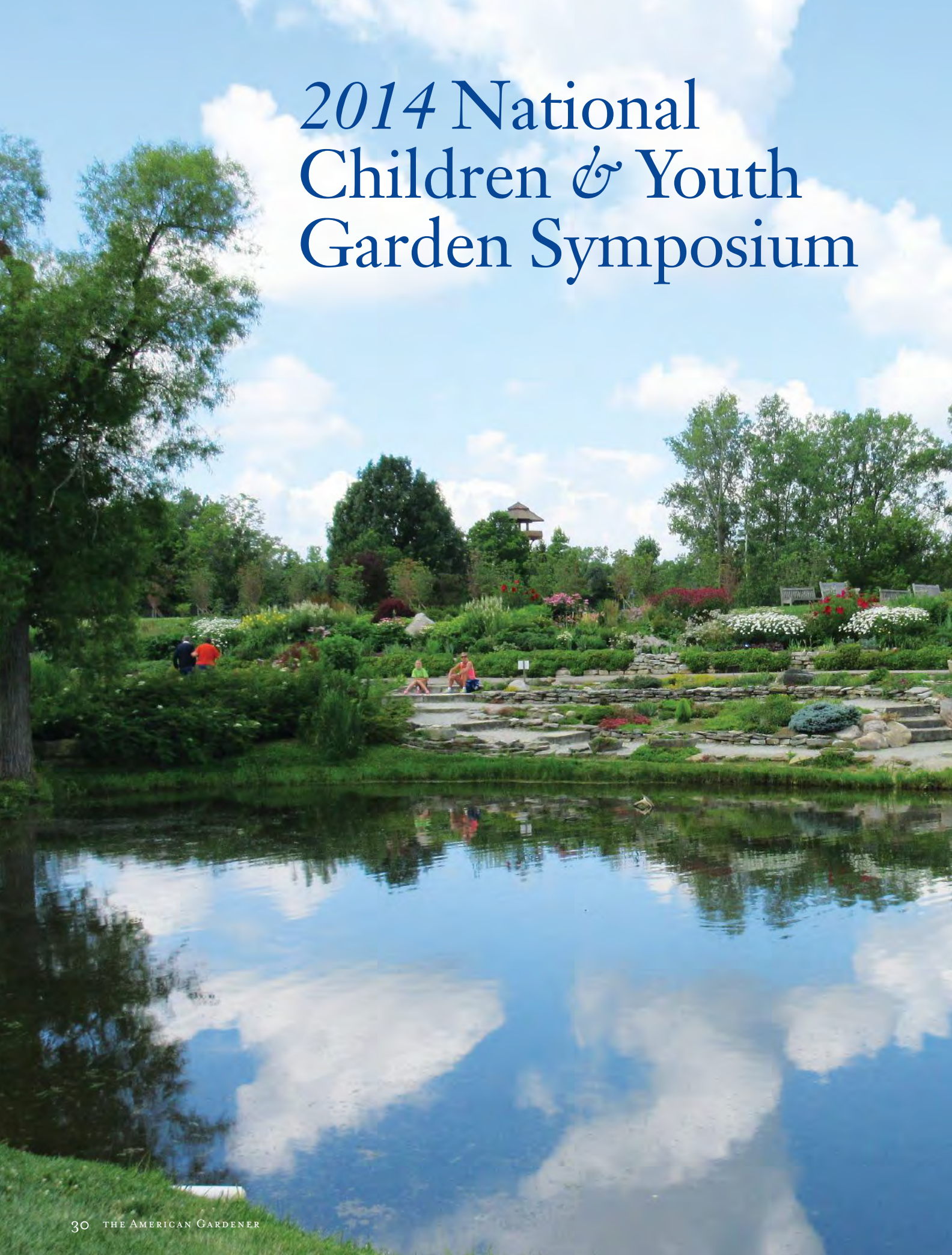
chemistry, and biosynthetic pathways. His team has decoded the complete genetic blueprints for poison ivy leaves, roots, and urushiol. That’s progress toward “developing molecular biology tools for poison ivy research and improvement,” Jelesko explains. One of the goals of this research is to identify a mechanism that would allow researchers to control the amount of urushiol produced by the plants’ cells. (Jelesko has developed a poison ivy citizen’s science project to allow others to contribute to his research. See the “Resources” box, page 28.)

UNIQUE AMERICAN PLANT

Poison ivy and its relatives may have few fans like Jelesko, but it holds an important place in American natural history and folklore that’s worth our respect. If you see a flash of its brilliant orange or crimson foliage along a roadway this fall, stop and admire it—at a safe distance, of course—not only for its beauty but for the ecological benefits it conveys. 🌿

A garden coach and freelance writer, Charlotte Kidd lives in Flourtown, Pennsylvania. She blogs at InTheGardenDesign.us.

2014 National Children & Youth Garden Symposium



At this year's annual symposium in Columbus, Ohio, participants from across the country came together to share ideas for helping kids grow into lifelong learners and gardeners.

BY KYLEE BAUMLE



A visit to Cox Arboretum in Dayton, Ohio, during one of the pre-symposium tours helped to set the scene for the rest of the three-day event.

WHAT HAPPENS when you gather enthusiastic teachers, experts, and organizations, then mix in exemplary gardens and innovative programs? The American Horticultural Society's National Children & Youth Garden Symposium (NCYGS)!

Columbus, Ohio, was a fitting host city for the 2014 NCYGS this past July because of its extensive community gardening scene, in which youth play a large role. It also boasts a variety of kid-friendly public gardens and has numerous youth-centered garden and nature programs administered through Ohio's park



system. Symposium attendees got a taste of all of this as they shared ideas for involving young people in gardening.

FUN AND FOOD

Among the first destinations for this year's symposium was the Highland Youth Garden, one of a dozen hub community gardens located throughout central Ohio. All of these community gardens are part of the Franklin Park Conservatory and Botanical Gardens' Growing to Green program, which provides free resources for building and growing community gardens as well as other city beautification projects.

NCYGS attendees heard directly from some of the young people that work in the Highland Youth Garden, as they led tours along the rows of edibles. When queried about the vegetables or some aspect of the garden, the kids made it clear that they are deeply involved and feel responsible for the success of the garden.

These kids are mentored on each step needed to take a garden from seed to harvest, from preparing the soil for planting to ultimately preparing a meal with the vegetables they've grown. Bill Dawson, coordinator of the Growing to Green program, says, "Mentoring is preferable to simply teaching because the kids are involved in making decisions about what is grown and how to use the harvest."

PING HONZAY



Dayton's Wegerzyn Gardens MetroPark hosted a pre-symposium tour of its Children's Discovery Garden. With so many colorful plants and new surprises around every bend, it was easy to see how this garden encourages children and adults to form positive, lasting bonds with nature.

One of these young gardeners, 16-year-old Da'Vetra Stewart, continued the conversation during a panel session held the following day, discussing how these gardens have become an important part of her daily life. Though Da'Vetra isn't yet certain about a career choice, no one would be surprised if she ultimately studies horticulture or a related field, since she spends a great deal of her time in Columbus's Wedgewood Community Garden. This garden was specifically created to help culturally integrate youth who have recently immigrated to America.

GARDENS FOR PLAY AND LEARNING

Cynthia Klemmer, a longtime symposium attendee, has noticed a shift in the focus of children's gardens. "When children's gardens first became popular many years ago, they were more demonstrative. Now they are more realistic," explains Klemmer, who is director of education at Bok Tower Gardens in Lake Wales, Florida. "Where there used to be a model of a plant growing, now we see the actual plants."



During the post-symposium trip to the Ohio Herb Education Center in Gahanna, attendees got creative as they assembled small bouquets and made artwork using herbs.

Symposium attendees saw this integrative approach during a tour of Inniswood Gardens on the outskirts of Columbus. Its "Sisters' Garden" is designed specifically for young visitors, with a wide variety of plants beckoning them to explore and enjoy the outdoors. Educational programs are conducted throughout the year both in and out of the Inniswood Gardens so that kids experience the joy and wonder of growing both beautiful flowers and food crops. Related program topics include those in which birds, animals, and insects are studied and observed as an integral part of a healthy ecosystem.

During the keynote presentation by Robin Moore, an international authority on the design of children's play and learning environments, attendees took a virtual tour through numerous other spaces that exemplify effective hands-on gardens. Moore's designs are attractive to adults and kids alike and incorporate learning about nature by encouraging interaction in realistic settings.



At the Zorniger Environmental Laboratory, part of Miami Valley School in Dayton, a pre-symposium tour allowed attendees to enjoy bread baked in an outdoor oven constructed by the students using material they found on the school grounds, above, and make herbal tea mixes from plants grown at the school, bottom right. Top right: Another pre-symposium group gave a helping hand to the Highland Youth Garden in Columbus, painting benches and assisting kids with several gardening tasks.



LOOKING TOWARD THE FUTURE

The people who both attended and presented at this year's symposium are but a small representation of people who care, people who are doing something to inspire both the kids and those who work with them to stay the course. This year's attendees came from all walks of life, but they all have a common love for kids and nature.

They are tireless in finding ways to make it possible for our youth to know where their food comes from and understand the myriad other reasons why plants are vital to our existence. These are the people who may inspire our youth to choose one of a number of careers in horticulture or to give back to their own communities through gardening just as their teachers are doing.

Kylee Baumle is a freelance garden writer based in Northwest Ohio. She is the co-author of Indoor Plant Décor: The Design Stylebook For Houseplants (St. Lynn's Press, 2013) and can be found online at www.ourlittleacre.com.



The Lowdown on Lawn Care

by Scott Aker



TURF HAS long served as the canvas on which most of us garden—and with good reason. Turfgrasses cover the soil surface and have fibrous roots that prevent erosion. Lawns slow stormwater runoff, and help cool our neighborhoods. They are a must for most athletic activities. They even buffer noise pollution, keep pests like ticks away from the areas we walk, and provide defensible areas around homes where wildfires are a concern.

But, as we all know, lawns also have some down sides. Keeping turfgrasses looking their best year-round can consume a lot of water, fertilizer, and pesticides. And the power mowers and trimmers many of us use consume fossil fuels and contribute to air pollution. It may seem difficult to have a lush and healthy lawn without leaving a significant environmental footprint, but with good timing and thoughtful planning, you can have a nice lawn that conserves natural resources as well as your time and money.

To start, think about what you really use your lawn for and whether the amount of space allotted for turf could be reduced. Lawns have many different functions, and perfection is not necessary for most of them. If you follow the lawn management practices described here, you will discover that many of the problems usually associated with turf are greatly diminished.

SOIL PREPARATION IS KEY

The greatest cause of high-maintenance turf is poor soil. When homes are built, topsoil is stripped and the subsoil is compacted by construction activity. In most cases, a woefully inadequate couple of inches of topsoil is replaced on top of the hard subsoil before lawns are seeded or sodded. These are less-than-ideal growing conditions for grass, so we end up applying a lot of fertilizer, watering frequently because roots cannot grow deeply, and applying pesticides when fungi or insects play their natural roles in finishing off stressed grass plants.

The key to heading off these problems is to prepare the soil properly before your turf is planted. Because most turfgrasses thrive with a pH near neutral, begin by having your soil tested. Till the soil to a depth of at least six inches and remove rocks; then till in a couple of inches of compost. If the soil test indicated the pH needs to be raised, also incorporate lime before you plant. In wet areas of the lawn, install perforated pipe to aid in drainage, making sure that the pipe is sloped toward its outlet so water does not collect in it.

CHOOSE THE RIGHT GRASS FOR YOUR REGION

Turfgrasses are grouped as either cool-season or warm-season, depending on the temperature ranges in which they grow best. In the North, bluegrass, fescue, and perennial rye thrive. St. Augustine grass, zoysia, and centipede grass perform well in the Deep South because of their tolerance for heat and humidity. Centipede and Bermuda grass can easily handle the heat and drought of the Southern Plains, and buffalo and grama grass do well in the warmer parts of the High Plains.

Most species need sun to grow well, so if you have shade, select one of the few that tolerate shade—namely creeping red fescue, chewing fescue, or sheep's fescue. However, no turfgrass will successfully grow in dense shade; moss is a better choice in that case.

Consider the function of your turf. Some, like fescue, don't have long underground stems, while others, like bluegrass, spread aggressively. So if you want turf as a path between garden beds, choose the fescue so you won't have to edge the beds as often, but if you want a place for sporting activities, opt for the bluegrass because it recovers more quickly from wear and tear.

When shopping for grass seed, be aware that there is a marked difference between turfgrass cultivars in terms of pest and disease resistance and growth habit. For in-

stance, one of the oldest tall fescue cultivars, 'Kentucky 31' (K-31), is strongly disease, pest, and drought resistant, but it is too coarse for use when a finely textured lawn is desired. Newer cultivars of tall fescue—such as 'Shenandoah', 'Rebel', and 'Falcon'—bear little resemblance to K-31. Above all, check the label of the seed package to make sure you are actually getting the grass you want and not a mixture of other types, which may contribute to weediness.

BLADES HIGH AND SHARP

Raise your mowing height to reduce the amount of grass cut. My mower is always set at maximum height. Keeping turf on the high side decreases plant stress, which makes for healthier plants with increased drought, pest, and disease resistance. Taller grass also deprives seeds of crabgrass and other weeds of the sunlight they need to germinate. And sharpen the mower blade every year because clean cuts also reduce stress on the grass.

If you have an old mower, consider updating it. New gasoline-powered mowers are much more fuel efficient than older models. Better yet, switch to a rechargeable electric model. If you have a small lawn and prefer to use your own muscle power, you can opt for a reel mower. Newer reel mowers, such as Fiskars' Staysharp™ Max, are easier to push and include other features, such as adjustable mowing height and lower-maintenance cutting blades.

WATER SMART

I never water my lawn, even when drought causes it to go dormant. If this approach makes you uncomfortable, though, the best approach is to water deeply and infrequently. Home lawns only need supplemental watering every 10 days to two weeks if the weather is dry—less frequently if the soil is heavy. If your soil doesn't retain moisture well, topdress your lawn with compost or well-rotted manure to increase its water-holding capacity.

When choosing a sprinkler, look for one that puts out larger water droplets rather than a fine mist that can be carried away by the wind. Also make sure the sprinkler system is not overpressurized, which also creates finer droplets. Installing a pressure-reducing valve will help you save water if this is the case.

Gardening Q&A with Scott Aker

GETTING RID OF OBEDIENT PLANT

My so-called obedient plants are running amok in my garden. I've tried pulling them out and digging them out to no avail. Is there a trick to getting rid of them?

Obedient plant (*Physostegia virginiana*) is only obedient in the way its flowers stay in place if pushed to one side of the flower stalk. The plant itself is tough to restrain in fertile, moist soil because it spreads rapidly via rhizomes (underground stems). Because these rhizomes run just below the soil surface, try using an edging spade to shave them off, much as you might do to remove sod. A non-selective herbicide, applied near the end of the growing season, is another option. If you prefer not to use herbicides, a last resort is to cover the area with black plastic during the heat of summer. 'Miss Manners' and 'Pink Manners' are two cultivars of obedient plant that won't spread the way the species does.

HEDGEROW PLANTS FOR BOTH SUN AND SHADE

I want to plant a hedgerow along the northern edge of my property. Part of the boundary line is dry and sunny, but as it moves towards the backyard, the ground slopes downward and becomes shadier and moist. I'd like the hedgerow to be six to 10 feet tall. What plants do you recommend for it?

I suggest using a minimum of two different plants to create the hedgerow, and planting a group of taller evergreens, such as hollies, near the transition from sunny and dry to shady and moist to give context to the transition between the two kinds of plants. 'Grey Owl' Eastern juniper (*Juniperus virginiana*) or northern bayberry (*Myrica pensylvanica*) would do well in the sunny and dry conditions. Dwarf 'Nana' Hinoki falsecypress (*Chamaecyparis obtusa*) or Hiba arborvitae, (*Thuja dolabrata*) would work in the shade. Japanese aucuba (*Aucuba japonica*) would be an option in moist shade. —S.A.

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


Watering early in the morning minimizes the amount of moisture lost to evaporation. Water until the soil is soaked at least six inches below the surface. If water starts to run off before it reaches this level, alternate two areas that you are watering for half-hour periods to allow the soil to absorb the water.

OTHER MAINTENANCE TIPS

Like all plants, grasses need nutrients—especially nitrogen—to thrive. Allow grass clippings to remain on the lawn after mowing so they can decay and cycle their nutrients back into the soil. If you must apply fertilizer, stick to one that is all or mostly nitrogen and apply it sparingly at the right time of year—autumn for cool-season grasses, and spring for warm-season grasses.

In dry regions, and with some species of warm-season turfgrass, removal of the thatch—the layer of dead grass and other

vegetation on top of the soil—every year or two will help keep your lawn healthy. A sturdy rake will work, or you can rent a dethatcher when the job needs to be done. Compost the thatch you remove or use it as mulch. If your soil is heavy, rent a core aerator that will pull plugs of soil out and relieve compaction.

Weeds often occur where soil is compacted or has a low pH, or where drainage is poor. You may be able to remove these weeds by hand, or use spot treatments with a broad-leaf herbicide rather than treating the entire lawn. Insects and diseases are best managed by choosing turfgrass species and cultivars that resist them. Healthy turf will resist the inroads of pests and disease to the point where the need for any treatment is rare. 

Scott Aker is a Washington, D.C.-based horticulturist.

Turnips and Rutabagas: Roots with a Bit of Bite

by *Karan Davis Cutler*



ONE MEASURE OF a vegetable's popularity is its recipe numbers on the web. Among root vegetables, the popular website *allrecipes.com* lists more than 16,000 recipes for onions, 6,800 for carrots, 4,600 for potatoes and 1,000 for beets. Turnips lag with 132 recipes, and rutabagas muster a meager 57.

After centuries of being grown mostly for fodder and forage, or boiled and baked beyond recognition, turnips and rutabagas are getting a second look. Seed sales are up, a few new cultivars are available, and imaginative chefs are transforming these country bumpkin roots into gratins, soufflés, frittatas, and galettes.

Turnips (*Brassica rapa*) and rutabagas (*B. napus*) are members of the mustard or brassica family, which includes cabbage, broccoli, and a number of other cold-season vegetables. Turnips are the smaller of the two, and everyone agrees that rutaba-

gas are sweeter, but their flavors are similar: mild with a spicy bite. There are white- and yellow-fleshed varieties of both turnips and rutabagas, but most turnips have white flesh, and rutabagas, yellow. Neither root is a nutritional powerhouse, although they do contain several vitamins and minerals.

For real nutrition, eat the young leaves. In addition to containing potentially cancer-inhibiting substances known as glucosinolates, both turnip and rutabaga greens are high in folate, plus vitamins A, C, and K.

GROWING GUIDELINES

Pick a site that hasn't hosted a brassica crop for a couple of years to avoid some pests and diseases, such as root maggots. The site should get at least six hours of sun daily and have well-drained, humus-rich soil with a near-neutral pH. A bit of nitrogen—composted manure, blood meal, and fish emulsion are good sources—promotes lush tops,

but too much hinders root development; phosphorus, contained in bone meal, helps produce good-sized roots.

Turnips and rutabagas are cool-weather crops. Too much heat—prolonged temperatures above 80 degrees Fahrenheit (F)—produces cracked, tough roots, or plants that go to seed before they have a chance to make roots. Sow turnips as early in spring as the ground can be worked for an early summer harvest or in late summer for a fall crop. Because they take longer to form roots than turnips, rutabagas nearly always are grown as a fall crop.

If you're growing them just for greens, thinning isn't necessary, but for good root development, thin turnips two to four inches apart and rutabagas six to eight inches apart. Cut rather than pull plants when you thin to avoid disturbing the roots of the remaining plants, and don't forget that the thinnings are edible.

Grown for their large roots as well as their greens, turnips, top left, and rutabagas, top right, make tasty additions to the edible garden.

All that's left is to water in dry weather and keep ahead of the weeds. If you cultivate with a hoe, do it shallowly to avoid damaging the roots. Applying a two-inch layer of mulch will discourage weeds and retain soil moisture.

PROBLEMS & SOLUTIONS

To avoid most disease problems, choose disease-resistant cultivars, and remove all debris, including leaves and roots, at the end of the garden season. Most pests—aphids, whiteflies, harlequin bugs, cabbage maggots, and flea beetles are among the usual suspects—can be avoided by installing floating row covers at planting time. Serious infestations may call for applying an insecticidal soap. Hand pick leaf-feeding caterpillars.

RECOMMENDED VARIETIES

Turnips Cultivars have globelike roots, purple and white skin, white flesh, and can be grown for both roots and greens unless noted otherwise.

'Gold Ball' Heirloom; gold skin, gold-yellow flesh; 55 days to maturity.

'Hakurei' Japanese hybrid; white skin, smooth, hairless greens; 40 days.

'Purple Top White Globe' Heirloom; smooth round roots and large, lobed greens; 55 days.

'Seven Top' Popular Southern heirloom for greens only; 45 days.

'Tokyo Cross' Hybrid AAS winner; white skin; some disease resistance; 40 days.

Rutabagas Cultivars have bumpy globe-like roots, yellow/white skin (sometimes with purple), and yellow/gold flesh unless noted otherwise.

'American Purple Top' Heirloom; large roots; 90 days.

'Helenor' Sweet flavor; 90 days.

'Joan' Refined 'American Purple Top'; some disease resistance; 95 days.

'Laurentian' Heirloom; mild flavor with purple skin; 100 days.

'Wilhelmsburger' Heirloom; green-and-white skin; some disease resistance; 90 days.

ENJOYING THE HARVEST

Turnip and rutabaga greens can be harvested when they are about four inches long. Leave at least two inches of stem above the top of the root to produce another crop of greens in two or three weeks. Cutting the greens, however, stunts root development, so if you're growing for roots, harvest sparingly or not at all.

For best flavor, harvest turnip roots when they are two to three inches in diameter, three to five for rutabagas. Fall crops are sweetened by light frosts, but turnips are less hardy than rutabagas and should be harvested before night temperatures are consistently below freezing. Rutabagas can stay in the ground longer if kept from freezing. In regions with mild climates, both can remain in the garden for harvest throughout winter.

After removing the tops and washing and drying the roots, store them for up to

PLANTING BASICS

Getting Started Sow turnips in early spring for a summer harvest, or late summer for a fall harvest. Sow rutabagas in summer for a fall/winter crop.

Spacing Sow seeds a quarter- to a half-inch deep, one inch apart; rows about two feet apart for rutabagas, 18 inches for turnips. For roots, thin turnips two to four inches apart, rutabagas six to eight inches. No thinning is necessary for greens.

Days to maturity Turnips: 40 to 60 days; rutabagas: 90 to 100+ days.

Sources

Annie's Heirloom Seeds, Beaver Island, MI. (800) 313-9140.
www.anniesheirloomseeds.com.

Baker Creek Heirloom Seeds, Mansfield, MO. (417) 924-8917.
www.rareseeds.com.

Johnny's Selected Seeds, Waterville, ME. (207) 861-3999.
www.johnnyseeds.com.

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

Territorial Seed Company, Cottage Grove, OR. (800) 626-0866.
www.territorialseed.com.



'Laurentian' is an heirloom rutabaga that produces four- to six-inch globes with a mild flavor.

three weeks in sealed plastic bags in the refrigerator. Greens will last about a week in plastic bags in the crisper drawer.

Firm, unblemished roots can be stored up to three months in a dark, cool spot with good ventilation, relative humidity around 90 percent, and temperatures between 40 and 32 degrees F. Remove the tops but do not wash the roots, spread them in a single layer, and cover with sawdust.

Both turnips and rutabagas make great additions to soups, stews, stir fries, or a mix of oven-roasted winter veggies. Or mash them as you would potatoes; their distinctive flavor makes for a pleasant change. ♪

Karan Davis Cutler is a freelance writer based in Bridport, Vermont. She is the author of Burpee—The Complete Vegetable & Herb Gardener (Macmillan, 1997).

Bellingrath Gardens and Home

by Sarah Miller



TWENTY MILES southwest of Mobile, Alabama, is Bellingrath Gardens and Home, where European Renaissance panache intermingles with the sultry milieu of the Gulf of Mexico coastline. Though Bellingrath is most well known for hosting one of the nation's most dramatic displays of azalea blooms each spring, every season at the historical estate offers plenty of colorful Southern charm.

EUROPEAN ROOTS

Located on the banks of the Fowl River, Bellingrath started out as a weekend retreat for its owner, Walter Bellingrath—Mobile's first Coca-Cola bottler—and his wife, Bessie Mae Morse Bellingrath. Inspired by their 1927 trip to Europe, the Bellingraths began developing their riverside property into an elegant, 65-acre estate complete with fountains, a grotto, and a grand manor house. The couple opened their gardens

to the public in 1932 and established the Bellingrath-Morse Foundation to oversee their estate's mission as a public garden.

Despite its English-inspired formalities, "it's really more of a classic Southern garden," says Bellingrath's Executive Director, William E. Barrick. "It has aspects of English-style gardens, where you have big open spaces with a lawn and floral borders, and as you get closer to the home, things become much more patterned and formal, but its intent always was to look like a traditional Southern garden, with beautiful oaks and Spanish moss in the trees."

And what is a Southern garden without azaleas and camellias? Avid gardeners, the Bellingraths collected hundreds of these plants from across the Deep South, and some of their original plants continue to bloom lavishly. A few of the azalea

Azaleas create a colorful display around Bellingrath's Mirror Lake in mid-March

bushes, towering 15 to 20 feet in height, originate from the 18th century. They are accompanied by over 1,000 more recently planted azaleas such as the magenta-purple 'Formosa,' deep pink 'Pride of Mobile,' white 'Mrs. G.G. Gerbing,' and white- or pink-freckled 'George Lindley Taber'. During Bellingrath's **Azalea Bloom Out** in mid-March, each one unfurls its delicate flowers to the delight of visitors.

The Bellingraths also created a **Camellia Parterre** with hundreds of varieties of winter-blooming camellias and a rose garden in the shape of the Rotary Club's symbolic wheel. More than 2,000 roses of 75 varieties bloom from April through December in this garden, which twice garnered the Top Public Rose Garden award from All-America Rose Selections.

NATURAL TRANSFORMATIONS

Given the estate's precarious perch on the Gulf Coast, unfortunately, many

plants from the Bellingraths' time have suffered the brunt of various storms through the years. In September 1979, Hurricane Frederic "wiped out about 80 percent of the tree canopy within the garden," says Barrick. "So overnight it went from a dense shade garden to a full-sun garden. Some of the original concepts changed. For example, the azalea planting that went down to the edges of the lake was replaced by turf because it was too much to completely reforest."

Hurricanes Ivan and Katrina scraped Bellingrath in 2004 and 2005 respectively, causing damage to production greenhouses and toppling in 2005 a couple of the oldest oaks. However, Barrick notes that after each calamity, the gardens have bounced back well. "Things grow very quickly," he says. "We have a long growing season, and trees can put on a lot of growth during the summer."

In the aftermath of Hurricane Katrina, the ExxonMobil Foundation funded the construction of a 1,600-foot ecological boardwalk through the **Dwight Harrigan Bayou Preserve** located in the northern part of the property. Along the boardwalk, interpretive graphic panels introduce visitors to the animals, plants, and ecology of the Fowl River watershed. Other modern additions to the gardens include the **Asian American Garden** and **Gazebo Perennial Garden**.

MULTI-SEASONAL ALLURE

In the autumn, thousands of chrysanthemums go on display at Bellingrath during its annual mum show, held this year from November 8 through 21. Purported to be the largest outdoor mum display in the United States, it rivals the dramatic show of color from Bellingrath's azaleas.

"My favorite time is the fall mum show. It's breathtaking," says Barrick. "You train the mums for nine months, and the display lasts three weeks."

"All the other displays in the gardens are based on and centered around the mum display," adds Chuck Owens, Bell-

Additional Information

Bellingrath Gardens and Home, 12401 Bellingrath Gardens Road Theodore, AL 36582. (251) 973-2217. www.bellingrath.org.

- Open year-round 8 a.m. to 5 p.m. (open until 9 p.m. during Magic Christmas in Lights).
- Admission (includes tour of house and gardens): Adults \$20.50, Youths (ages 5 to 12) \$12.50, Children (under age 5) free. Garden-only tour rates also available, with additional fees for special events.

Other nearby sites to explore:

Dauphin Island Sea Lab and Estuarium/Public Aquarium, Dauphin Island, AL. www.estuarium.disl.org.

Mobile Botanical Gardens, Mobile, AL. www.mobilebotanicalgardens.org.



Chrysanthemums in the thousands can be seen everywhere at Bellingrath in autumn.

ingrath's horticulturist.

Visitors can admire the cascading mum varieties that hang from the intricate wrought-iron balconies of the Bellingrath manor house and are draped over garden's bridges. Mums fill flower

beds, are packed into columnar towers, and sway in large baskets hung from oak canopies.

As the mums fade, Bellingrath staff begins stringing thousands of lights around the home and gardens for the annual **Magic Christmas in Lights** event, which will be held this year from November 28 through January 3. Lights twinkle in tree canopies and brighten up balconies and bridges. Some are strung around metal frames depicting bayou creatures, such as crabs and fish in an underwater scene. In another scene, gigantic flowers such as camellias, azaleas, daffodils, and crocuses are rendered in lights. And reflected on the dark water of **Mirror Lake** are the lights from three enormous swan sculptures that seemingly float upon it.

Coastal Alabama's mild climate provides many opportunities to see the Bellingrath gardens in bloom, but as for the finest time to visit, perhaps Walter Bellingrath said it best. In a 1942 letter to an inquiring journalist, he wrote, "The Gardens are like

a beautiful woman who has 52 lovely changes of costume, representing the 52 weeks of the year, and in each week in the year this same beautiful woman presents herself in a different one of these lovely costumes."

Sarah Miller is the editorial intern for The American Gardener.

Recommendations for Your Gardening Library

Gardens in Detail: 100 Contemporary Designs

Emma Reuss. Monacelli Press, New York, New York, 2014. 431 pages. Publisher's price, hardcover: \$45.

REACHING ONLY for books that feature favorite designers or preferred garden styles broadens neither perspective nor knowledge base. It does a gardener good to see and learn something new—especially when we can do so for a relatively small expenditure of money, time, and effort. In this regard, *Gardens in Detail* is worth every penny of its \$45 cover price.

The book's focus on key design principles and how they are applied in 100 gardens, most built or renovated over the course of the last 40 or so years, is refreshingly catholic in its approach. The principles, including unity, proportion, rhythm, and repetition, are constants. However they are employed on garden types ranging from a highly conceptual Cambridge, Massachusetts roof garden by Martha Schwartz (Splice Garden, 1986) to the restoration of a turn-of-the-20th-century English residential landscape by Gertrude Jekyll. Similarly, three roof gardens installed between 2009 and 2013 and respectively in London, Melbourne, and Hong Kong, offer singular aesthetic experiences as they respond to different needs and growing conditions.

These examples show the breadth of the projects covered in the book. Yet, *Gardens in Detail* is just as remarkable for author Emma Reuss's consistent and highly effective organizational approach. After a short introduction elucidating the seven principles that underlie design success, she gets right to work. Every garden is treated in the same manner. A large photograph and short overview precede two pages that explore the "design ingredients" of the featured garden. These brief drilldowns highlight elements of the initial photograph through more images and text that show how these details contribute to the larger composition. In many cases, an additional sidebar provides a pertinent tidbit of relevant garden history, plant knowledge, or backstory.

I loved the fact that I could flip through this book's crisp pages in a spare moment or devote several hours to reading about garden after garden. In each case, I came away with a better understanding of design and a renewed appreciation for the diversity of garden styles throughout the world today.

—Susan Hines

Susan Hines is a former staff writer for Landscape Architecture magazine. She lives and gardens in Hyattsville, Maryland.

The Living Landscape

Rick Darke and Doug Tallamy. Timber Press, Portland, Oregon, 2014. 392 pages. Publisher's price, hardcover: \$39.95.

AS CLIMATE change continues to impact plants and animals, it becomes increasingly imperative to protect fragile ecosystems in whatever way we can. In *The Living Landscape*, authors Doug Tallamy and Rick Darke explore strategies for designing landscapes that not only look stunning, but also nurture wildlife and deepen our connection to the natural world.

In the book's preface, Darke opines that the "design of broadly functional, ecologically sound, resource-conserving residential gardens requires a carefully balanced mix of native and non-native plants." He argues that rather than worrying about where plants come from, we should consider "how they function in today's ecology." As for how the authors define native—it's quite a different take than what you might expect.

A central idea for creating the careful balance of plants to which Darke refers is thinking in terms of layers in wild landscapes. Chapters describe what happens from the overhead canopy to the ground and everything in between. Darke and Tallamy also factor in the influence of "cultural layers" created by humans, such as old pastures, roads, and railways, and "temporal layers," such as seasons or centuries.

All these layers affect insects, birds, and other animals. Using specific examples of these relationships among species, the authors illustrate the vital importance of biodiversity to healthy ecosystems. There's even a chapter on the "art of observation" to help readers tune in to the fascinating microcosms around them. Building upon this foundation, the rest of the book examines how a gardener can apply these concepts to create "inclusive habitats" that attract and support wildlife and humans alike.

In the back of the book, there are extensive plant lists for different regions of the country that include information about each plant's ecological and landscape functions and wildlife value.

The book is richly illustrated with photographs of landscapes and plants that exemplify the discussed concepts, and depict the birds, butterflies, and other animals that depend on them for survival.

—Jane Berger

Jane Berger is a landscape designer based in Woods Hole, Massachusetts. She blogs at www.gardendesignonline.com.

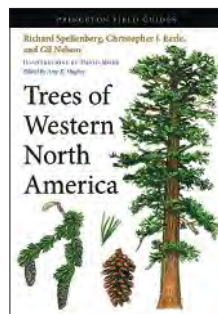
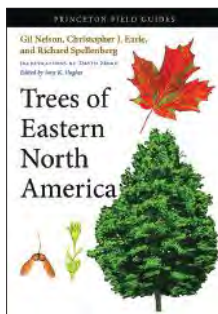
Trees of Eastern North America and Trees of Western North America

Gil Nelson, Christopher J. Earle, and Richard Spellenberg. Princeton University Press, Princeton, New Jersey, 2014. 720 pages and 560 pages, respectively. Publisher's price, softcover: \$29.95 each.

A HALLMARKS of a good reference book is knowledgeable and trustworthy authorship. Twenty years ago, I began my field education among the oaks of the Florida panhandle during a sweltering August trip with two superb botanists, Angus Goulson and his young colleague Gil Nelson. Not much later, I started to study the oaks of the West and found the imprimatur of Richard Spellenberg of New Mexico State University on nearly everything I read.

So, my expectations were high for the pair of North American tree books with Nelson and Spellenberg sharing authorship. Add the insights of Seattle-based forest ecologist Christopher J. Earle and the superb artwork of the renowned Scottish botanical illustrator David More, and you've got the veritable Dream Team of the tree world!

A good book deserves to be read from the beginning, so I started with each volume's introduction, which functions as a "how to use me" guide. The authors also provide basic tree biology and traits that distinguish species from one another. Pictorial keys to twigs and leaves of selected species illustrate the enormous diversity of trees.



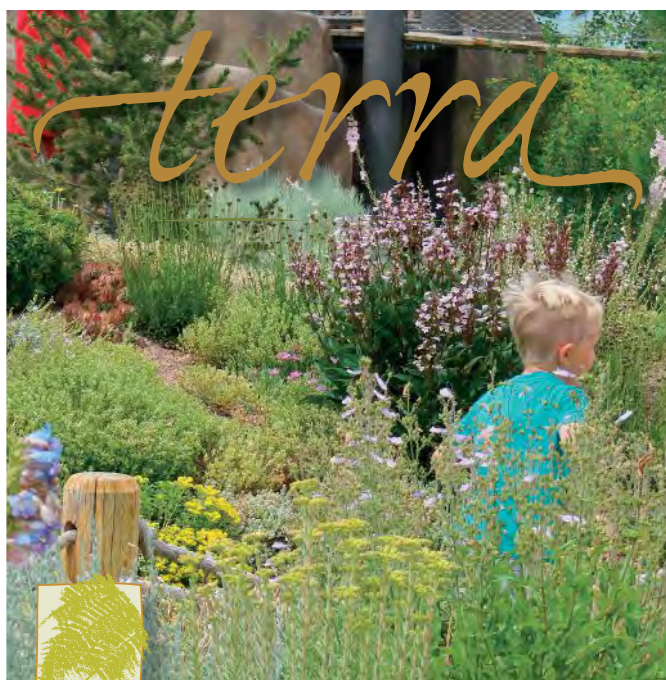
From there, the reader can dive into whichever sections are of interest. The information about each tree—every species in North America that grows “without the aid of human cultivation”—is presented in a logical and standardized way that makes cross-referencing easy. The authors chose the rooth meridian as the dividing line for species to include in each of the volumes, so some species appear in both.

To get a sense of how comprehensive the coverage of each tree is, I went directly to material I know particularly well: oaks. Not surprisingly, the information is accurate and thorough to the point that even nomenclatural nitpicking is a challenge. For example, the Durand oak is referred to as *Quercus durandii* rather than *Q. sinuata*, the name favored by the U.S. Natural Resources Conservation Service. The issue becomes moot anyway because the authors include synonyms in the text.

Each volume on its own would serve you well in getting to know the trees around you better. Both together certainly provide a more complete understanding of the diversity of North American trees. I already treasure my two-volume set and expect to wear it out quickly.

—Guy Sternberg

Guy Sternberg is the founder of Starhill Forest Arboretum of Illinois College, lead author of Native Trees for North American Landscapes (Timber Press, 2004), and founding president of the International Oak Society.



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Horticultural News and Research Important to American Gardeners

CONCERN ABOUT HARMFUL IMPACTS OF NEONICOTINOID INSECTICIDES SPURS BANS AND RESTRICTIONS

Neonicotinoid insecticides have long been considered a potential culprit for the unexplained colony collapse disorder observed in honeybees in recent years. Now, these systemic, broad-spectrum pesticides are coming under increasing scrutiny as a key factor in recent pollinator population declines.

This past summer, the Task Force on Systemic Pesticides, a group of international scientists, completed a four-year analysis of around 800 scientific research papers on the subject of environmental impacts of neonicotinoids. In its open



Researchers think the use of persistent neonicotinoid insecticides may be affecting many kinds of pollinators, including butterflies.

access report, published in the journal *Environmental Science and Pollution Research*, the task force concluded that the “wide-scale use of these persistent, water-soluble chemicals is having widespread, chronic impacts upon global biodiversity and is likely to be having major negative effects on ecosystem services, such as pollination, that are vital to food security and sustainable development.”

This has sparked a number of U.S. businesses and organizations to ban or restrict neonicotinoid use. For example, Home Depot, which environmental groups have been pressuring to stop carrying neonicotinoid products, now requires its suppliers to identify all plants

PEOPLE and PLACES in the NEWS

In Memoriam: Harold Pellett

One of America’s most distinguished plant breeders, Harold Pellett, passed away in July in Eden Prairie, Minnesota, at the age of 76. Among Pellett’s many plant introductions, perhaps the most well-known is the Northern Lights series of cold-hardy azaleas, which debuted in 1978. However, his seminal research on the cold hardiness, disease tolerance, and ornamental properties of woody plants suited to northern climates has had a transformative influence upon the nursery and landscape industry.



Harold Pellett

In 1990, Pellett established the Landscape Plant Development Center with the vision of connecting various universities, arboreta, botanical gardens, and experiment stations to facilitate better plant research through cooperation. Although the center was dismantled earlier this year, the Minnesota Landscape Arboretum absorbed its resources and continues its mission.

In addition to his plant research and breeding work, Pellett taught horticultural science for more than 30 years at the University of Minnesota in Minneapolis. His many accolades include the American Horticultural Society’s Liberty Hyde Bailey Award in 2008 and the 2012 Arthur Hoyt Scott Medal and Award from the Scott Arboretum of Swarthmore College in Pennsylvania.

To learn more about Pellett and his work, you can read a profile of him that was published in the July/August 2001

issue of this magazine, available online through the American Horticultural Society’s website at www.ahs.org.

New Executive Director at U.S. Botanic Garden

Following the retirement of its previous Executive Director, Holly Shimizu, the U.S. Botanic Garden (USBG) in Washington, D.C., has selected Ari Novy to take the helm. Novy first came to the USBG in 2012 as its public programs manager before becoming deputy executive director in 2013. In addition to Novy’s new role at the USBG, he will continue to serve as research collaborator for the Botany Department at the Smithsonian National Museum of Natural History in Washington, D.C.



Ari Novy

Novy received his doctorate in plant biology from Rutgers University in New Jersey in 2012. Before becoming a doctoral student, Novy researched sustainable agriculture in the Philippines and was an environmental consultant in the northeastern United States.

At the USBG, Novy’s mission is to expose an increasingly urbanized population to a variety of plants and their important cultural uses. “It’s about inclusivity,” says Novy. “It’s where we present the great diversity of plants and create a space where anybody can come in and feel comfortable learning about them.”

For more information, visit www.usbg.gov.



grown for retail sale with a label if they have been treated with these chemicals. It is also working with growers to phase out their use entirely. Several other national and regional retailers, such as Minnesota-based garden center Bachman's, have established similar policies.

Neonicotinoids are also no longer welcome within the National Wildlife Refuge System (NWRS). In July, the Fish and Wildlife Service announced it would completely phase out the application of these insecticides by January 2016. The NWRS includes 560 national wildlife refuges and 38 wetland management districts encompassing 150 million acres of land and water across the United States and its territories.

For more information about the Task Force on Systemic Pesticides' findings, visit www.tfsp.info.

COLORFUL NEW CANNA WINS INTERNATIONAL AWARD

Cannova® Bronze Scarlet, a hybrid canna introduced by the seed company Takii Europe B.V. in the Netherlands, won the 2014/2015 FleuroStar Award



Breeder Diony de Bont shows off his award-winning canna, *Cannova Bronze Scarlet*.

in June. This award is given by Fleuroselect, an international professional organization for the ornamental plants industry. A jury selected by the organization evaluates nursery plants worldwide

purely by their most striking ornamental qualities. This new canna exhibits a "superb contrast of scarlet flowers with dark foliage," according to Fleuroselect.

Diony de Bont, who spent 15 years developing this canna at Takii, says that it will help people recreate some "Mediterranean flair in their garden at home." Expect to see the new canna in the North American market through Ball Horticultural Company based in Chicago, Illinois.

CLEVELAND BOTANICAL GARDEN AND HOLDEN ARBORETUM MERGE

Two horticultural institutions in northern Ohio will become one botanical *tour de force*, according to an announcement in late June by the Cleveland Botanical Garden (CBG) and the Holden Arboretum. Catalyzed by CBG's need to reduce its long-term debt, the merger will pool the resources of the sprawling 3,600-acre arboretum near Kirtland with the more metropolitan botanical garden's access to research institutions and educational outreach.



'SPOUT TIME!

Finally, a new spin on Watering Cans! Introducing the OXO Good Grips Pour & Store Watering Cans with a rotating spout for easeir filling and space-efficient storing. Water levels in the translucent spout line up with the measurement markings on the body for easy measuring. Available in two sizes: Outdoor (2 gal) and Indoor (3 qt).



Pour & Store Watering Cans



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“A combined organization would have a strong scientific foundation of research, plant collections, and community outreach,” says Clement Hamilton, president and CEO for the Holden Arboretum, “while also being attractive to families and visitors—hallmarks of the nation’s finest public gardens.”

The unification process is expected to take several months to complete. However, members from either institution now receive all the membership benefits from both the garden and the arboretum.

AMERICAN ROSE CENTER CELEBRATES FOUR DECADES

The Gardens of the American Rose Center, headquarters of the American Rose Society in Shreveport, Louisiana, turns 40 this year. It will officially celebrate this milestone on October 19 with guided tours, an art show of porcelain roses created by ceramic artist Chen Yuhua of China, and a barbecue amid peak fall rose bloom. Free admission to its 73 rose gardens will be offered until October 31, when the rose-blooming season concludes.



The Windsounds Carillon Tower, above, is the landmark feature at the Gardens of the American Rose Center in Shreveport, Louisiana, left.

The festivities also celebrate a significant restoration effort for the gardens. “The 40th anniversary will see the gardens recovering from one of the worst years Mother Nature had to offer us,” says Executive Director Jeff Ware. “A tornado and two hailstorms hit us in the last year, but we decided to see this recovery as an opportunity. We removed trees and replanted hundreds of roses.”

The rose center also serves as a research and trial grounds. Current projects in the gardens include the Louisiana State Uni-

versity AgCenter’s Easy-Tea Hybrid Tea Rose Research Project and some of the Texas AgriLife Extension Service’s Earth-Kind® rose cultivars. And since 1979, the center has designated many of its rose beds for use by amateur rose hybridizers.

For more information about the Gardens of the American Rose Center, visit www.rose.org.

News written by Editorial Intern Sarah Miller.



Trumpet Daffodil Bravoure (#8048) and Muscari latifolium (#3743)

BEAUTY FROM BULBS

Bring the beauty of bulbs to your gardens from our vast collection of the best Dutch flower bulbs and herbaceous peonies at the best prices. Select your own color palette and create natural, harmonious gardens with intermingled flower bulbs. Here is a stunning drift of Trumpet Daffodil Bravoure with a thick ribbon of Muscari latifolium. What would spring be without Daffodils and Muscari?

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Cooperative Extension Service: 100 Years of Horticultural Help

by Rita Pelczar



MAKING RESEARCH-BASED, practical agricultural knowledge available to the American public may sound like a tall order, but that is exactly what the Cooperative Extension Service (CES) has been doing since 1914. Created through a partnership between the United States Department of Agriculture and land grant universities in each state, CES filled a need for a national network that could deliver expertise locally. President Woodrow Wilson called it “one of the most significant and far-reaching measures for the education of adults ever adopted by any government.”

The resources offered by Extension offices vary somewhat from state to state, and even county to county, depending on local needs and available funding; however, they all share the mission of disseminating reliable information to the public.

For example, Linda Lehmusvirta often includes CES experts on her television show, “Central Texas Gardener” on KLRU-TV, PBS-Austin. “With every topic of concern that comes my way, Extension agents from around the state jump in to help,” Lehmus-

virta says. A weekly regular is Daphne Richards, a horticulturist with Texas A&M AgriLife Extension Service in Travis County. She helps viewers tackle common gardening problems while promoting organic techniques and drought-tolerant plants suited to the region. As just “one Extension agent, serving a population of over one million county residents,” Richards sees the show as a great way to extend her reach and make important information available to a wider audience.

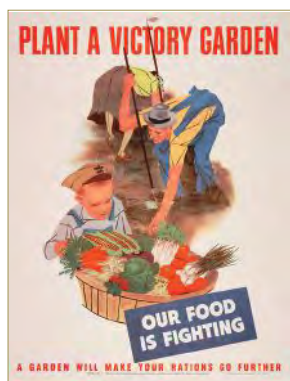
ADDRESSING CHANGING NEEDS

One of the Extension Service’s strengths throughout its history has been its re-

An Extension agent in North Carolina demonstrates techniques and discusses weed control with a group of farmers, circa 1930.

sponsiveness to changing needs. During the Great Depression, Extension agents helped establish buying and selling co-operatives for farmers and provided instruction on nutrition, canning, home gardening, and a variety of other skills to help people survive the hard times.

During both World Wars, CES provided seeds, tools, and backyard gardening assistance to an estimated 15 million families. The resulting Victory Gardens helped alleviate food shortages; in 1944 alone, Victory Gardens were responsible for producing about 40 percent of the vegetables grown in the United States.



Victory Gardens helped reduce food shortages during both World Wars.

When CES was established, more than half of the U.S. population lived in rural communities. Today that figure has dropped to about 17 percent. The Extension Service has responded with more programs designed for urban and suburban dwellers. It also expanded the focus of existing programs, such as 4-H.

Originally conceived to provide hands-on learning experiences beyond the classroom for rural youth, 4-H has grown to include young people from urban and suburban communities. It offers out-of-school enrichment programs that address topics such as food safety, sustainable energy, and environmental protection as well as its more traditional topics of animal husbandry, agriculture, and home gardening.

VOLUNTEER POWER

It's fortunate that CES is adept at adapting. With budget cuts in recent years resulting in fewer resources and reduced staff, Extension offices across the country



Caroline Homer, a Master Gardener in Travis County, Texas, helps to conduct a community program designed to teach children how vegetables and fruits contribute to a healthy diet.

are having to prioritize. This often means combining or eliminating programs.

“While budget challenges since around 2008 have caused shrinkage in some programs, I believe we have overcome such reductions and become more effective and efficient in the process,” says Scott Reed, vice provost for University Outreach and Engagement at Ore-

gon State University. “Among our clear success stories is service to the horticultural sector, and especially the Master Gardener program.”

The program “recruits and trains volunteers to serve the public,” says Steve Mayer, a horticultural Extension educator who coordinates the Master Gardener Program in Marion County, Indiana.



Master Gardeners and Texas A&M AgriLife Extension agents answer questions from the public about their demonstration beds where they are trialing different tomato varieties.

Every state, the District of Columbia, and even two provinces in Canada boast an Extension Master Gardener (EMG) program. A survey conducted five years ago conservatively estimated the number of EMG volunteers at 94,865, who contribute more than five million volunteer hours per year.

After completing their training, EMG volunteer work “is as varied as the local needs of a community,” says Mayer. It may include answering garden consumer hotlines, writing news articles, assisting with community gar-

den Master Gardener coordinator of Johnson County, Kansas, they enjoy the challenge. “We ask for a minimum of 30 hours of volunteer time per year [but] our volunteers are very dedicated, and the average volunteer gives 120 hours per year.”

Garden coach and designer Kathy Kimbrough is living her dream “because of the education and support of our local Extension office—CSU Extension Tri-River Area in Grand Junction, Colorado.” Kimbrough became a Master Gardener in 2001 and immediately became involved with the diagnostic team.



As part of their annual volunteer service, a group of Master Gardeners performs spring cleanup at a public demonstration herb garden in Shawnee, Kansas.

dens, controlling invasive plants, establishing public demonstration gardens, and teaching youth, the elderly, and at-risk audiences.

“Master Gardeners are invaluable to my program,” says Jamie Hancock, horticulturist with Shawnee County Research and Extension in Kansas. “We are able to reach out to thousands of people each year, helping them with yard and gardening issues. I could not do this alone. I have about 125 active EMGs whose time and effort is worth over \$200,000 annually to our county.”

MUTUAL BENEFITS

And what do Master Gardeners think about their training and volunteer experiences? According to Laura Dickinson,

“Our Extension office always went the extra mile to give me, and all of the Master Gardeners, the tools and education necessary to help our community’s gardening challenges.”

Patty Cassidy of Portland, Oregon, is a registered horticultural therapist with the American Horticultural Therapy Association. Since 2002, she also has been a Master Gardener. “My training has enhanced and deepened my horticultural and gardening skills that are very important aspects of being a competent and knowledgeable horticultural therapist,” says Cassidy.

THE NEXT 100 YEARS

As CES begins its next 100 years, accomplishing its mission will require contin-

CENTENNIAL CELEBRATIONS

Events have been held throughout the year to mark the 100th anniversary of the Cooperative Extension Service (CES). On a national level, an Extension Centennial Convocation was held in Washington, D.C., in May to commemorate the signing of the Smith-Lever Act, which officially established the CES.

Most states and many individual counties have recognized or are planning to celebrate the centennial with activities ranging from tree plantings to multi-day events that showcase 100 years of Extension activities.

Many states have set up links on their Extension program’s websites to share information, images, and videos of their centennial events. To find Extension offices and Master Gardener programs in your area, check out the state-by-state list on the American Horticultural Society’s website at www.ahs.org/gardening-resources/master-gardeners. —R.P.

ued adaptability. Expanding on successes such as the Master Gardener program will be essential, as will the increased use of electronic communications to extend the reach of national, state, and local resources, notes Jimmy C. Henning, chair of the Extension Committee on Organization and Policy, which governs the Cooperative Extension System.

Henning cites eXtension.org as a significant part of keeping CES accessible to the largest audience possible. This learning network delivers training and solutions to problems from experts across the country. “It is a way for communities or individuals to come together and identify the best of the best resources, create regional or system-wide resources, and share expertise,” explains Henning. Focus areas range from energy and disaster issues to health and nutrition, and of course, horticulture. “The consumer horticulture community in eXtension is especially robust and active,” says Henning. Check it out at www.extension.org/horticulture.

Rita Pelczar is a contributing editor for The American Gardener.

Satisfying Your Plants' Thirst

by Rita Pelczar

WATERING IS one of the most important chores for establishing and maintaining a successful garden; it can make the difference between healthy, thriving plants and those that struggle to survive. Of course, water is also a precious resource that should be used accordingly. There are lots of tools ready to efficiently deliver water to your plants. The types and age of plants, size of your garden, location of your faucets, and other factors will determine which tools are best for you.

WATERING CANS

Using a watering can, while a bit labor intensive, is sometimes the best way to go, particularly for indoor plants or spot watering outdoors. Things to look for in a good watering can are size and shape, a comfortable handle that provides good balance, a spout that is long enough to reach your plants, and possibly a rose that delivers the water stream you desire.

If storage space is tight, consider **OXO Good Grips Pour and Store Watering Can**. Its spout rotates so that it fits snugly against the body. It has a soft, non-slip grip and a removable rose that delivers a very fine stream, perfect for seedlings. It comes in two sizes, two-gallon for outdoor use, and three-quart for indoors. www.oxo.com



OXO Good Grips Pour and Store Watering Can



Four-Port Deluxe Rain Barrel

Dramm's 7-Liter Watering Can is lightweight and has a decent capacity for small jobs like spot watering, keeping seedbeds moist, or filling bird baths. Made from injection-molded plastic, it comes in six bright colors and carries a lifetime guarantee. Its removable plastic rose distributes a gentle stream of water. www.dramm.com

RAIN BARRELS

I'm a big fan of rain barrels—I have several, strategically placed at the corners of my garage and house where I don't have a convenient faucet. However, one problem that I've experienced with my barrels is the placement of the faucet; it's typically about 12 inches above the base of the barrel, which means there is a significant reservoir of inaccessible water.

The **Four-Port Deluxe Rain Barrel** from Gardener's Supply Company has a faucet that is only four inches above the base, providing access to much more of the collected water. In order to pour water from the barrel directly into a bucket, the barrel needs to be raised. This is easily

accomplished with a rain barrel stand, either purchased or homemade. Raising the barrel also increases water pressure.

This barrel holds 75 gallons of water and has four ports so you can attach several hoses and/or link other barrels; it comes with caps to seal those ports you don't need. A removable screen prevents debris from entering into the barrel and excess water is easily diverted through the overflow outlet. www.gardeners.com

HOSES AND NOZZLES

Good hoses are usually the most efficient way to carry a lot of water from a rain barrel or a faucet to your gardens. Maintaining your hoses is important to prevent wasting water through leaks in the hose itself or leaky connections, so it's a good idea to check your hoses each spring and replace the rubber washers.

If you find that winding up the hose after use is a drag, try the **Lightweight Self-Recoiling SpringHose™** from



Lightweight Self-Recoiling Springhose

Plow & Hearth. The polyurethane hose, which comes in ½-inch and ¾-inch diameters and 50- or 75-foot lengths, extends and contracts as needed, without kinks. It's a particularly good fit for smaller gardens, where hose storage can be a problem. www.plowhearth.com

For efficient water delivery, it's hard to beat the **Leak Free Water System** by Nelson. The starter kit, carried by many garden centers and most large home improvement stores, includes a faucet-to-hose connector, a sturdy 50-foot hose, and an adjustable spray nozzle. The watertight connections snap easily into place with a little push and turn.

A good nozzle delivers the water in a pattern and at a volume suited to your plants. For watering in newly sown seeds, the **One Touch Fan Nozzle** from Dramm is ideal—it provides a gentle shower in a wide band. A simple thumb switch turns it on or off. The hose connector is heavy duty and will last for years as long as you replace the rubber washers once in a while.

Gardener's Supply Company offers several nozzles, but I particularly like its **Push-Button Nozzle**, a simple, sturdy aluminum and brass device with a cushioned grip that delivers a spray with a pattern that adjusts from wide to pinpoint.

If you prefer more variety in patterns, try the **Easy Squeeze Spray Nozzle** also from Gardener's Supply. Its seven spray patterns range from mist to soaker. A plastic squeeze grip turns the spray on, and it can be locked into position for a continuous spray.

SPECIFIC NEEDS

For watering a large vegetable garden, a soaker or trickle irrigation system saves time and minimizes evaporation and runoff. In my vegetable garden, I use the **Garden Row Snip-n-Drip Soaker System** from Gardener's Supply. Set up is easy, and you can fashion it to suit the length and width of your rows or beds. All you need is a pair of scissors to cut the hoses to fit. Each set comes with 25 feet of garden hose, 100 feet of soaker hose, and all the connectors you need.

Last spring I planted a fairly large zelkova in my front yard and wanted to be sure it received sufficient moisture. The **Deep Root Waterer** from Rittenhouse did the job easily. The tool is a



Deep Root Waterer



Garden Row Snip-n-Drip Soaker System

thin pipe with a hole at the bottom. It goes into the soil to a six- to 18-inch depth within a plant's dripline. Above ground, you attach a hose at low volume so water seeps out of the hole at the bottom of the tool for up to 30 minutes. Every once in a while, you move the tool 12 to 24 inches throughout the dripline, depending on the needs of the tree or shrub. www.rittenhouse.ca

Plants that are correctly watered are less susceptible to damage from pests, diseases, and environmental stress. Knowing how and when to water takes some practice, but tools like these help make the job easier.

Rita Pelczar is a contributing editor for The American Gardener.

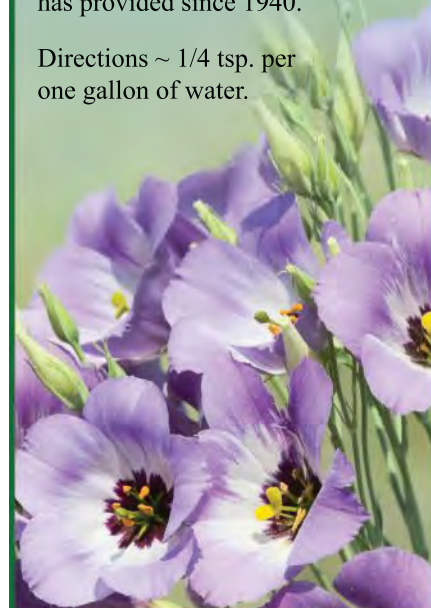
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REGIONAL HAPPENINGS

Horticultural Events from Around the Country

NORTHEAST

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

THROUGH NOV. 26. **17th Annual Exhibition.** American Society of Botanical Artists at The Horticultural Society of New York. New York, New York. (866) 691-9080. www.asba-art.org/exhibitions.

RAP OCT. 2. **Common Mushrooms of Coastal Maine.** Lecture. Coastal Maine Botanical Gardens. Boothbay, Maine. (207) 633-4333. www.mainegardens.org.

RAP OCT. 2–26. **Kiku: The Art of the Japanese Garden.** Exhibition. The New York Botanical Garden. Bronx, New York. (718) 817-8700. www.nybg.org.

RAP OCT. 18–NOV. 9. **Mum Show.** Buffalo and Erie County Botanical Gardens. Buffalo, New York. (716) 827-1584. www.buffalogardens.com.

RAP OCT. 19. **Basic Felling Techniques.** Tree workshop. The Arnold Arboretum of Harvard University. Boston, Massachusetts. (617) 384-5209. www.arboretum.harvard.edu.

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.

RAP OCT. 19 & 26. **Writing Nature and the Environment.** Workshop on nature appreciation through literature. Landis Arboretum. Esperance, New York. (518) 875-6935. www.landisarboretum.org.

RAP OCT. 31–NOV. 2. **Orchid Show and Sale.** Tower Hill Botanic Garden. Boylston, Massachusetts. (508) 869-6111. www.towerhillbg.org.

Looking ahead

RAP NOV. 2. **Pruning Practices and Winter Interest.** Guided tour. Blithewold Mansion, Gardens & Arboretum. Bristol, Rhode Island. (401) 253-2707. www.blithewold.org.

Florida Festival Celebrates Fall Migrations and Autumn Blooms

FROM OCTOBER 3 through 5, during the flurry of fall bird migrations, the Lake County Department of Economic Development and Tourism will host a showcase of the unique birds and wildflowers native to central Florida at its 3rd Annual Wings and Wildflowers Festival. The event will be based at Venetian Gardens in Leesburg, where exhibits, talks, and children's activities will take place. Additionally, numerous field trips will be offered to nearby preserves and natural areas, led by ornithologists and native-plant experts.

Some highlights include a rare plant hunt in the Ocala National Forest with the Florida Forest Service, and a hike through a wildflower meadow with the Florida Bat Conservancy. Greg Miller, the inspiration behind the star-studded birdwatching-themed film, *The Big Year* (2011), Stacy Tornio, the editor of *Birds & Blooms* magazine, and Roger Hammer, a renowned naturalist with the Fairchild Tropical Botanic Garden in Coral Gables, Florida, will give keynote presentations.

"Besides meeting all the gardening enthusiasts, I love being at the 'Meet the Experts' night and getting a chance to talk to all the celebrity speakers for one evening," says Teresa Watkins, an Orlando, Florida-based environmental consultant who will present on butterflies in the garden at the festival. "It's a great opportunity for nature lovers to meet their favorite writers and personalities."

For more information about the festival, visit www.wingsandwildflowers.com. ☞

—Sarah Miller, Editorial Intern

RAP NOV. 8. **Propagating Your Own Woody Plants.** Workshop. Berkshire Botanical Garden. Stockbridge, Massachusetts. (413) 298-3926. www.berkshirebotanical.org.

MID-ATLANTIC

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

RAP OCT. 4. **Install and Maintain a Native Plant Meadow.** Lecture. Mt. Cuba Center. Hockessin, Delaware. (302) 239-4244. www.mtcubacenter.org.

OCT. 7. **Agents of Change—Botanic Gardens in the 21st Century.** Symposium. Smithsonian National Museum of Natural History. Washington, D.C. www.ntbg.org/symposium.

RAP OCT. 11 & 12. **Rose Fest.** Lewis Ginter Botanical Garden. Richmond, Virginia. (804) 262-9887. www.lewisginter.org.

OCT. 13. **The Botany, History, and Future of Chrysanthemums.** Lecture. United States Botanic Garden. Washington, D.C. (202) 225-8333. www.usbg.gov.

RAP OCT. 15. **Historic Landscapes Symposium.** Winterthur Museum, Garden, & Library. Winterthur, Delaware. (302) 888-4600. www.winterthur.org.

OCT. 17. **Perennial Plant Conference.** Scott Arboretum of Swarthmore College. Swarthmore, Pennsylvania. (610) 328-8023. www.perennialplantconference.org.

OCT. 18. **Apple Tasting.** Lecture and tasting apple varieties. Jefferson's Tufton Farm. Monticello. Charlottesville, Virginia. (434) 984-9800. www.monticello.org.

RAP OCT. 18 & 19. **National Capital Area Flower Show.** National Capital Area Garden Clubs, Inc. United States National Arboretum. Washington, D.C. (202) 245-4523. www.usna.usda.gov.

RAP OCT. 19. **Fall Harvest Festival.** Bartram's Garden. Philadelphia, Pennsylvania. (215) 729-5281. www.bartramsgarden.org.

Looking ahead

RAP NOV. 8. **Conifer Identification Workshop.** State Arboretum of Virginia. Boyce, Virginia. (540) 837-1758. www.blandy.virginia.edu.

SOUTHEAST

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

THROUGH NOV. 2. **Following in the Bartrams' Footsteps.** Exhibition. American Society of Botanical Artists. North Carolina Botanical Garden, The University of North Carolina at Chapel Hill. Chapel Hill, North Carolina. (919) 962-0522. www.asba-art.org/exhibitions/bartram.

RAP OCT. 11. **Dividing Perennials Workshop.** Yew Dell Botanical Gardens. Crestwood, Kentucky. (502) 241-4788. www.yewdellgardens.org.

OCT. 18. **Make Your Own Garden Trough.** Workshop. Callaway Gardens. Pine Mountain, Georgia. (800) 225-5292. www.callawaygardens.com.

OCT. 22-24. **PLANET 2014 Green Industry Conference.** Louisville Marriott Downtown. Louisville, Kentucky. (703) 736-9666. www.landcarenetwork.org.

OCT. 25 & 26. **Fall Plant Sale, Open House, and Orchid Show.** Kanapaha Botanical Gardens. Gainesville, Florida. (386) 454-2147. www.kanapaha.org.

OCT. 25-29. **Southern Region International Plant Propagator's Society Conference.** Crowne Plaza Hickory. Hickory, North Carolina. (803) 743-4284. <http://ipps-srna.org>.

NORTH CENTRAL

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

RAP OCT. 10-12. **Fall Bulb Festival.** Chicago Botanic Garden. Glencoe, Illinois. (847) 835-5440. www.chicagobotanic.org.

RAP OCT. 15. **Architecture in the Garden.** Behind the scenes tour and lecture. Reiman Gardens at Iowa State University. Ames, Iowa. (515) 294-2710. www.reimangardens.org.

RAP OCT. 18. **Woody Plant Propagation.** Workshop. The Holden Arboretum. Kirtland, Ohio. (440) 946-4400. www.holdenarb.org.

RAP OCT. 18 & 19. **Midwest Fruit Explorers Show & Sale.** Chicago Botanic Garden. Glencoe, Illinois. (847) 835-5440. www.chicagobotanic.org.

OCT. 25. **Fall Festival.** Indiana Gourd Society. Lake County Fairground. Crown Point, Indiana. (219) 767-2901. www.indianagourdsociety.org.

OCT. 30-NOV. 2. **Independent Plant Breeders Conference.** Amway Grand Plaza. Grand Rapids, Michigan. (517) 355-5191. www.plant-quest.blogspot.com/2013/12/2014-independent-plant-breeders.html.

Looking ahead

RAP NOV. 1. **Fall Symposium.** Rotary Bo-

Greater Des Moines Botanical Garden Opens Outdoor Gardens

THE OUTDOOR GARDENS at the Greater Des Moines Botanical Garden in Des Moines, Iowa, will briefly open for the first time in October to give the public



Visitors get a glimpse of the Des Moines skyline near the entrance to the new botanical garden.

a glimpse of the garden's progress since breaking ground early last year. Nearly half of the 14-acre gardens along the Des Moines River has been completed, a major milestone in this multi-million dollar renovation project.

"There are over 600 new taxa in the outdoor gardens," says Horticulture Manager Kelly Norris, "including trees, shrubs, perennials, and bulbs from around the world, with a strong representation of Midwestern native plants and cultivars."

A shaded promenade of an allée and a belvedere overlooking the river with a view of the downtown Des Moines sky-

line are a few of the exterior garden highlights. The first seven acres also includes a rose garden, formal lawn, water garden, and conifer and gravel garden.

From October 2 through 4, visitors can take guided tours and attend a Saturday symposium on modern plant exploration, featuring plant hunter *extraordinaire* Dan Hinkley as the keynote speaker. After the weekend, the outdoor gardens will close again until spring; however, visitors may still explore the plant displays within the conservatory. Visit www.dmbotanicalgarden.com for more information.

"Lost Hollow" Unearthed at Daniel Stowe Botanical Garden

ON OCTOBER 18, Lost Hollow: The Kimbrell Children's Garden opens at the Daniel Stowe Botanical Garden in Belmont, North Carolina. This adventurous space, imagined by landscape designer W. Gary Smith, is reminiscent of the dark, romantic folk tales of The Brothers Grimm. Amid a sophisticated plant palette, this garden's features include a deconstructed tower, throne, and ruins that contribute to its eerie, medieval atmosphere.



Moon Keep observation tower at Lost Hollow

"A lot of the great children's stories have a dark side. They're engaging at all levels of the human psyche," says Smith. "By including some of the melancholy along with all of the brightness, the garden is more memorable, meaningful, and relevant."

When designing the garden, Smith kept in mind teenagers and adults, who also "need places that stimulate the imagination." However, those who want to follow a well-defined storyline will not find it here. "You have to make up your own story and engage your own imagination. If the story is too obvious, it's just not interesting," says Smith. "On your first visit, you're aware that something's going on, but you're not exactly sure what, so then you want to come back and experience it again." For more information about the Daniel Stowe Botanical Garden, visit www.dsbg.org.

—Sarah Miller, Editorial Intern

tanical Gardens. Janesville, Wisconsin. (608) 752-3885. www.rotarybotanicalgardens.org.

RAP NOV. 18 & 19. **Urban Tree Conference.** Morton Arboretum. Lisle, Illinois. (630) 968-0074. www.mortonarb.org.

SOUTH CENTRAL

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

OCT. 4. **Autumn Plant Sale and Market.** Mercer Arboretum and Botanic Gardens. Humble, Texas. (281) 443-8731. www.hcp4.net/mercer.

RAP OCT. 4. **Fall Festival and Run.** Clark Gardens Botanical Park. Weatherford, Texas. (940) 682-4856. www.clarkgardens.com.

RAP OCT. 4 & 5. **Cacti and Succulent Society Show and Sale.** Tulsa Garden Center. Tulsa, Oklahoma. (918) 746-5125. www.tulsagardencentral.com.

RAP OCT. 6. **Shade Gardening: Orchids and Ferns.** Lecture. Burden Horticulture Society at the Burden Center. Baton Rouge, Louisiana. (225) 763-3990. www.lsuagcenter.com/burden.

RAP OCT. 7. **Kinder Garden: Creepy Crawlies in the Garden.** Children's workshop. Longue Vue House & Gardens. New Orleans, Louisiana. (504) 488-5488. www.longuevue.com.

RAP OCT. 11 & 12. **Fall Native Plant Sale.** Lady Bird Johnson Wildflower Center. Austin, Texas. (512) 232-0200. www.wildflower.org.

OCT. 15. **Fall National Convention and Rose Show.** American Rose Society. Tyler Rose Garden. Tyler, Texas. (318) 938-5402. www.rose.org.

OCT. 16-19. **Texas Rose Festival.** Tyler, Texas. (903) 597-3130. www.texasrosefestival.net.

RAP OCT. 18. **Family Nature Crafts.** Workshop. Botanica, The Wichita Gardens. Wichita, Kansas. (316) 264-0448. www.botanica.org.

RAP OCT. 23. **Botanical Chic! Seasonal Floral Design.** Workshop. Myriad Botanical Gardens. Oklahoma City, Oklahoma. (405) 297-3995. www.myriadgardens.org.

SOUTHWEST

AZ, CO, NM, UT

RAP OCT. 4. **Containers for Fall Gardens.** Workshop. Red Butte Garden and Arboretum at the University of Utah. Salt Lake City, Utah. (801) 585-0556. www.redbuttegarden.org.

RAP OCT. 6. **Eating, Loving, and Learning in the Santa Fe Garden.** Kitchen garden

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

RAP OCT. 10. **Building Your Own Greenhouse.** Workshop. Denver Botanic Gardens. Denver, Colorado. (720) 865-3500. www.botanicgardens.org.

RAP OCT. 10-12. **Bi-Annual Plant Sale.** Desert Botanical Garden. Phoenix, Arizona. (480) 941-1225. www.dbg.org.

OCT. 11 & 12. **Cider Festival.** ABQ BioPark Botanic Garden. Albuquerque, New Mexico. (505) 768-2000. www.cabq.gov/biopark/garden.

RAP OCT. 15. **The Amazing Honeybee: Pollination and Beyond.** Lecture. The Hudson Gardens and Event Center. Littleton, Colorado. (303) 797-8565. www.hudsongardens.org.

RAP OCT. 30. **Best Bulbs for Desert Gardens.** Lecture. Desert Botanical Garden. Phoenix, Arizona. (480) 941-1225. www.dbg.org.

Looking ahead

NOV. 1 & 2. **Orchid Show.** Red Butte Garden and Arboretum at the University of Utah. Salt Lake City, Utah. (801) 585-0556. www.redbuttegarden.org.

NOV. 21-24. **American Society of Landscape Architects Annual Meeting & Expo.** Colorado Convention Center. Denver, Colorado. (866) 229-2386. www.aslameeting2014.com.

WEST COAST

CA, HI, NV

RAP THROUGH JAN. 4, 2015. **Wicked Plants.** Exhibit. Origen Museum at Springs Preserve. Las Vegas, Nevada. (702) 822-7700. www.springspreserve.org.

RAP OCT. 1-DEC. 31. **Annual Cloud Forest Bloom.** San Francisco Botanical Garden at Strybing Arboretum. San Francisco, California. (415) 661-1316. www.sfbotanicalgarden.org.

RAP OCT. 11. **Plant Sale.** San Francisco Botanical Garden at Strybing Arboretum. San Francisco, California. (415) 661-1316. www.sfbotanicalgarden.org.

RAP OCT. 11 & 25. **Plant Sale.** UC Davis Arboretum. Davis, California. (530) 752-4880. www.arboretum.ucdavis.edu.

RAP OCT. 21. **Garden Design: Demystified!** Lecture. Descanso Gardens. La Cañada Flintridge, California. (818) 949-4200. www.descansogardens.org.

RAP OCT. 25 & 26. **Cactus and Succulent Show and Sale.** San Diego Botanic Garden.

Encinitas, California. (760) 436-3036. www.sdbgarden.org.

Looking ahead

RAP NOV. 7. **Planting and Pruning for Vigorous Trees.** Lecture. Lyon Arboretum. Honolulu, Hawaii. (808) 988-0456. www.hawaii.edu/lyonarboretum.

RAP NOV. 8. **End-of-the-Season Plant Sale.** San Francisco Botanical Garden at Strybing Arboretum. San Francisco, California. (415) 661-1316. www.sfbotanicalgarden.org.

NORTHWEST

AK, ID, MT, OR, WA, WY

RAP OCT. 4. **Worm Bins, Compost Bins, and Has-beens.** Vermicomposting workshop. Alaska Botanical Garden. Anchorage, Alaska. (907) 770-3692. www.alaskabg.org.

RAP OCT. 4 & 5. **Fall Harvest Festival.** Idaho Botanical Garden. Boise, Idaho. (208) 343-8674. www.idahobotanicalgarden.org.

RAP OCT. 10-12 & 17-19. **Annual Fall Tree and Shrub Sale.** Kruckeberg Botanic Garden. Shoreline, Washington. (206) 546-1281. www.kruckeberg.org.

RAP OCT. 11. **Fall Color Beyond Maples.** Tour. Hoyt Arboretum. Portland, Oregon. (503) 865-8733. www.hoytarboretum.org.

RAP OCT. 19. **Fall Bird Walk.** Mount Pisgah Arboretum. Eugene, Oregon. (541) 747-3817. www.mountpisgaharboretum.com.

RAP OCT. 19. **Mushrooms of Leach Botanical Garden.** Guided tour. Leach Botanical Garden. Portland, Oregon. (503) 823-9503. www.leachgarden.org.

RAP OCT. 22. **Collecting Seed and Plants in the Mountains of Northern Vietnam.** Lecture. Bellevue Botanical Garden. Bellevue, Washington. (425) 451-3755. www.bellevuebotanical.org.

CANADA

RAP OCT. 7. **Mad About Japanese Maples.** Lecture. Toronto Botanical Garden. Toronto, Ontario. (416) 397-1341. www.torontobotanicalgarden.ca.

OCT. 18 & 19. **Orchidfête 2014: International Orchid Show.** Cégep André-Laurendeau. Lasalle, Québec. (514) 684-3904. www.ecosorchids.ca/show.

OCT. 22 & 23. **Garden & Floral Expo 2014.** Trade show. Toronto Congress Centre. Toronto, Ontario. (416) 848-4141. www.loexpo.ca.



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The American Horticultural Society thanks the following sponsors for making the 2014 National Children & Youth Garden Symposium in Columbus, Ohio, a success.



Helianthus angustifolius: A Glow in the Autumn Light

by Carolyn Singer

SOON AFTER the autumn equinox, native landscapes from Kansas throughout the central and eastern United States begin to glow with the late-blooming perennial, swamp or narrow-leaved sunflower (*Helianthus angustifolius*, USDA Hardiness Zones 6–9, AHS Heat Zones 9–4). And although I live in California—out of its native range—it puts on a yearly show in my garden, too.

Swamp sunflower thrives in moist soils, its native habitat. But as long as it's grown in full sun, it is not fussy about soil types, handling sandy or clay loam and a pH range that runs from fairly acid to neutral. So it's no surprise this vigorous and drought-tolerant perennial will do well in the drier regions of the West and Southwest as long as it is irrigated during extended droughts.

A TALL PERENNIAL

In ideal conditions, swamp sunflower may grow to over six feet. If you would like it a bit more compact, prune the stems back about two feet in midsummer. The flowering habit will change, with longer secondary stems, but the autumn display of flowers will still be breathtaking. You can also easily root some of the cut stems to make more plants.

Drier soils curtail the growth; in full bloom it may not reach five feet. At this stage, the upper spread of the plant may be as much as four feet. Swamp sunflower is most attractive where it is given the space to arch as it comes into bloom.

SPECTACULAR FALL DISPLAY

For weeks throughout the summer, the narrow, dark green foliage of this perennial sunflower creates a lush, understated display. The leaves offer good coverage and no damage even when temperatures are over 100 degrees Fahrenheit in my garden.

As fall arrives, swamp sunflower bursts into bloom, a blaze of glowing color. No matter what the summer



The profuse and cheerful blossoms of swamp sunflower brighten autumn landscapes.

weather has been, this amazing sunflower reliably blossoms from mid-September into October, its three-inch-wide, golden-yellow flowers opening in profusion on slightly arching stems branching from a primary stalk.

Gardeners who grow swamp sunflower in moist, fertile soils may find its root system can eventually spread, crowding out other perennials. If this happens, however, it is easy to pull out. It has also been relatively deer-proof for me, although gardeners in other areas have reported minor damage when it is in bloom.

Sources

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

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

Swamp sunflower is a fall favorite for the gardens I design in the hot and dry summer climate in the Sierra foothills of northern California. In one small garden in the Gold Rush mining town of Grass Valley, I planted it along a white picket fence in a front yard. Each fall, passing drivers stop to enjoy the show, as the flowers spill through and reach above the fence for weeks. They often ask, "What is that flower?"

In addition to its beauty, what really sells me on swamp sunflower is the role it plays in providing a late-season feast for a variety of pollinators. Native bees and honeybees alike may be observed enjoying its pollen, fortifying themselves for the winter ahead.

Carolyn Singer is a garden columnist for The Union in Grass Valley, California. Her most recent book is The Seasoned Gardener (Garden Wisdom Press, 2012).



AMERICAN HORTICULTURAL SOCIETY

Members-Only SEED EXCHANGE

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TIPS FOR COLLECTING SEEDS TO SHARE

Depending on the seed type, there are several methods you can use to separate the seeds from the plant. Most garden seeds fall into one of the three following categories:

■ Many seeds, such as those that form in pods, remain on the plant for a long time after maturity. Harvest them after they have dried on the plant, or cut off stalks or stems and bring them in to dry before removing the seeds.

■ Seeds of many ornamental annuals, herbaceous perennials, and herbs scatter easily when ripe. They should be watched closely for maturity and picked on a dry day. Separate the seeds from the plant by running them through a screen or shaking them in a paper bag. Another method is to tie a ventilated paper bag around the flower heads to catch seeds as they scatter.

■ Seeds encased in a fleshy fruit, like tomatoes, need to be separated from the pulp. With fruits that have many seeds, you may need to scrape out the seedy section, add some water, and let the mix sit for a day or two. Then put the mixture in a strainer and run water through it until the seeds are clean. Spread the seeds out on a glass or glazed ceramic plate and let them dry. Large seeds need about a week to dry; smaller seeds are usually dry after four days. Store the seeds in a well-ventilated, cool, dry place.



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AMERICAN HORTICULTURAL SOCIETY

2015 SEED EXCHANGE

Look for the AHS 2015 Seed Exchange List on www.ahs.org in mid-January!

A list of available seeds will appear in the January/February 2015 issue of *The American Gardener*. The full list of available seeds with descriptions will be posted on the AHS website (www.ahs.org) in mid-January. **AHS members who donate seeds get first pick from the entire list of seeds.** To be notified when seed ordering opens and to stay up to date on other AHS activities, we suggest visiting the AHS website to subscribe to the free AHS e-newsletter.

If you would like to receive a paper copy of the seed exchange list, send a self-addressed, stamped, business-size envelope to 2015 AHS Seed Exchange List Request, 7931 East Boulevard Drive, Alexandria, VA 22308.

Please note: *Due to Federal regulations, the AHS can only accept seed donations from, and send seeds to, members living in the United States.*

If you have seeds you would like to donate to the 2015 Seed Exchange Program, here's what to do:

- Seeds must be cleaned and dried as thoroughly as possible before packaging. (See "Tips for Collecting Seeds" on the other side of this page.)
- Collect enough seeds of each variety to fill a minimum of 75 orders. For very small seeds, one order would be enough to fill the tip of a teaspoon; for large seeds, such as beans, it would be five to 10 seeds.
- Complete a Donor Information Sheet (below) for each type of seed donated. Photocopy as many sheets as needed.
- To help us with cross-referencing, also label each package of seeds with the common and botanical names of the plant.
- Mail seeds in a box or padded envelope marked **HAND CANCEL to: 2015 AHS Seed Exchange Program, 7931 East Boulevard Drive, Alexandria, VA 22308.**
- Seed donations must be postmarked by **November 15, 2014.** AHS members who have donated seeds according to these guidelines will receive first preference in getting their orders filled.

Due to insufficient supply or other reasons, not all donated seeds may appear in the catalog; these seeds are donated to nonprofit organizations and schools, upon request. If you would like to obtain seeds for your local school or organization, please contact us for availability.

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I appreciate the AHS's efforts to reduce paper usage by making the seed list available online, but I prefer to have a copy mailed to my home. I've enclosed a self-addressed, stamped, business-size envelope.

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Please write the common and botanical names of the plant and your name, city, and state on each package of seeds.

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