

The American GARDENER®

The Magazine of the American Horticultural Society

November / December 2020

**Agaves
for Small
Spaces**

Stunning Stems

**Propagating Woody
Plants By Layering**

**Health Benefits of
Gardening**



A person is shown from the back, using a long-handled Corona pruning shears to trim a bush with small blue flowers. The shears are silver with red grips and black adjustment buttons. The Corona logo is visible on the handle. The background is filled with green foliage and more blue flowers.

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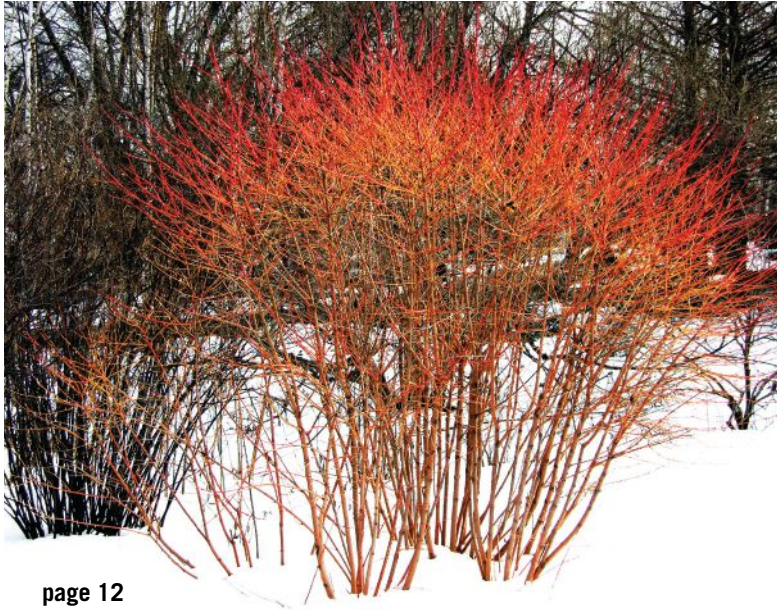
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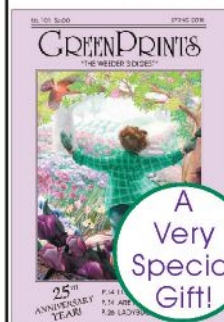
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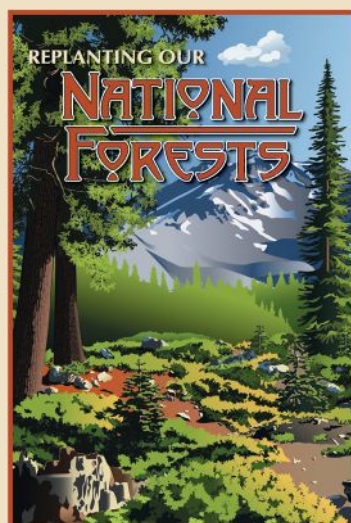


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NOTES FROM RIVER FARM

WE HAVE GREATLY appreciated the outreach and input we've received from many of you since we announced a possible merger and sale of our River Farm headquarters last month. The resounding sentiment has been that people are proud of the American Horticultural Society's century-long legacy, and greatly desire for us to find a solution that allows our mission—and the AHS name—to live on in the future with an increased national presence.

With that in mind, we're pleased to report that the Board has committed to maintaining AHS as an independent national nonprofit with its own Board, staff, and headquarters (to read the updated statement, visit the AHS website at www.ahsgardening.org). To that end, we are now working diligently to develop a more sustainable business model that will allow us to streamline expenses and continue operating as an independent national nonprofit organization for the next 100 years.

What can you expect? Our goal is to continue offering the varied programming and resources that you and other members across the United States already enjoy, plus add innovative new programming to help connect people and plants. As part of this new model, we are focused on building collaborative relationships with like-minded organizations who share our desire to create wonderful horticultural programming and other initiatives across the country. Our mission demands that we seek opportunities which expand geographic accessibility and programs that resonate with diverse communities across the United States from Alaska to Florida and from Maine to Hawaii.

In order to move forward with this renewed vision, we are dependent on the proceeds from the sale of River Farm. These funds would create a significant endowment that has been the missing link in our financial viability. Our hope is to find a buyer—a new steward—for River Farm who will work to preserve this beautiful and historic property that we all cherish.

Until such time as a suitable buyer is found, however, River Farm will continue normal operations while following COVID-19 health guidelines and respecting the safety of staff, volunteers, and members. At AHS, for now, it is also business as usual. Be assured that your member benefits will continue with only one slight change:

The January/February 2021 issue of *The American Gardener* will be available exclusively online through our digital magazine platform. This cost-savings measure, forced on us by loss of revenue during the pandemic, dovetails with the AHS's goal of environmental sustainability by saving paper, ink, and the fuel used in shipping those magazines to homes around the country. To learn how to access the January/February issue online, turn to page 10 or visit our website.

I understand that this news will come as a surprise to many of you. You can be assured that the decision to go down this road was a challenging one for our Board members, many of whom have been closely involved with this organization for decades. Our primary goal is that the mission and name of the American Horticultural Society live on, long into the future. We appreciate your support and look forward to providing you with important updates in the coming months.

Warmly,
Terry Hayes
AHS Board Chair



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CONTACT US

The American Gardener

7931 East Boulevard Drive

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EDITORIAL

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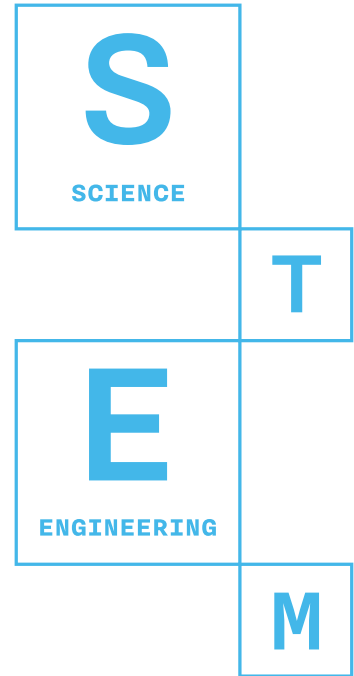
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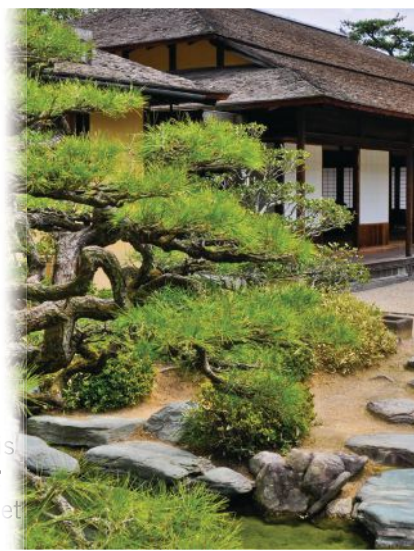
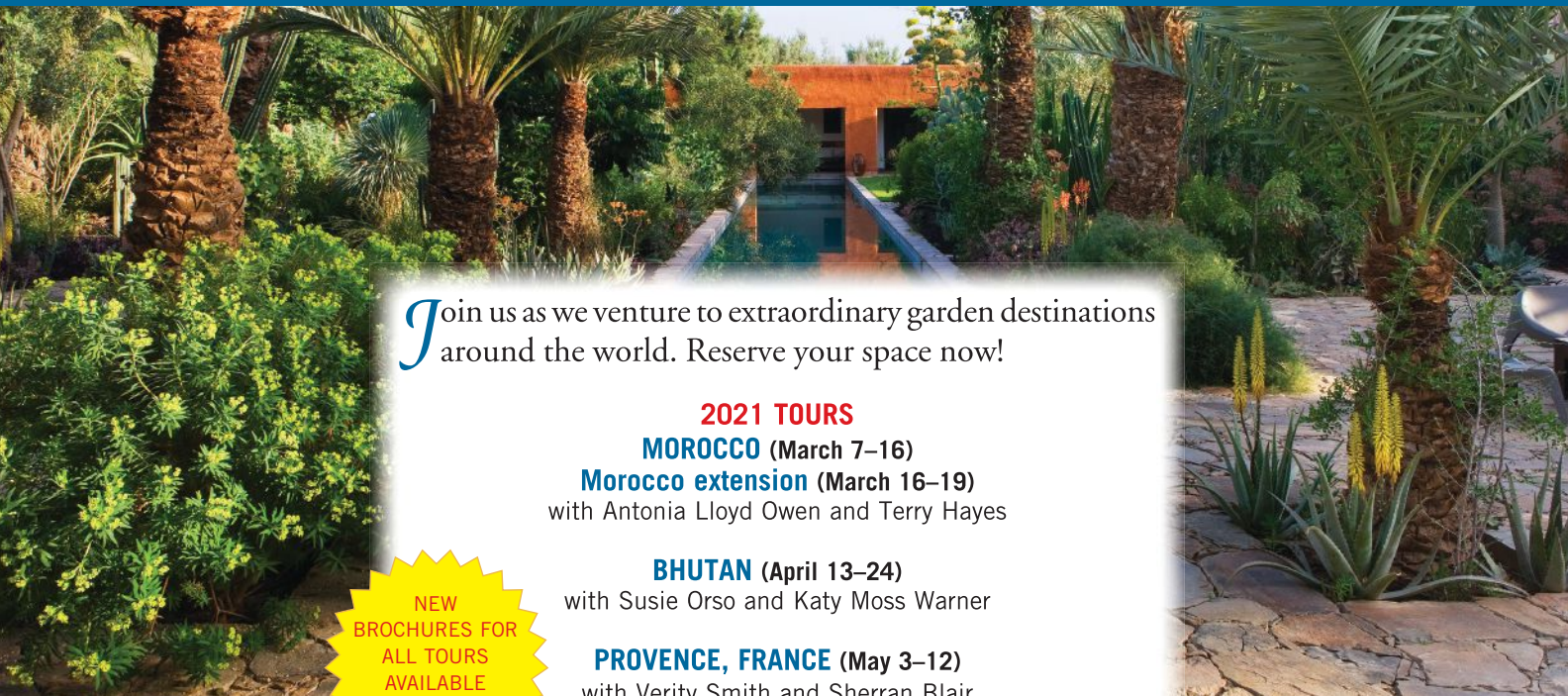
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RIVER FARM The AHS headquarters at River Farm is currently closed due to the COVID-19 pandemic. Please visit our website for updates. For information about events, rentals, and directions, visit the River Farm section of www.ahsgardening.org.

TRAVEL STUDY PROGRAM Visit spectacular private and public gardens around the world through the Society's acclaimed Travel Study Program. For information about upcoming trips, call (703) 768-5700 ext. 127, e-mail development@ahsgardening.org, or visit www.ahsgardening.org/travel.

WEBSITE: www.ahsgardening.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 members-only sections.

News from the AHS

November / December 2020

PROGRAMS • EVENTS • ANNOUNCEMENTS

TERRY HAYES IS NEW AHS BOARD CHAIR

IN SEPTEMBER, **Terry Hayes** was named the Chair of the American Horticultural Society's Board of Directors. Hayes, who has been an AHS Board member since 2016, lives in Woodinville, Washington, where she worked as an accountant for several years before following her passion for gardening to become proprietor of Dirty Hands Designs, which provides landscape design and coaching services to homeowners. Her experience with gardening nonprofits also includes stints as a board member for the Bellevue Botanical Garden Society and as a trustee for the Washington Garden Club. An AHS member since 2009, Hayes has visited gardens around the world as a regular participant in—and occasional host of—AHS Travel-Study programs.



AHS COSPONSORS NEW WEBINAR SERIES STARTING IN JANUARY

WE ARE very pleased to announce that the AHS is again partnering with New Directions in the American Landscape (NDAL) to cosponsor a series of professional and home gardener/educator virtual programs running from January to March 2021. Based in Glenside, Pennsylvania, NDAL is a non-profit organization focused on ecological design founded by landscape designer **Larry Weaner**.

The topics and featured speakers for the series are still being finalized, but among the presenters will be influential Dutch garden designer and plantsman **Piet Oudolf**; plant ecologist **Daniela Shebitz**, who's a professor at Kean University in Union, New Jersey; **Ujjii Davis**, a landscape architect with the SmithGroup in the greater Detroit area; and **Charles A. Birnbaum**, founder, president and CEO of The Cultural Landscape Foundation, headquartered in Washington, D.C.

For more details on the webinar series, please visit the NDAL website (www.ndal.org) or the AHS website (www.ahsgardening.org). Registration is open in November.

A 30% DISCOUNT FROM PRINCETON UNIVERSITY PRESS

AS THE holidays approach, give your friends—or yourself—the gift of books about gardening by taking advantage of a 30 percent discount available to AHS members through our arrangement with Princeton University Press (press.princeton.edu). Among the current books available from Princeton is *The Gardener's Botanical*, which *New York Times* writer Margaret Roach praised in a recent column. Just enter promo code **AHS30** at checkout to receive the discount.



BRENT AND BECKY'S BLOOMIN' BUCKS

PLANTING BULBS in autumn is a great way to ensure a colorful spring garden. And now, through Brent and Becky's Bulbs Bloomin' Bucks program, there's a way to enhance your garden while at the same time supporting the AHS's outreach programs.

A family-owned mail-order bulb supplier based in Gloucester, Virginia, Brent and Becky's Bulbs created Bloomin' Bucks, a progressive fundraising program that allows the company's customers to support nonprofits of their choice through a percentage of their purchases. When checking out, just mention that you would like your order to benefit the AHS, and 25 percent of the total amount you spend will go to the AHS. This

JANUARY/FEBRUARY 2021 ISSUE DIGITAL ONLY

As mentioned in "Notes from River Farm," the **January/February 2021 issue of this magazine will not be mailed to members, but will be available via our digital magazine platform.** This cost-saving measure, necessitated by revenue losses resulting from the pandemic, dovetails with the AHS's goal of environmental sustainability by saving paper, ink, and the fuel used in shipping those magazines to homes around the country.

If you have not previously accessed the online version of the magazine, instructions on how to create an AHS account and access the magazine will be available on the AHS website (www.ahsgardening.org) in January. You will also be able to access all past issues of the magazine.

Regular mailing of the printed copy of the magazine will resume with the March/April 2021 issue.

You can also view all past issues on our digital platform!



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AHS NATIONAL AND LOCAL EVENTS CALENDAR

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

Because guidelines for holding events are subject to change, please check our website for the most up-to-date information.

2021

JAN.–MAR. **Online Webinars hosted by New Directions in the American Landscape.** (AHS partner event)

MAR. 7–16 **The Enchanting Gardens and Allure of Morocco.** AHS Travel Study Program. <https://ahsgardening.org/gardening-programs/travel-study/the-enchanting-gardens-and-allure-of-morocco>

APR. 13–24 **Discovering the Beauty of Bhutan.** AHS Travel Study Program. <https://ahsgardening.org/gardening-programs/travel-study/discovering-the-beauty-of-bhutan-land-of-the-thunder-dragon>.

MAY 3–12 **Gardens of Provence.** AHS Travel Study Program. <https://ahsgardening.org/gardening-programs/travel-study/gardens-of-provence>.

JUNE 12–20 **Treasures of Japan.** AHS Travel Study Program. <https://ahsgardening.org/gardening-programs/travel-study/treasures-of-japan>.

JULY 7–9 **National Children & Youth Garden Symposium.** (Virtual event)

Access Member Benefits Online!

Did you know you can easily search back issues of *The American Gardener* through our website and even gain early access to the most current issue before your copy arrives in the mail? You'll also find discount codes with AHS partner companies, links to discounted events, and more as new benefits pop up! Here are a few things to do to help access your member benefits online.

1. Create a username and password. This can be done from any page on our website (www.ahsgardening.org) by clicking on the Member Login in the top right corner and following the instructions.
2. If you have already done this and still aren't able to access benefits, e-mail us at membership@ahsgardening.org and we'll troubleshoot the problem with you.
3. Make sure ahsgardening.org is marked as a **safe sender** within your e-mail provider to make ensure you are receiving timely communication from us or if you ever need to reset your password. If you still aren't getting our e-mails, please let us know and we can look into it further for you.

Gifts of Note

In addition to vital support through membership dues, the American Horticultural Society relies on grants, bequests, and other gifts to support its programs. We would like to thank the following donors for gifts received between August 27, 2019 and November 3, 2020.

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If you would like to support the AHS, please call Susan Klejt, Vice President of Development, at (703) 768-5700 ext. 127.

is a great way to ensure that you have everything you need for fall planting, while also supporting the AHS's work. To learn more about Bloomin' Bucks, and view Brent and Becky's catalog, visit www.brentandbeckysbulbs.com.

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VIRTUAL GARDEN PARTY RESCHEDULED FOR SPRING 2021

THE AHS's Virtual Garden Party, originally scheduled in November as a replacement for our annual fundraising gala, has been rescheduled for spring 2021. "By postponing the event until the spring, we are optimistic that in addition to a virtual component that gives us a tour of extraordinary gardens both here and abroad, we'll be able to feature a live program direct from River Farm," says **Laura Dowling**, chair of the Spring Garden Party.

Thank you to those who graciously purchased tickets for or sponsored the event; these will be honored for the rescheduled date. We'll be announcing additional details about the rescheduled event and a spring date soon.

News written by AHS Staff.



Legacy Gifts benefit you and the American Horticultural Society.

Bequests made through your estate either by will or trust can provide important benefits to both you and the Society:

- Maintain control over your current assets during your lifetime
- Reduce or eliminate estate taxes
- Change beneficiaries at any time
- Designate any amount
- Leave a legacy of a healthier, more beautiful America

We are honored to discuss ways to make a gift to AHS through your estate plan with you or your estate planning professional. Please contact Susan Klejst, Vice President of Development, at (703) 768-5700 ext. 127 or sklejst@ahsgardening.org



www.ahsgardening.org





Shrub dogwoods are at the top of the list for colorful stems. 'Midwinter Fire', above, is a spectacular selection of bloodtwig dogwood (*Cornus sanguinea*) featuring stems washed in hues of blended red and yellow tinted with pink. 'Flaviramea', opposite page, is a yellow-stemmed selection of redosier dogwood (*C. sericea*, syn. *C. stolonifera*) that grows five to six feet high and wide.



Stunning Stems

BY ED LYON

FINDING WAYS to create four-season interest is a rewarding challenge when you live, as I do, in the Midwest, where the landscape can be dominated by brown or white for nearly half the year. Here, verdant color from flower and foliage must surrender to the stripped back elegance of texture and form. Even in climes less stark in winter months, structure adds layers to the landscape. Fortunately, some woody plants possess stems that are stimulated into vibrancy with the onset of cool weather. The two power players are shrub dogwoods (*Cornus* spp.) and willows (*Salix* spp.), but a number of other options are also available. No winter landscape is complete without the vivid yellows, oranges, reds, and burgundies these plants offer. And you needn't worry that these deciduous shrubs and small trees are one-trick ponies: Many also provide interest during summer and fall with variegated or colorful foliage.

Add winter color and interest to the landscape with redb twig dogwoods, willows, and other shrubs with eye-catching stems.



In this Delaware garden designed by author and landscape designer Rick Darke, the brilliant stems of *Cornus sericea* 'Cardinal' provide a vivid contrast to the subdued tones of bluestar (*Amsonia hubrechtii*) left standing for winter interest.

DASHING DOGWOODS

Tough, adaptable, and readily available, shrub dogwoods have long been the queen of red stems. A wide range of species and cultivars shine in winter, but there is some regional variation in adaptability and performance among the different species. In particular, some may be susceptible to fungal diseases or suffer foliage scorch from intense sunlight in warmer regions of the country. Most commonly used are tatarian dogwood (*C. alba*, Zones 2–6/7), native to Eurasia; bloodtwig dogwood (*C. sanguinea*, Zones 4–7), native to Europe; and redosier dogwood (*C. sericea*, syn. *C. stolonifera*, Zones 2–7), native to much of eastern and central North America.

“In the Mid-Atlantic, stem color at first seems an easy feat, but keep in mind the heat of our summers can cause many northern tier selections to perform poorly,” says Dan Benarcik, horticulturist at Chanticleer garden in Pennsylvania. “The best

performers for us are the redosier dogwood (*C. sericea*) cultivars.” Todd Lasseigne, former president and CEO of Tulsa Botanic Garden declares that during his tenure in Oklahoma, “We could not grow the tatarian dogwood cultivars too well due to anthracnose.” Lasseigne, who is now ex-

ecutive director of Bellingrath Gardens and Home in Alabama, says that redosier dogwood is a better performer in the Plains states. The lesson here is that if shrub dogwoods have struggled in your landscape, it’s worth trying again with a species perhaps better adapted to your growing climate.

PRUNING AND CARE

Because younger stems tend to have the brightest coloration, shrubs with stunning stems benefit from annual “rejuvenation” pruning. This is a fairly simple process of cutting roughly one-third of the oldest stems to the ground, which forces the plant to flush out vigorous new stems the next growing season. Some species will also benefit from occasional renewal pruning, where all the stems are cut down entirely to within a few inches of the ground. They will flush out thicker, fuller, and shorter the following spring.

Both rejuvenation and renewal pruning should be done in winter, while these deciduous shrubs are dormant. A side benefit of this pruning may be that you can use some of the cut stems, along with other fall and winter plant material, to create attractive porch pot displays (for more on how to design porch pots, view “Seasonal Porch Pots,” published in the September/October 2019 issue of *The American Gardener*).

—E.L.



The young twigs of *Salix alba* var. *vitellina* turn yellow when temperatures drop, but those of this cultivar, 'Britzensis', commonly called coral bark willow, turn bright red.

WONDERFUL WILLOWS

If shrubby dogwoods are the queen of colored stems, then willows are a worthy consort. Willows are generally categorized as trees, but this huge genus ranges from the lofty weeping willow to dwarf arctic forms growing prone to the ground only inches high. There are shrub forms, but tree species may be coppiced—pruned back to the base—regularly to

produce a shrublike form that's better adapted to modest home landscapes. You may also find these in nurseries trained as a single-stem tree forms.

One of the best willows in my estimation—and one also recommended by Lasseigne—is white or coral bark willow (*S. alba* var. *vitellina* 'Britzensis', Zones 4–8). Its young, slender twigs turn brilliant red to red-orange in cool temperatures.

Sources

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Monrovia, Azusa, CA. www.monrovia.com. (Monrovia is a wholesale nursery, retail sources for its plants can be found on its website.)

Sooner Plant Farm, Park Hill, OK. www.soonerplantfarm.com.

Resources

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Coppicing this tree produces some of the most vibrantly colored stems in the winter landscape and keeps it to a manageable size. Lasseigne has been equally impressed with 'Chermesina' in Oklahoma with its brilliant scarlet stems. Benarcik lauds the hybrid 'Flame' and the popular 'Golden Curls' selection of Chinese willow (*S. matsudana*, Zones 5–8) that features vivid golden-green, twisted branches. Another Chinese willow selection is 'Tortuosa', sometimes called corkscrew willow. All of these lend themselves to annual coppicing to control their size and maintain vibrantly colored twigs.

MORE PLANTS WITH STRIKING STEMS

One of the more unusual and intriguing shrubs for twisted stems best appreciated in fresh fallen snow is contorted European filbert (*Corylus avellana* 'Contorta', Zones 4–8), also known as Harry Lauder's walking stick. Few plants create such dramatic silhouettes when the foliage drops. The foliage is contorted as well. Cultivars 'Red Dragon' and 'Red Majestic' have added red-purple foliage to the visual mix. This shrub is durable for most areas of the country; however, it is a Japanese beetle magnet. In the Northwest, another filbert is the choice of Janine Anderson, founder and principal of North Beach Landscapes in Port Townsend, Oregon. "There's something transcendent about the long pinkish purple catkins dangling from the bare stems of *C. maxima* 'Atropurpurea Super-



ba' (Zones 4–8) in the Winter Garden at Seattle's Washington Park Arboretum," she says. Although technically flowers rather than stems, the flowers elevate this purple filbert to deserve inclusion on a list of plants with stunning stems.

Until *Rhus typhina* 'Bailtiger' (Tiger Eyes®) exploded on the scene, sumacs (*Rhus* spp.) flew under the radar with their brief but spectacular fall foliage. However, many gardeners recognize that the coarse fuzzy stems of Tiger Eyes® can be pruned into interesting forms. "Tiger Eyes® sumac (Zones 4–8) is a favorite of mine," says Carol Heffernan, founding principal of Heffernan Landscape Design in Chicago, Illinois. "I like them alone, as a specimen, or in a little colony that adds a striking presence. It can easily step into the role of a little tree. The delicate, feathery foliage really lights up a garden, and the fall color is always dependably stunning."

Top left: The twisted branches of Harry Lauder's walking stick are best seen in winter after the leaves have dropped. **Bottom left:** The young branches of Tiger Eyes sumac, shown here in fall color, are covered with reddish fuzz.

Opposite: The red stems of 'Sango Kaku' Japanese maple are especially striking in spring when contrasted against its emerging new leaves.

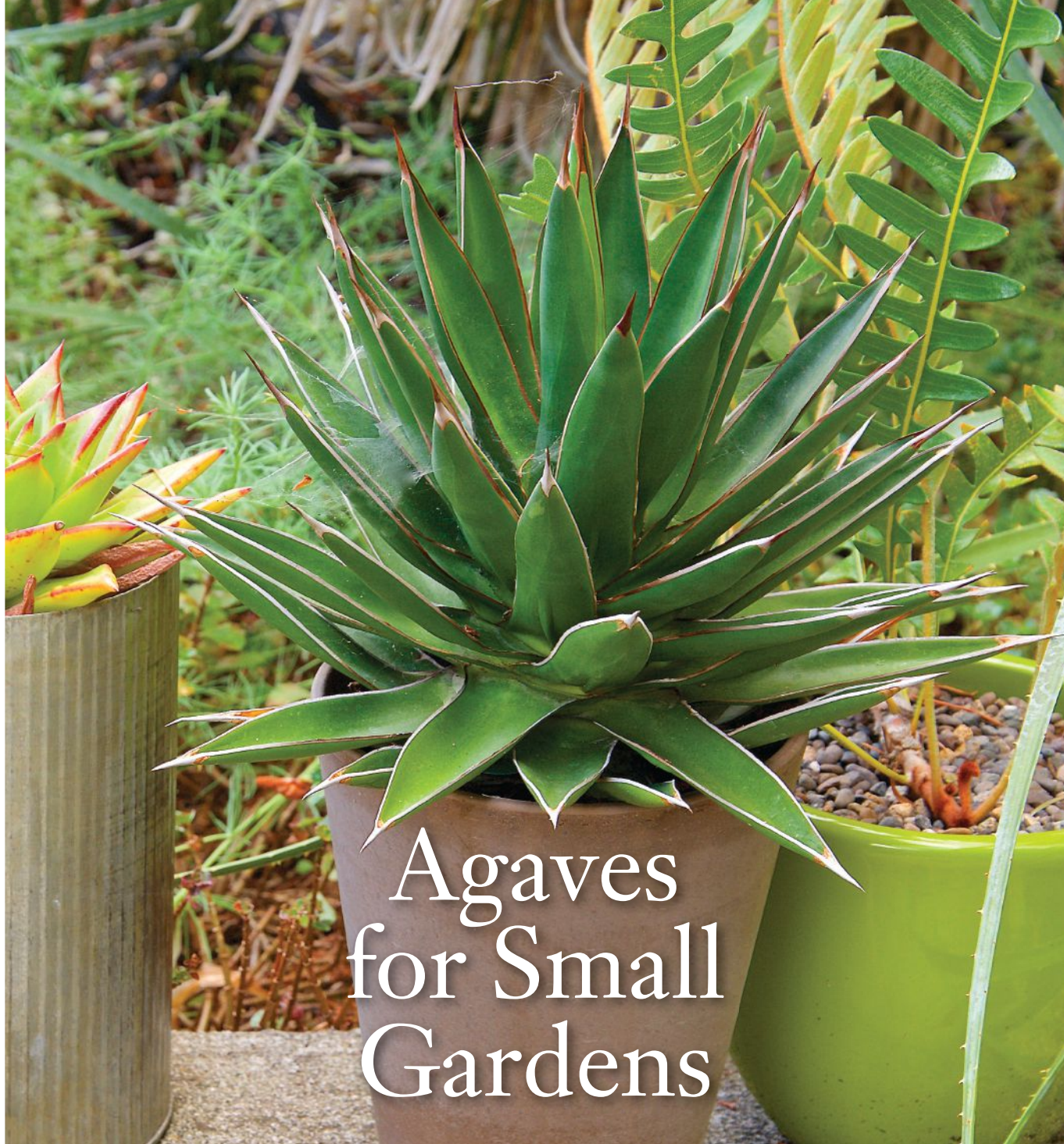


Maples (*Acer* spp.) are another example of common trees with small-scale options that fit home landscapes, including some offering exceptional stem color and texture. Benarcik lauds Japanese maple (*A. palmatum*, Zones 6–8) cultivar 'Sango Kaku' for its chartreuse foliage and stems, which he says are "a proven warm red color so useful in our regional winter landscapes." Although Japanese maples may not be hardy in the ground for those in Zone 5 and colder, they adapt well to containers that can be wheeled into an unheated garage that doesn't drop below zero in the winter.

I hope this article inspires you to consider a new aesthetic focusing on color, texture, and form that will add interest to your garden and enrich the senses every season. 🍂

Ed Lyon is the director of Reiman Gardens in Ames, Iowa. He is the author of Growing the Midwest Garden (Timber Press, 2016).





Agaves for Small Gardens

Many small agave selections are well suited for smaller garden sites and also adapt surprisingly well to cultivation out of their native Southwest.

BY MARY IRISH

TWO TRENDS in American gardening are causing a considerable adjustment in our landscapes and plant choices: increasingly drought-prone conditions and ever smaller gardening spaces. The convergence of these two trends has gardeners—and plant developers—on the hunt for new plants that can withstand dry conditions yet offer

multi-season interest on a scale suited to more compact gardens.

This trend has increased the interest in agaves for their range of color, textural contrast, and exquisite symmetry

Growing only to three feet tall and wide, *Agave ocahui* is well suited for a container, as seen here in an Oregon garden designed by Lori Bohl.

in combination with low maintenance, drought tolerance and beauty. However, many gardeners with only a patio or small yard turn away from these plants either because they think they are not hardy, or because they mistakenly believe the mighty giants, like the spectacular five-foot-tall blue agave (*Agave americana*), are their only choices. Fortunately

there are many smaller agave species, hybrids, and selections that are well suited to smaller-scale gardens—and some are not armed like warriors.

There are three strategies to keep in mind when selecting agaves for small spaces. The first is to focus on those species or selections that are inherently small—for the purposes of this article I consider small to be under three feet high. The second is to choose plants whose armament—terminal spines and marginal teeth—is either absent or tiny and soft. The third strategy is to grow agaves in containers that are large enough to allow the plant to thrive but small enough to restrict its ultimate size.

DIMINUTIVE SPECIES

The tiniest of all agaves is *A. toumeyana* ssp. *bella*. Rarely over six inches tall and wide, this central Arizona native has dark green leaves marked with white and accented on the margin by curled white filaments. Despite its size, this species is hardy to at least zero degrees Fahrenheit (F). Two other tiny agaves, *A. parviflora* and *A. polianthiflora*, are virtually indistinguishable from the former unless you are able to compare their flowers.



An ideal container specimen, *Agave victoriae-reginae* is prized for its slow growth habit and the geometric precision of its densely clustered rosette of leaves.

AN OVERVIEW OF AGAVES

The genus *Agave* is composed of about 200 to 250 species that are native to arid regions in the western United States south through Mexico, Central America, and the West Indies. Along with yuccas, agaves are members of the agave or century plant family (Agavaceae). They commonly grow in dry hillsides, deserts, arid plains, forests, and coastal plains.

Perhaps the most distinctive feature of agaves is their rosette of rigid, fibrous, and often sharply-toothed leaves. Designed for water storage, the leaves live 12 to 15 years on average, and it is not uncommon for them to remain on a plant for its entire life.

Another adaptation to dry climates is the agaves' root system; the shallow-growing, wide-spreading roots are very fine and die off when soil water levels are low. Then, when it rains, they regenerate quickly to make the most of even the slightest soil moisture.

All species of *Agave* are monocarpic, meaning they only bloom once in their life, then die. In agaves that send out root suckers (pups), only the rosette that flowered will die. Some species die as they flower, others take years to fall decrepit. When they do flower, agave inflorescences are very tall, usually 10 times the height of the plant.

Bats are important pollinators, as well as bees, wasps, moths, and beetles. —M.I.

The arresting selection 'Desert Diamond' is a sport of the equally stunning Kishoo Kan. Both these miniature jewels grow to 15 inches tall. Wide, well-armed maroon teeth contrast sharply with the spatulate blue-green leaves marked with white. Both are hardy to about 25 degrees F.

One of the most vibrant small agaves is *A. victoriae-reginae*, well known for its tight, crowded rosette composed of thick, deeply keeled, dark green leaves variously lined with white. The leaves have no teeth but end in a pair of short, black spines. This Mexican species is cold hardy to zero degrees F. A number of yellow-variegated selections, including 'Golden Princess', generally stay even smaller than the species.

A. victoriae-reginae has hybridized freely with *A. scabra* to form a hybrid group that is sometimes listed under the name *A. ferdinandand-regis*. The selection 'Sharkskin' is part of this group and has dusky gray to gray-green leaves that are up to 30 inches long, with smooth, maroon-edged margins and a sturdy, solitary spine. Although these species and hybrids are quite cold tolerant, they are very sensitive to wet, cold soils.

There are a host of agave species with blue-gray leaves that are under two feet tall. The most commonly grown—and among the most cold hardy—is Parry's agave (*A. parryi*), native to northern Mexico and Arizona, New Mexico and Texas. Known in at least three varieties, and even more forms, this species typically grows to two feet tall and wide with numerous blue-green to gray-blue leaves held in a perfectly symmetrical rosette. Hardy to at least zero degrees F, this is a plant for almost any location blessed with good drainage and plenty of sun. Of the varieties, *A. parryi* var. *couesii* is the smallest—rarely growing more than eight inches tall—and *A. parryi* var. *truncata* is the most

Growing here in Jenny Stocker's Texas garden is *Agave parryi* var. *truncata*, which has broad, blue-gray leaves in a dense rosette.

dramatic, featuring nearly round gray-blue leaves held in a tight rosette.

A. parryi var. *neomexicana* is smaller, usually to two feet tall and wide, with a more significant range of leaf color. In the wild, most are dusky green with small teeth and spines, but forms in cultivation tend to have paler, almost white leaves rimmed with dark purple-brown teeth and a long, stiff terminal spine. This agave, too, is hardy to at least zero degrees F.

Gardeners in warmer climates can also seek *A. colorata*, a variable species that ranges from urn-shaped plants that are pale bluish white, to deep green-leaved forms with expansive, fancifully-shaped teeth. This agave is generally marked by a strong bud imprint on the back of the leaf adding to the dramatic look. Up to 15 inches tall it is hardy to 18 degrees F.

One of the oldest agaves in cultivation is the 15-inch-tall *A. filifera*. Its numerous stiff, deep green leaves are lined with slender filaments, and form a rosette. Hardy to at least 20 degrees F, it rises on a stem in old age and may then reach three feet tall. *A. filifera* ssp. *multifilifera* has a proliferation of delicate filaments that almost obscure the leaves. *A. filifera*

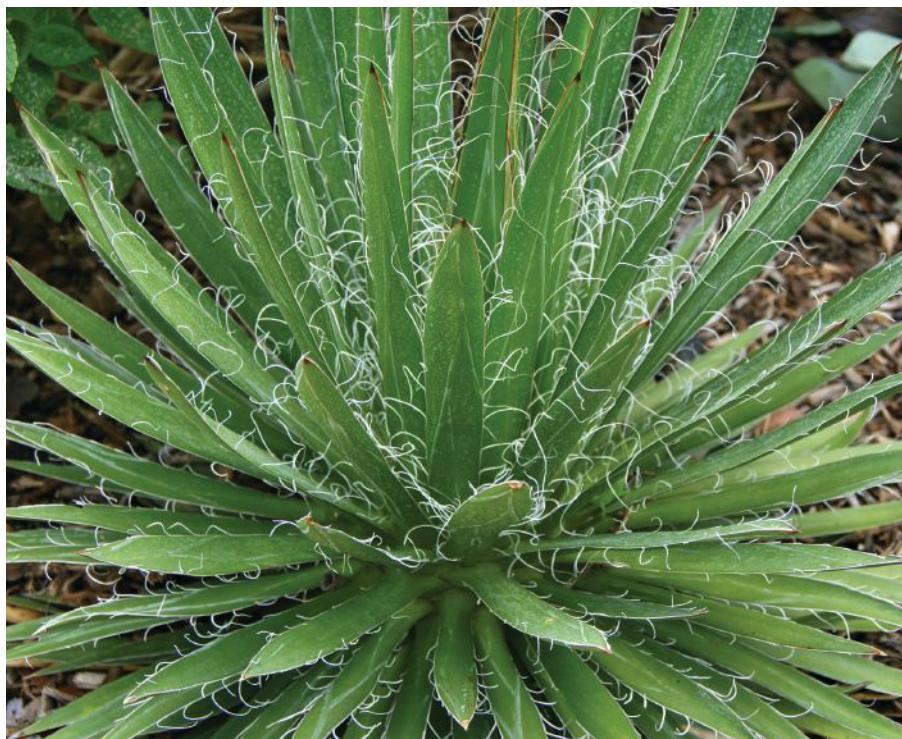


ssp. *schidigera* has wide leaves with few to no filaments.

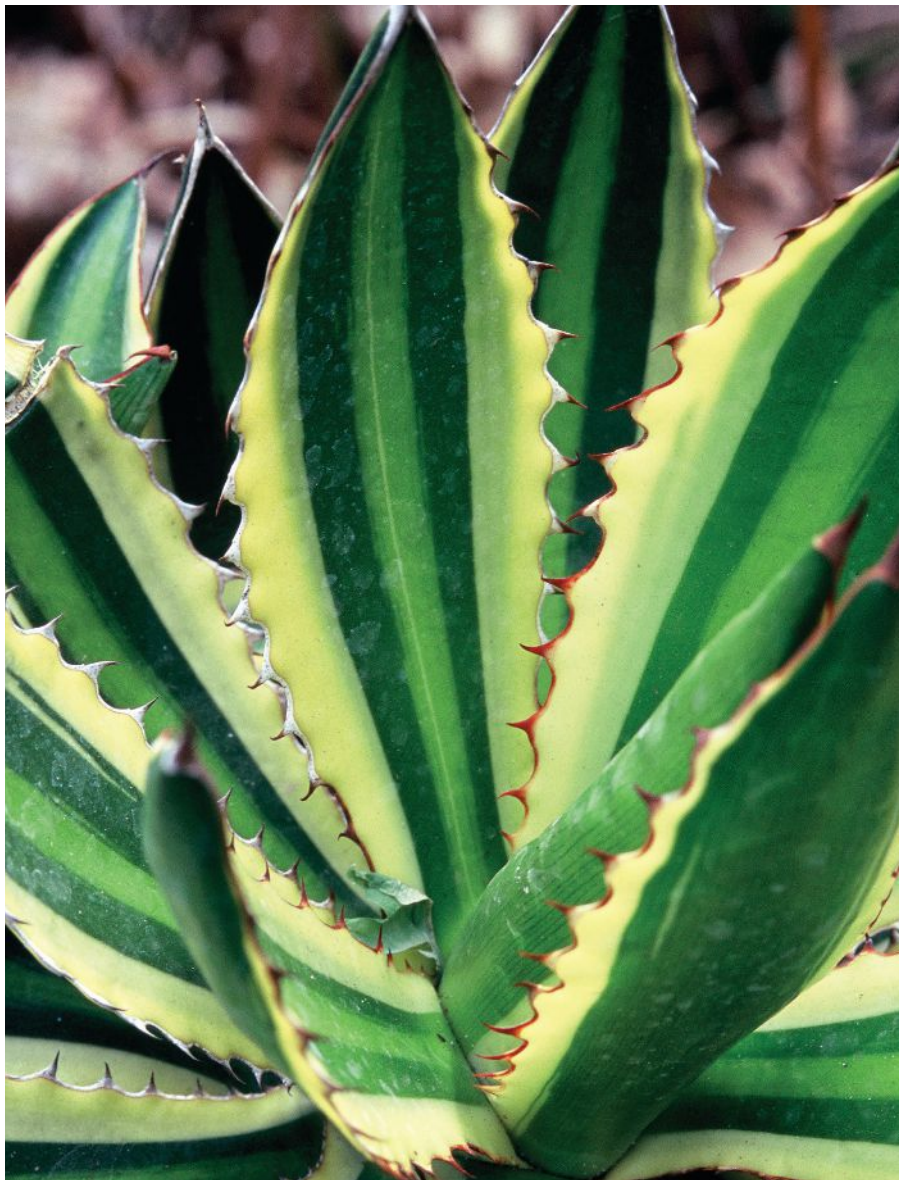
There are a number of narrow-leaved smaller agaves. One of the most striking is *A. geminiflora* with its 200-plus rounded leaves. It resembles a starburst and rarely

reaches over three feet tall. The bright green leaves have no marginal teeth, but do end in a sharp tip. It is hardy to 20 degrees F.

A. striata has narrow, stiff leaves that rise from the central growing point in a graceful curve. The leaves end in a dark,



The diversity in agave forms is illustrated by *A. filifera*, left, and *A. striata*, above. The former has broad leaves graced by a lacy web of filaments; the latter has narrow leaves and a more upright habit.



For striking leaf color, it's hard to beat 'Quadricolor' a hybrid of *A. univittata*.

terminal spines. It, too, has a highly symmetrical shape and provides excellent contrast to leafier plants. This agave is hardy to zero degrees F.

CHIHUAHUA AGAVES

Often overlooked are two stars from the Chihuahuan Desert, which straddles the border between Mexico and Texas, New Mexico, and Arizona. The aptly named shindagger (*A. lechuguilla*) is an upright plant 12 to 18 inches tall whose narrow, olive green upright leaves are marked with pale splotches on the back. This species shows immense variation over its broad range. One of the most stunning of its forms, sometimes listed as *A. albomarginata*, features narrow, light

blue-gray leaves that are up to 30 inches long and rimmed with prominent white margins and widely spaced white teeth.

A. univittata (formerly *A. lophantha*) is equally difficult to pin down. The leaves of most selections are dark green with white margins and regularly spaced white teeth; typically the front side of the leaf shows a linear pale shadow. But this species is highly variable and there are countless hybrids between it and *A. lechuguilla*—as well as many other species—creating some outstanding, but generally unnamed, hybrids. The selection 'Quadricolor' is particularly striking with yellow, yellow-green, pale green, and dark green, with occasional pink blushes, vying for attention along the leaf.

TIPS FOR GROWING AGAVE IN COLD CLIMATES

Many gardeners and horticulturists are successfully growing agaves in regions well out of their native range. Winter moisture, rather than cold-hardiness is the critical factor for agave survival.

One such noted agave enthusiast in the Southeast is Tony Avent, owner of Plant Delights Nursery, who grows nearly 200 agave selections at his home and nursery in Raleigh, North Carolina. His key for growing agaves in areas with wet, cold winters is to provide extremely well-draining soil. Incorporate coarse amendments such as PermaTill—a porous granular aggregate—or pea gravel to improve soil drainage.

It is also advisable to plant agaves on an incline so water won't collect around the base.

For agaves in containers, provide winter protection. Move to a sheltered location.

The other cultural consideration is to select containers that are the same size or a bit smaller than the agaves so the plants can serve as their own umbrellas.

Among small agaves that have performed well in the Southeast, Avent recommends *A. victoriae-reginae* because of its many variegated forms. He also likes the *A. ferdinandi-regis* hybrid group, selections of Parry's agave, and the easy-to-grow *A. univittata*. —M.I.

Both *A. univittata* and *A. lechuguilla* have excellent cold tolerance, down to zero degrees F and as low as -20 degrees F in dry climates, but many of the hybrids are not nearly as hardy.

KINDER, GENTLER AGAVES

In considering agaves without spines, the choices cover a wide range of appearances. *A. ocahui* is a symmetrical plant with deep green, smooth leaves that is particularly effective in a pot. The similar *A. pelona* has darker, often brown margins and a long, tapered, terminal spine with fewer and narrower leaves.

The wondrous *A. bracteosa* is one of

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scapes and Containers** by Greg Starr.
Timber Press, Portland, OR, 2012.

the finest, unarmed small agave for any garden. Plants support only a dozen or so celadon leaves that gracefully curl and curve. There are a number of selections and hybrids on the market now, the most lovely of which is the white variegated form. Plants range in size from 8 to 15 inches tall and are fully hardy to at least 20 degrees F and perhaps colder.

Many agaves without a designated name are hybrids, some of which are excellent plants. Among the most desirable is 'Blue Glow' (with *A. ocahui*). Up to 15 inches tall with soft blue-green leaves and maroon edges. It is hardy to at least 17 degrees F. The similar 'Blue Flame' is a cross between *A. attenuata* and *A. shawii*. The plant has wider blue green leaves but retains the cold hardiness of *A. shawii*, down to 20 degrees F.

CULTIVATION AND CARE

The most vital cultural requirement for success with agaves is excellent drainage. In areas with clay soil, or where there is abundant rainfall, placing agaves on a mound, along a slope, or in a raised bed helps wick water away from their roots. Waterlogged soils, especially when they are cold, will kill these plants. In areas with reliable and consistent rainfall, fill the hole with gravel and/or mix gravel generously into the backfill before planting the agave. Avoid placing agaves in a site where water naturally collects or drains from a roof or gutter.



The arching leaves of *Agave bracteosa*, shown bottom left in this xeric garden, don't bear spines.

These superb drought-tolerant plants have the root system typical of most succulents: shallow, with a fine web of fast-growing roots that die off as soon as the soil is dry. This clever adaptation to drought has a downside: when water is plentiful, agaves take it up and never quit until the water does, by which time they have begun to rot. So while good drainage helps, careful attention to prevent overwatering is also important.

Be sure that the soil dries out significantly between waterings. Most of my agaves thrive when watered just twice a month in the summer and no more than monthly in the winter if it is dry.

For agaves in containers, test the soil with your finger or a long prod and be sure

that the pot is dry nearly to the bottom before watering again. In the winter this may be a number of weeks, in the summer possibly weekly.

Agaves rarely need to be fertilized, regardless of where they are growing. Even with agaves growing in containers, a light hand is best. Apply a layer of compost to the top of the potting soil once a year, or lightly sprinkle a small amount of slow-release fertilizer in the late spring, or apply liquid fertilizer at half the recommended strength once a month during the warm season.

Agaves are very heat tolerant and—in all but the hottest regions—grow best in as much sun as you can manage. In very hot regions, provide some afternoon shade or

BUGS THAT BOTHER

While agaves have few pest problems, there are two insects that can be both disfiguring and lethal: agave running bug and agave snout weevil.

Agave running bug is a minute insect that feeds on the interior sap of the leaf of an agave. It is not particular about what kind of agave, although I have noted that plants in the ground are slightly less susceptible. While you may never see the insect, it is almost microscopic, the damage is clear. Small, regular, round yellowed or white dots all up and down the leaf. If left entirely untreated it can kill the plant, but it takes a while.

Treatment is by a spring application of insecticidal soap or a broad spectrum insecticide. Fall application can also be effective.

In my own collection, I found that when anoles moved in to the greenhouse, the incidence of this pest declined to nearly zero. Now I try to avoid chemical sprays as much as possible to encourage the presence of these useful and friendly lizards.

Agave snout weevil is a one-and-a-half-inch black weevil with a distinctive down-turned proboscis. The female prefers to lay eggs in the heart of the agave in the late spring. These hatch and, assisted by a bacteria to soften the agave's heart, the larvae begin to eat and grow. Look for small punctures near the leaf base, but finding them is difficult, and generally damage is done before you know it. Prevention is key.

Drench the base and soil of the agave with a product containing imidacloprid in the spring and again in the fall. More often is useless and a waste of product.

This insect prefers agaves with soft leaves and is particularly attracted to all *A. americana* clones and hybrids, as well as *A. weberi* and *A. ovatifolia*. But it can strike anywhere so stay alert.

—M.I.

filtered shade from a high canopy.

Cold tolerance in agaves varies by the species, and it may take some experimentation or consultation with local growers to find the best species for your region.

When using agaves outside of their known range, or if a sudden or unexpected cold snap is predicted, you can briefly cover them with row covers, blankets, or sheets for protection. Plastic must be used with a frame so that it doesn't touch the plant. Be sure the plants remain dry during such a cold spell.

Placing agaves on a southern exposure, snuggling them up to the south face of large rocks, and providing rock or gravel mulch will also help to prevent damage. For tips on growing agaves in regions with wet winters, see the sidebar on page 21.

AGAVES IN CONTAINERS

Agaves are well suited to container culture. The same cultural principles apply. Provide excellent drainage and ample sun, water when the soil is dry, fertilize lightly, and apply inorganic mulch such as rocks or gravel.

Containers made of clay are best for keeping the potting soil from holding too much moisture. Choose pots that are wider than they are tall to accommodate agaves' shallow radial root system.

Eventually an agave will need to be repotted as evidenced by roots, and sometimes pups, breaking out at the bottom of the pot. Lift the entire plant, remove the old soil and repot in fresh mix. It is also good practice to prune the roots before repotting. Hold the plant by the top of the roots and snip off all roots below your hand. Set aside in a dry, shaded place for a week or so to let the roots dry out. Then repot.

GETTING HOOKED

No matter what part of the country you call home, you can successfully include striking agaves in your garden by selecting adaptable species and providing the right site and soil conditions. Start with one and you may find yourself hooked.

Mary Irish is the author of several gardening books, including—with her husband, Gary—Agaves, Yuccas, and Related Plants (Timber Press, 2000). She lives in Castroville, Texas. This is an updated version of an article that was originally published in the March/April 2010 issue of this magazine.



The hybrid 'Blue Flame' produces large blue-green rosettes and is extremely cold-hardy.



Layer Upon Layer of Plants

If you're new to propagation, layering is one of the easiest ways to increase the numbers of many favorite woody plants in your garden.

ARTICLE AND PHOTOGRAPHS BY DENNY SCHROCK



Layering is an effective way for home gardeners to propagate shrubs with low-growing limbs such as weigela (*Weigela florida*), above. Opposite page: New leaves appear on a layered weigela branch, a clear indication of successful root formation.

“**L**AYERING is propagation for the faint of heart.” When I taught plant propagation methods to horticulture students, that’s how I introduced the unit on layering.

Unlike starting new plants from cuttings, which involves removing a section of stem, root, or leaf from an established plant, layering is the process of forming new roots on a portion of stem that is still attached to the mother plant. The propagator does not sever the new plant from the parent until it has developed its own roots. If rooting is unsuccessful on the first attempt, nothing is lost. The gardener can try the process again on the same plant.

Layering is especially useful for woody species that are difficult to root from cuttings, such as brambles (blackberries and raspberries), or shrubs that have flexible stems, like azaleas, spreading and prostrate junipers, spireas, as well as shrubby dogwoods and viburnums. Woody houseplants that develop elongated stems that need to be shortened are good candidates for a form of layering called air layering (see sidebar on page 28.)

ADVANTAGES AND DISADVANTAGES OF LAYERING

Layering offers several advantages compared to other forms of propagation. First, it’s easy to do, and in fact often happens without human intervention. You don’t need any special equipment such as an intermittent mist bench or dedicated propagation chamber. A shovel or trowel and pruning shears are likely the only tools that you’ll need. Landscape fabric pins or rocks and rooting hormone are also helpful. Second, the technique is effective. It results in a high rate of rooting success. Because layering is an asexual (vegetative) propagation technique, the new plant will be identical to the parent, so you know exactly what the new plant will look like, unlike sexual (seed) propagation during which different traits may show up in the offspring.

So why not use layering exclusively as a propagation method? The technique has some disadvantages as well. It requires patience. Rooting development may take several months or longer. The increase in numbers of plants from layering is small—in most cases, only one or two new plants at a time. Automation isn’t compatible with layering, so it’s labor intensive. Hence, few commercial propagators use layering as a major means of creating daughter plants, but it’s well-suited to home gardeners who only want a few new plants at a time.



Among many shrubs that lend themselves to simple layering are rose of Sharon (*Hibiscus syriacus*), above, and arrowwood viburnum or southern arrowwood (*Viburnum dentatum*), above right.



SIMPLE LAYERING BASICS

Spring is generally the best time to begin the layering process, so that the layered stem has a full growing season to develop new roots. In climates with mild winters, where the ground does not freeze, fall is also a good time. In colder climates, fall is an acceptable time to layer, but new roots are unlikely to form until the following spring or summer.

When selecting a stem for the layer, look for a long, flexible one that you can bend to the ground without breaking it. A shoot that matured in the previous growing season will give the best results. Older stems are too lignified (woody) and won't form new roots as easily. The stem also needs to be long enough to allow for six to 18 inches to extend beyond the part that will be buried in the ground.

Before doing any layering or other asexual propagation, make certain that you have the legal right to propagate the plant. If it's patented, you need to obtain permission of the owner of the patent in order to propagate it. (For a more detailed explanation, see "Propagating with Hardwood Cuttings" in the November/December 2019 issue of this magazine.)

Layering is a great way to add more plants to your landscape (or to share with friends) in a budget-friendly way. All it takes are a few tools that you probably already have in your garage or garden shed and a little patience. If you have attempted to propagate plants from cuttings with little success, give layering a chance. You're almost certain to succeed if you follow the steps outlined here. 🌱

Denny Schrock recently retired from Iowa State University, where he taught plant propagation and coordinated the statewide Master Gardener program. He is also a member of the advisory board for this magazine.



A successful layer depends upon selecting a stem that can be bent to the ground and remain attached to the mother plant, in this case a buttonbush.

HOW TO MAKE A SIMPLE LAYER

1. Locate the hole for the layer so that the upper end of the selected stem reaches it while still attached to the mother plant and the tip of the shoot extends beyond the hole. Dig the hole several inches deep.

2. Bend the chosen stem to ground, placing the portion of the stem located six to 18 inches from the tip into the hole. Remove any leaves present on the section of stem that will be buried. New roots should develop on this section of the stem, especially at the nodes, which is where the leaves were attached.

3. Create an upward bend in the stem at its tip, so that it will emerge from the hole. This second bend causes disruption in the phloem (the plant's water and nutrient conducting tissues), which in turn results in an accumulation of carbohydrates and auxins (naturally occurring growth regulators that promote rooting) at the bend.

4. To improve rooting, scratch the surface of the stem section that will be buried in the hole. Wounding stimulates the plant to form callus tissue, which is a cluster of undifferentiated cells that often are precursors to root development in difficult-to-root species. If desired,



Above, left: Scraping the bark from the area of a branch that will be buried aids in root formation.

apply rooting hormone to the wound to help increase the number of roots that form as well as speed their development.

5. Secure the stem in place with a U-shaped piece of heavy wire, such as a landscape fabric pin, and cover the



Above, right: The buried portion can be held in place with a large rock, shown, or a metal pin.

VARIATIONS ON SIMPLE LAYERING

Serpentine or compound layering follows the same steps as simple layering except that long, vining stems are used and multiple sections of stem are buried. This way, several new plants can form from one stem.

Tip layering occurs with blackberries and raspberries (*Rubus* spp.), which naturally form new plants at the tips of their canes when they become long enough to arch down and touch the ground. Similarly, the runners of strawberries (*Fragaria Xananassa*) and spider plants (*Chlorophytum comosum*) naturally develop roots on daughter plants where they touch the soil.

Suckering is a another type of natural layering that occurs with plants that form shoots that arise from below ground. Woody plants that form thickets, such as red osier dogwood (*Cornus sericea*) and Virginia sweetspire (*Itea virginiana*) are examples of native shrubs that do this.

Air layering is most commonly used on overgrown houseplants but the technique can also be used on woody plants in the landscape whose stems lack the flexibility to bend to the ground for simple layering. As with simple layering, select one- to two-year-old wood, wound the stem, and treat it with rooting hormone. However, rather than bury the wounded stem in soil, exclude light by wrapping the wounded area of the stem with a couple handfuls of moist sphagnum moss held in place by a sheet of heavy plastic and twist ties. Keep the sphagnum moss moist until new roots form. When the new roots are a couple of inches long, remove the rooted stem tip from its mother plant, pot up and treat it as you would any new transplant.

—D.S.



Above: Serpentine layering, such as shown here with golden pothos or devil's ivy (*Epipremnum aureum*) is an easy way to enlarge a collection of vining houseplants.



Left: House plants such as dracaenas (shown here), along with some woody landscape plants, can be propagated by air layering.

pinned stem with a couple inches of soil. Alternatively, you can cover the stem with soil and place a large rock on it to hold it in place. Both methods exclude light from the section of stem where new roots form. This is beneficial for a couple of reasons. Auxin, the rooting hormone, is destroyed by light, so blocking light to the stem increases the effectiveness of the auxin. Also, lack of light reduces the lignin content (woodiness) of the stem, making it easier for new roots to emerge.

6. Keep the mother plant and the buried stem adequately watered. Mulch to prevent moisture loss and prevent weed growth. Avoid fertilizing the buried shoot. Fertilizer salts can burn tender developing roots. As long as the mother plant has good nutrition, the developing



Young roots have begun to form on this layer but need more time to develop before the new plant can be removed from the mother plant.

daughter plant should get all the nutrients that it needs from its parent.

7. After several months, check for root development on the buried stem by gently removing some soil to see if roots have formed or giving the stem a tug to see if it is firmly rooted. If few or no roots have developed, leave the stem in place longer or repeat the layering process. If the buried stem is well rooted, sever it from the mother plant.

8. Dig the newly rooted shoot and re-plant it immediately to its permanent home. Water it in, and keep it watered well for its first couple of years of establishment. Give it the same attention and care as you would any newly purchased plant that you are establishing in your landscape.





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Gardening and Wellness



Scientists worldwide are finding evidence for what gardeners have intuitively felt all along: The act of gardening and being outside in nature offers a broad range of physical and mental health benefits.

BY BETH BOTTS

GARDENING AND being outdoors in green space simply feels good. When times are hard—say, for instance, in the middle of a pandemic—working in the garden can make us feel better. But does it actually make us healthier? There’s considerable scientific evidence that it does.

Much of the research on the health benefits of green spaces and gardens can be traced to a pathbreaking article on hospital recuperation published in *Science* magazine in 1984. The study, headed by environmental

psychologist Roger Ulrich, indicated that hospital patients whose rooms had a view of trees healed faster, needed fewer pain medications, and were released sooner than control patients whose windows looked out on a brick wall. Since then, hundreds of other researchers have demonstrated, in a variety of empirical studies, that living or spending time in or around trees, gardens, plants, and wildlife reduces stress, improves physical and mental health, and extends lifespans.

As the research accumulates, health practitioners, communities, and even for-profit

companies are beginning to incorporate some of these findings into their daily practices. For instance, doctors in some areas have begun to write prescriptions for “green exercise,” such as nature walks. A walk in a natural area has been shown to have more beneficial effects, such as reducing blood pressure and improving mood, than the same walk along a street or in a mall.

Another example is the trend for creating garden spaces in hospitals, designed so that patients and their families can relax among plants. Urban planners, citing pub-

lic health benefits, as well as aesthetic and environmental enhancements, are using these studies to bolster their arguments for inclusion of more green space in cities.

OUR OWN PATCH OF NATURE

For most of us, however, our gardens are the places we spend the most time—they are our personal patch of nature, if you like. And although there has been more research on the positive effects of exposure to nature and green space in general than on gardening in particular, the actual process of gardening—planting, pruning, weeding, etc.—seems to have health benefits of its own. Admittedly, home gardens are tricky to study, because gardeners and their gardens are all so different.

Still, research generally supports the idea that for those who do garden, it does them good. A review of 77 studies published in 2020 in *BMJ Open*, a peer-reviewed multidisciplinary online medical journal, found that, despite the difficulties of definition, there was solid evidence for physical health benefits. For example, the authors found that “Typically, gardening can help

Resources

The Lifelong Gardener by Toni Gattone, Timber Press, Portland, OR. 2019.

10 Mental Health Gardening Benefits blog on Psychology Today website: www.psychologytoday.com/us/blog/think-act-be/201906/10-mental-health-benefits-gardening.

improve physiological outcomes” from chronic conditions. It was associated with at least modest reductions in blood glucose, a trigger for diabetes; cortisol, the “fight or flight” stress hormone; heart rate variability; and cholesterol and triglycerides, which are implicated in heart disease.

Although more studies have been done with community gardens and school gardens than with individual home gardeners, “there’s no reason to think that the benefits we’ve documented and associated with community and school gardening would not be realized in the home garden,” says Elizabeth Hodges Snyder,

associate professor of public health at the University of Anchorage, Alaska, who studies local food systems and health.

A good deal of research focuses on older gardeners. That’s relevant because, according to surveys, people aged 45 to 65 are most likely to garden and most likely to be enthusiastic about it. Other studies have shown that older gardeners spend more time in the garden than any other age group. Remaining active through gardening can have substantial health benefits as people age. For example, in Taiwan, a long-term study of people as they aged found that daily gardening—whether growing flowers or vegetables or cultivating potted plants—was associated with longer survival, even for people with mobility problems.

In the Netherlands, a 2010 study compared 121 gardeners who had allotment sites to non-gardening neighbors living nearby. Both younger and older gardeners reported higher levels of activity. The gardeners older than 62 scored better on all measures of health and feelings of well-being than non-gardeners. It’s worthwhile to note that although the younger gardeners



didn't have the same results, this may be because younger non-gardeners have many other outlets for being active.

PHYSICAL WORKOUT

Gardening can definitely be a workout. A 2014 Korean study found that common activities such as planting, raking, watering and weeding are demanding enough to count as "moderate- to high-intensity exercise," even for people in their 20s. The American Heart Association recommends 150 minutes a week, or two and a half hours, of moderate- to high-intensity exercise, but a 2008 study of 14 Kansas gardeners aged 63 to 86 years found that, on average, they spent 33 hours a week gardening in May and 15 hours in June and July.

That amount of exertion may explain why at least one study of community gardeners in Utah found that the gardeners had, on average, lower BMI (body mass index) scores than their neighbors or their same-sex siblings.

Most gardening is done outdoors, which also helps people get some or all of their recommended dose of Vitamin D—important for bones and vision. An Italian study found that cycling and gardening did more to increase Vitamin D among elderly people than walks, fishing or indoor dancing and gym workouts. Of course, too much sun can lead to skin cancer, so it's important to limit exposure by using sunscreen and wearing a hat.

ENHANCING NUTRITION

If you have an edible garden, you are more likely to eat a good amount of vegetables, which is known to improve health. A four-year study of food gardeners in Laramie, Wyoming, found that their average 253-square-foot plot was enough to supply an adult with the daily recommended amount of vegetables for nine months. These were gardeners with space to grow, because 253 square feet works out to about 10 standard 4-by-6-foot raised beds.

Studies of home gardens, community gardens and school gardens show that growing vegetables and fruits changes both attitudes and diets, and that for children and adolescents, the effect can be long lasting. Based on interviews with more than 1,600 parents of small children, researchers in Missouri found that preschoolers who were served homegrown

fruits and vegetables were more than twice as likely to eat five servings a day than those whose produce came from the grocery store. A Florida study of college students found that those who had gardened as children ate 20 percent more vegetables than those who hadn't.

RAISING SPIRITS

Even if your gardening is ornamental and not edible, the mental and emotional benefits of gardening have been well researched. In numerous studies, gardeners report reduced stress, depression and anxiety and better psychological well-being compared to control groups. Gardeners often talk in terms of their feelings of escape, relaxation and joy, but the effects

can be physically measured—for example, in lower cortisol levels.

Such research provides the scientific support for horticultural therapy programs that help hospital patients, elderly residents of nursing homes, veterans and others who are under stress.

Stress relief is powerful medicine, since stress has been shown to cause or complicate many physical ills. But how does gardening relieve stress? Researchers have found a number of mechanisms, according to Naomi A. Sachs, assistant professor of plant science and landscape architecture at the University of Maryland in College Park, who studies how best to design hospital gardens. Working with your hands can increase your sense of



JUDYWHITE, GARDENPHOTOS.COM

GROW A GARDEN FOR WELLNESS

Any garden is likely to be good for you, but you can tweak yours to better promote wellness. Here are some suggestions from Naomi A. Sachs, assistant professor of plant science and landscape architecture at the University of Maryland in College Park, and founder of the Therapeutic Landscapes Network (healinglandscapes.org), a resource for gardens that promote health and well-being.

■ **Bring the outside in.** Design the garden so you can see it from inside the house, so you have a visual connection to all the beauty of nature even when you're indoors.

■ **Don't overdo.** If your garden is too large or too elaborate for you to maintain, "that ends up being frustrating and stressful," Sachs says. Start with something manageable, so you get a sense of accomplishment that leaves you relaxed and happy.

■ **Smooth the way.** Eliminate obstacles, especially if you're older and aging in place. For example, you might install level paving or handrails for easier walking, or create deep raised beds that you can reach with less stooping.

■ **Make it yours.** "A garden is very personal," Sachs says. "Figure out how you are going to use the space, and make it work for you." You might want a gathering place, a meditation place, or a place to get your hands dirty growing vegetables. "Create a place that brings you joy," she said.

—B.B.



control and distract you from dwelling on negative things, she said.

"Gardening is also a multisensory experience," Sachs says. As you take in the sounds of birds, the sight of butterflies fluttering and grasses moving in the wind, the smell of earth or the fragrance of flowers, the texture of leaves and bark, your attention softens, your focus widens, and you relax. The experience reminds us that the natural world is larger than ourselves and our troubles, Sachs says. "When you interview gardeners, you hear over and over that nature is life-affirming, that the seasons and cycles of nature are hopeful."

And don't forget those soil microbes that enhance mood—*Mycobacterium vaccae*—that were revealed to the world in 2007 in an article published in *Neuroscience*. These microbes, common in loam-rich soil worldwide, stimulate production of serotonin in a similar way to antidepressant drugs. And all it takes to tap into the benefits is getting your hands

in the dirt on a regular basis and breathing deeply.

ENHANCING SOCIAL BONDS

Community gardening has been shown in numerous studies to strengthen social bonds and improve neighborhood relationships. For example, a survey of 332 allotment gardeners in Tokyo found they reported not only better physical and mental health than non-gardeners but better social cohesion, an effect that has also been found in a number of U.S. studies.

At the Chicago Botanic Garden in Glencoe, Illinois, veterans work together to tend gardens in a horticultural therapy program. Alicia Green, the program coordinator, says she knows new gardeners are starting to relax when they start to chat. "We have this common thing we're doing, and it's something that's really easy to talk about," she says.

But even a home garden has its social aspects. "People stop and talk to you when you're out gardening," Sachs

says. So, you get to know the people at the garden center, chat over the fence, swap perennial divisions with your neighbors, and serve as a mentor for the grandchildren.

A 2016 meta-analysis of the literature by scholars in Japan and the United Kingdom, concluded that "gardening can improve physical, psychological, and social health, which can, from a long-term perspective, alleviate and prevent various health issues facing today's society."

It's little wonder, then, that this difficult pandemic year seems to have prompted a surge in gardening. No one needed a prescription to know this was a healthy way to get outside and get some exercise in a lockdown, to grow some safe food, to feel in control of something, to relax, and to escape the stresses of the news. Gardening is one home remedy that has science and intuition behind it.

Beth Botts is a freelance writer based in Chicago, Illinois.

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Growing Under Cover

BY NIKI JABBOUR

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This article is an adapted excerpt from *Growing Under Cover: Techniques for a More Productive, Weather-Resistant, Pest-Free Vegetable Garden* by Niki Jabbour, published by Storey Publishing, 2020. Used with permission of the publisher.

GARDEN COVERS aren't just for growing plants into winter or protecting them from frost. They can be used all year long to boost yields, protect plants from pests, reduce disease, establish summer sowings, and improve crop quality.

I use a variety of fabrics, devices, and structures in my garden in Nova Scotia to capture heat or reduce heat, provide shade, and create a barrier against pests. A few, like polytunnels and greenhouses, require a large investment. Most of them, however, like shade cloths, row covers, and mini tunnels, are inexpensive and easily made.

FIVE WAYS TO USE A MINI HOOP TUNNEL

■ **Frost protection.** Top your hoops with a row cover to protect from frost or cold weather. A row cover also shelters crops from heavy rain, hail, or strong winds.

■ **Winter harvesting.** I use mini hoop tunnels to harvest cold-season crops all winter long. For winter crops, cover the hoops with a 6 mil greenhouse polyethylene. Twist the ends closed and weigh down the sides to secure them against the winter weather.

■ **Summer shade.** I use my mini hoop tunnels from late spring to early autumn to provide some shade from the hot sun. Cool- and cold-season vegetables like salad greens quickly bolt once spring turns to summer. Having a cover over the hoops lowers temperatures and prolongs the harvest season. It also helps just-planted seeds or seedlings get established.

■ **Spring, summer, and autumn insect defense.** Using a lightweight insect barrier keeps cabbage, kale, broccoli, potatoes, and other pest-prone plants free of insect damage. Float the cover over the hoops as soon as crops are planted and bury the sides to prevent pests from entering the mini tunnel.

■ **Spring, summer, and autumn pest prevention.** Not all pests are small. Deer, rabbits, birds, chickens, and even dogs can eat or damage vegetables. Top the mini hoops with bird netting or chicken wire to keep crops safe. —N.J.

If you're new to gardening, start small and begin with a mini hoop tunnel. This will give you an opportunity to flex your gardening skills and learn techniques like timing off-season growing and how to regulate temperature by venting regularly. Once you've had a season or two under your belt, you'll know if you're ready to move to a bigger structure like a polytunnel or greenhouse.

A mini hoop tunnel consists just two main components: hoops and a cover. The hoops can be made from a variety of materials, including PVC conduit, metal, wire, concrete reinforcement mesh, or even old Hula-Hoops cut in half.

TYPES OF MINI HOOP TUNNELS

Mini hoop tunnels fall into two categories: lightweight and heavy duty. Your reason for covering the crop and the timing of coverage help determine the type of hoop you'll need.

Lightweight Tunnels. I make lightweight tunnels with wire hoops and use them for spring and fall frost protection. They do a fine job of protecting crops from cool weather, light frost, heavy rain, and wind, but don't stand up to snow. I also place them over the beds inside my polytunnel for a double layer of winter protection. For this light work, wire or PVC hoops are fine.



Above: A mini hoop tunnel made from metal conduit is great for long-term winter protection of cold-season crops. **Opposite page:** A temporary mini hoop tunnel made from nine-gauge wire and row cover fabric will protect crops during the main growing season.





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I generally prefer to build my own mini hoop tunnels, as it takes little time and I can match the size to my raised beds, but there are many commercially produced mini hoop tunnel kits you can buy. The kits often have wire hoops and fall into the “lightweight tunnel” category. Depending on the manufacturer, mini hoop tunnel kits may be called polytunnel cloches, mini greenhouses, or mini tunnels.

Heavy-Duty Tunnels. The other type of mini hoop tunnel is a heavy-duty version made from 10-foot lengths of half-inch diameter PVC or metal conduit. These are strong enough to withstand a snow load and are great for winter protection; if you live in an area that gets a lot of snow, consider adding an extra center support.

CHOOSING COVERS

There are different options for the cover of a mini hoop tunnel, and I base my choice on the season and the use.

Plastic. I only use greenhouse polyethylene. Many garden centers or supply stores offer four-year, 6 mil, UV-treated polyethylene by the running foot or by the roll. It’s not inexpensive, but with proper care, it can last for years, protecting crops from frost or sun, prewarming the soil,



or giving heat-loving vegetables like eggplants or melons a bit of extra warmth. Thinner plastics, like construction-grade plastic sheeting, degrade after just a few months, so are best reserved for light protection in spring, summer, or early autumn.

Row Covers. These are lightweight fabrics made with spun-bonded translucent polypropylene, which allows light, air, and water to pass through to the plants. Row covers are super effective at protecting crops from frost and cold weather, as well as from insects, birds, and other garden pests. You can also use row covers

to hold insulating winter mulch in place over root vegetables or to isolate crops for seed saving.

There are four main weights of row covers. The lighter covers allow more light to pass but retain less heat, while the heavy-duty covers have low light transmission but hold more heat. In general, I find lightweight and medium-weight row covers are the ones I use the most; I save the heavier covers for winter, when plants aren’t actively growing.

Insect Barrier. This is the lightest-weight row cover (0.45 ounces per square yard) and is an effective barrier against com-



Above: Floated on hoops over a bed of seedlings, shade cloth protects them from drying wind and baking sun. **Left:** The author covers a hoop tunnel over a bed of tender crops with row cover in anticipation of autumn frost.

mon garden pests like Colorado potato beetles, flea beetles, and imported cabbage worm. It also prevents the transmission of diseases some insects carry.

Because it offers good air exchange, heat doesn't build up easily under the cover. It's the best fabric for preventing summer insects from eating heat-loving crops like tomatoes, peppers, and eggplant. However, it offers little in the way of frost protection. If it's all you have on hand with a frost in the forecast, double it up to boost its frost-busting capability.


Insect barrier is also used by seed savers who need to isolate crops and prevent cross-pollination in crops like cucumbers,

melons, and squash. But if you're protecting crops that need to be pollinated in order to produce their crop, be sure to remove the covers when the plants begin to flower.

Shade Cloth. Shade cloth is an underappreciated tool for the vegetable gardener. Like row cover, shade cloth is a material that can be used to extend the harvest season, preserve the quality of crops, and provide shelter from inclement weather. Row cover is typically used to protect in cold weather, whereas shade cloth is used to protect crops in hot weather. Although a row cover can also be used to create shade in the garden, I've found

shade cloth to be far more effective in reducing the ambient temperature around crops, thus delaying bolting and helping establish summer crops.

Shade cloths are a low-tech and inexpensive way to shelter vegetables in the garden, but also in garden structures like polytunnels and greenhouses. They're made of black or dark green polypropylene that is durable and will last for many years with proper care. The polypropylene is knitted or woven into different densities that block a certain percentage of sunlight, ranging from 5 to 95 percent. For most garden use, 30 to 50 percent shade cloth is ideal.

Using covers to extend and protect the harvest is both easy and effective. It's turned my traditional summer garden into a year-round food factory! Now that you know the many benefits of gardening under cover, you can have the same success. 

Niki Jabbour is the author of several books on vegetable gardening, including the award-winning Niki Jabbour's Veggie Garden Remix (2018). She gardens in Halifax, Nova Scotia.

RAP GARDENS IN FOCUS

Explore Sites That Participate in the AHS Reciprocal Admissions Program

Mercer Botanic Gardens

by Mary Yee

AS A Harris County Precinct 4 facility, Mercer Botanic Gardens in Humble, Texas, is open to the public free of charge year round. Some 250,000 visitors annually, mainly from the Houston area, enjoy its well-manicured lawns, playgrounds, ample benches, colorful seasonal display beds, and lots of paths for strolling. This makes it sound like Mercer is just another county park, but it is so much more.

With the George Bush Intercontinental Airport about four miles to the south, railroad tracks two miles to the west, and busy Aldine Westfield Road literally dividing the gardens, the sounds of human activity are ever-present. But so, too, are the songs of birds and splashing water from fountains set amid towering trees, making the garden an oasis in one of the country's most populated regions.

MODEST BEGINNINGS

Ensuring the garden is available for all to enjoy was the wish of Charles and Thelma Mercer when they sold their land to Harris County in 1974 upon their retirement. The Mercers had purchased 14.5 acres of land in pine country adjacent to Cypress Creek in 1949 and spent the next 25 years cultivating a garden there. A koi pond the Mercers created remains popular with visitors. Over the past four decades, the county has greatly expanded the garden's footprint, with its care supported by the nonprofit Mercer Society.

The 60 acres east of Aldine Westfield Road, which include the original Mercer property, feature a variety of themed gardens. On the other side of the road are over 340 acres of natural landscape—commonly referred to as the “arboretum.”

INSPIRATION AND IMAGINATION

While many of the woodies the Mercers planted, such as camellias and ginkgos, survive, the garden is vastly different than the



A variety of themed attractions to suit every taste can be found at Mercer, including the formal Renaissance Garden, top, and the ancient Mexican-inspired Tropical Garden, above.

one they left behind. “We want visitors to come out and enjoy the gardens and nature,” says Mercer Director Chris Ludwig of the park’s goal, and what better way to do it than create a little spectacle? Amid the soaring pines is a formal Renaissance Garden—complete with columns and

arbors—comprising a number of themed areas, such as the Cypress Promenade and Citrus Walk. Italian cypress, silver date palms, and other Mediterranean plants create a classical feel, as does the symmetrically laid out walkways, reflecting pools, and flower beds.



The arboretum side of Mercer features vestiges of natural landscape, such as a cypress swamp.

The Tropical Garden features a large flagstone plaza with an Olmec head statue water fountain. The Ginger Garden showcases a variety of the ornamental species. According to Ludwig, Mercer has one of the largest collections of tropicals and gingers in East Texas, and stellar examples are on view everywhere. “People can see what plants will look like full grown, so they can design their own garden oasis at home,” he says.

One of the newer displays is the Shakespeare Garden, complete with a bust of the playwright, that features plants mentioned in Shakespeare’s works. Roses and boxwood predominate, together with annuals.

The Endangered Species and Native Plant Garden features a faux beaver dam

and pond and serves as a teaching tool for habitat preservation. Among the species growing here are the Neches River rose-mallow (*Hibiscus dasycalyx*), found only in a few wetland sites in East Texas, and Florida corkwood (*Leitneria florida*), a rare shrub native to coastal Texas and Florida.

A WILD SIDE

A more back-to-nature experience awaits just across the street. Two playgrounds, a picnic area, and barbecue pavilions are situated in acres of peaceful woodland. “Mercer is on the edge of the East Piney Woods region of Texas,” says Ludwig. “Our natural landscape is made up of pines, oaks, and elms for canopy, with ironwoods and yaupon in the understory.” Much of this ecosystem is now lost, but Mercer is preserving a small part of it for future generations to enjoy.

About two-and-a-half miles of trails in the woods along Cypress Creek meander past a cypress swamp, hickory bog, and an oxbow lake, giving hikers a chance to see turtles basking on logs, frogs, birds, and other wildlife—such as snakes, for which there are signs giving fair warning.

PROGRAMS AND PLANS

Mercer holds a number of educational events throughout the year, but the ongoing pandemic has necessitated changes. “We had to convert the March Mart plant sale to online shopping and curbside pickup,” says Ludwig. The Pollinator Festival in October became a virtual event. The

HOW THE RECIPROCAL ADMISSIONS PROGRAM (RAP) WORKS

This American Horticultural Society program is designed to encourage people to visit gardens, arboreta, and conservatories while traveling. As a current member, you receive free admission and/or other special discounts at more than 330 sites throughout North America! Here’s how to make the most of this member benefit:

- View the current list of participating locations and the RAP benefits they offer at www.ahsgardening.org/rapgardens. This list is also published in a booklet. To order, visit <https://www.ahsgardening.org/gardening-programs/rap>.
- Contact the garden to confirm the RAP benefits it offers. (Some sites may choose to enforce a 90-mile exclusion policy; if your zip code falls within that distance from the location, you would not receive the offered RAP benefits there.) Admission to special events may also be excluded.
- Present your current membership card at the admissions counter or gift shop to receive the RAP benefit(s) offered by that garden. Each card will only admit the individual(s) listed on the card. In the case of a family, couple, or household membership card that does not list individual names, the garden must extend the benefit(s) to at least two members; it is at the garden’s discretion to extend benefits to more than two individuals. Some gardens may require a photo ID.

gardens are open, but programs have attendance restrictions.

The pandemic isn’t the only thing Mercer has had to weather. In 2017, Hurricane Harvey flooded much of the garden, killing some of the trees and shrubs. But Mercer is bouncing back. Ludwig says the gardens will be expanding an additional 43 acres, with plans for building a stormwater basin and creating more space for community events—as well as more opportunities for visitors to reconnect with nature.

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

Additional Information

Mercer Botanic Gardens

22306 Aldine Westfield Road
Humble, TX 77338
www.hcp4.net/parks/mercer

■ Hours: Open daily. March–Oct., 8 a.m. to dusk. Nov.–Feb., 8 a.m. to 5 p.m. Closed on Thanksgiving, Christmas, and New Year’s Day. Subject to change. Check website for most current information.

■ Admission: Free.

■ RAP benefits: Free or discounted educational programs. Free or discounted entry to select special events.

The Magic of Manure

by Scott Aker

THERE'S NOTHING like well-rotted manure for building soil health and fertility. Unlike commercial fertilizers, it provides a shot of beneficial microorganisms that keep roots healthy, releases small amounts of nutrients over a long period of time, and also serves as an amendment to improve soil structure. Another plus is that you can usually get manure for little to no cost from a local stable or farm if you pick it up yourself. Understanding the chemistry and biology of manure will help you learn to use it safely in your garden.

WHAT'S IN MANURE?

Manure is composed of feces, urine, and any bedding that is used to absorb these wastes. It is the product of complex biological processes and contains a wide array of complex molecules and microorganisms. Nitrogen is the main nutrient in manure, and it is present in many different forms—mostly as methane gas, urea, ammonia, and nitrate. Carbon is found in undigested plant parts and bedding materials. As the manure is aged, some of the carbon is converted to humic acid that improves the structure and nutrient-holding capacity of soil. Phosphorus is also found in manure and is present in the orthophosphate form, which is easily transported in runoff. It is the main pollutant of concern in manure. Manure contains potassium and micronutrients in their soluble form that is easily taken up by roots.

THE IMPORTANCE OF OXYGEN

When wastes are expelled by an animal, they move from the warm, anaerobic environment of the digestive tract to a much cooler aerobic environment. Upon contact with air, denitrifying bacteria colonize the manure and use oxygen to convert ammonia and urea to nitrates. Ammonia is volatile and some of it is lost in this process. Nitrates are



Composted, or well-rotted, manure provides a host of benefits for garden soil.

not volatile, but they are water soluble and may be lost if manure is not stored in a dry environment.

Most of the carbon present in manure is converted into carbon dioxide gas as the manure decays, but lignins and other complex carbohydrates remain. These decay-resistant molecules do wonders for soil structure and nutrient-holding capacity. Many of the bacteria present in well-rotted manure also stimulate the development of a rich microflora in the soil that may ward off soil-borne disease organisms.

If the manure is not well-aerated, the nitrogen in it will ultimately be converted to nitrogen gas and will be lost to the atmosphere. Hydrogen sulfide may also be produced, giving the manure a foul odor. If you have manure that becomes anaerobic, mix additional bedding into it and give it some time to age in a dry location before using it.

MANURE SOURCE CONSIDERATIONS

Each animal produces manure with unique characteristics. Cow manure is

very loose and much of the plant material in it is well digested. Poultry manure is rather dry and is high in salts; the use of fresh poultry manure often burns plants. Horse manure is dry and contains a lot of undigested plant material, even viable weed seeds. Sheep and goat manure takes the form of hard pellets that are easy to handle and they contain more nutrients per unit volume than cow manure. Rabbit manure should be used sparingly since it is very high in nutrients.

You must also consider how much bedding comes with the manure. Lots of bedding will dilute the nutrients and salts present in the manure and make it safer to apply, but the bedding will also take time to decompose. If it is mixed into your soil before it has decayed, it may rob the soil of nitrogen in the short term. It's always best to use manure that has been composted, or allowed to decay. (For more on how to compost, see the September/October 2020 column in this magazine.)

Gardening Q&A with Scott Aker

OAK TREE DECLINE

My oak tree did not look good last year. It seemed to have fewer leaves and some of the branches were bare at the tips. Should I fertilize the tree?

I would never fertilize a tree that is in distress—the symptoms you describe indicate that the tree is in decline, probably from loss of roots. The root death may have been caused by soil compaction, a long period of soil saturation, or drought. You can aerate the area under the tree, install drainage, or provide water in times of drought to increase the odds that the tree will survive. Trees only need fertilizer if they are growing in infertile subsoil, and even then it is best to supply nutrients by spreading an organic mulch around them that will slowly supply nutrients as it decays.

KEEPING INDOOR PAPERWHITES SHORT

I always grow paperwhite narcissus indoors for the winter holidays. Is there a way I can prevent them from getting tall and floppy? I grow them in a sunny, south-facing window, so they get plenty of light. I plant mine in potting soil, but I've seen them grown in gravel.

Paperwhites are best grown in gravel in a container without drainage since they are top heavy and prone to tipping. Water should be kept just below the base of the bulbs. The constant warmth found indoors and lack of light cause paperwhites to stretch. Alcohol will counteract this. After the roots have grown and the green shoots reach two inches in length, pour off the water and use a solution of four to six percent alcohol to water them henceforth. If you are using 70 percent isopropyl alcohol, the solution would be one part alcohol to 10 parts water. The growth should be reduced by 30 to 50 percent, but the flowers will be full sized and will last as long as they would if the plants were grown in plain water. —S.A.

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

Never use manure from any animal that is carnivorous or omnivorous. Wastes from dogs, cats, or pigs have microorganisms in them that could cause disease in people. Even the manure of vegetarian animals can contain disease organisms such as *E. coli* and *Salmonella*, so wear gloves when handling fresh manure and allow it to decay thoroughly before using it. If you are unsure about



Manure from chickens contains higher levels of nitrogen than that from cows and horses.

whether manure is fully decayed and you want to use it in the garden, don't use it on root vegetables, or till it into the soil at least four months before harvest.

If you don't want to work with fresh manure, you can purchase it already composted in plastic bags. The most commonly available manure is from cows and chickens. Pay attention to the way they are stored when you buy them. If they have been kept in wet conditions, they may have taken on water and anaerobic decay may have occurred. Don't purchase bags of manure that are saturated or have a foul odor.

APPLY WISELY

Too much manure is far worse than a bit less than what you need. Excess manure may burn plants, produce an overabundance of vegetative growth at the expense of fruit or flowers, and may pollute waterways. For most soils, a good rule of thumb is to apply no more than 50 to 100 pounds of composted manure per 100 square feet of area for cow or horse manure, 20 to 30 pounds per 100 square feet of poultry manure, or 40 to 50 pounds per hundred square feet of sheep manure. Use the lower number if there

is little or no bedding in the manure, and the higher number if the manure has a lot of bedding material.

For new or unplanted beds, till the manure into the top six inches of soil to prevent loss of nitrogen to the atmosphere; never apply it directly to actively growing crops. Do not till manure into chronically saturated soil. Most of the nitrogen will be lost to the atmosphere and odor-causing sulfides will form in wet, poorly drained soils.

For landscape beds containing established shrubs and perennials, it's best to use manure as a mulch to avoid disturbing plant roots. Macroinvertebrate activity will tend to bring the organic matter and nutrients deeper into the soil over time.

It's best to apply manure in the fall. If you miss that window, you can apply it in early spring, but be sure that it is well-decayed. Most of the nutrients present in manure are released in the first season of growth, so plan to apply manure every year if you want to rely on it as your main fertilizer.

Scott Aker is head of horticulture and education at the U.S. National Arboretum in Washington, D.C.

Sweet Marjoram

by Ellen Ecker Ogden

SOME OF the most widely grown culinary herbs are in the genus *Origanum*, which includes a number of popular fragrant, medicinal, and ornamental plants. One underused member of this genus is sweet marjoram (*O. majorana*), a standout for the gardener who loves to cook. Often confused with Greek oregano (*O. vulgare* ssp. *hirtum*), the leaves and flowers of both have a similar flavor, but sweet marjoram also has a delicate nuance of honey floral, with a woody overtone. As a seasoning in a recipe, marjoram and Greek oregano are somewhat interchangeable, yet in the garden, marjoram is a better choice for a small herb bed.

A COMPACT MEDITERRANEAN NATIVE

Typically grown as an annual in USDA Hardiness Zones 3 to 6, sweet marjoram is a subshrub in its native Mediterranean habitat and perennial in Zones 9 to 11. In Zones 7 and 8, it may come back the following year if well mulched and protected in winter. A favored plant in English herbal knot gardens during the 16th century, it maintains a tidy, one- to two-foot-high mound and its gray-green foliage blends well with other plants. Pinch back the tips every two weeks to encourage new growth. When left to flower, tight knots of buds will appear, slowly opening to lavender-purple blossoms.

In most garden nurseries, you can find many cultivars of culinary herbs, yet when it comes to sweet marjoram, you'll generally only find the standard variety. At specialty herb nurseries, you may be able to find *O. ×majoricum*, a hybrid of *O. majorana* and *O. vulgare* ssp. *virens* with leaves that contain the spiciness of oregano with the sweetness of marjoram, offering the best of both worlds.

GROWING TIPS

Early in my education as a gardener, I learned that growing herbs from seed



Sweet marjoram is a member of the mint family. Its leaves, which can be used fresh or dried, contain aromatic oils that make it a flavorful seasoning herb in many recipes.



Sweet marjoram and its hybrid, *Origanum x majoricum*, shown here, are suited for containers.

takes patience, and marjoram is no exception. Given the right conditions such as a sunny greenhouse with a steady temperature of 70 degrees Fahrenheit and a germination mat, you may succeed. You can also propagate it from a cutting by taking eight inches from the semi-woody section of an existing plant stem, stripping off the top few inches of leaves, and setting it into sandy soil. Since a single plant is enough for my kitchen garden, I prefer to find a young plant at the nurs-



Flowering diminishes the flavor of marjoram's leaves, but the purple blossoms are also edible.

ery in the spring. If possible, taste the leaves of a plant before buying to confirm that it has acceptable flavor, as the intensity can vary from plant to plant. The leaf should tingle on your tongue.

Like other Mediterranean herbs, marjoram needs well-drained sandy or even rocky soil, and full sun to thrive. Fertilizing is usually not recommended, since too many nutrients will weaken the stems and diminish the essential oils that give the leaves their aromatic qualities.

Marjoram adapts easily to container growing, alone or with other culinary herbs, ideally in pots near the kitchen door, but it can also grow indoors on a sunny windowsill. If growing more than a single plant, space the plants out about eight inches apart for ample air circulation, and to prevent dark leaf rot that may appear along the stem and lower leaves when too much moisture accumulates. Avoid overwatering.

If plants are grown indoors, white flies, aphids and red spider mites may be a problem. Control them by spraying with an organic insect repellent, such as water mixed with a few drops of essential oil of cinnamon.

ENJOYING THE HARVEST

For optimal productivity, harvest full stems, rather than leaf by leaf, before buds or blossoms appear. Plan to harvest every two weeks, or at least twice during the season. When harvesting, use a sharp

PLANTING BASICS

Getting Started It's easiest to purchase young plants from a nursery. One or two plants should suffice for the average family's culinary needs. Plants can also be started from seed or from cuttings taken from an established plant.

Planting Set plants eight inches apart in well-drained soil in a sunny, well-ventilated location.

Days to Maturity Harvest stems or leaves as needed during the growing season. Plants started from seeds produce enough growth for harvesting in 60 to 90 days.

Sources

Richter's Herbs, Goodwood, ON.
www.richters.com.

Seed Savers Exchange, Decorah, IA.
www.seedsavers.org.

W. Atlee Burpee Co., Warminster, PA.
www.burpee.com.

knife or clippers to remove a whole stem or a section, cutting just above a leaf node to encourage new growth.

At the end of the growing season, cut off all the stems and bundle and hang them upside down to dry in a warm, well-ventilated area. Marjoram retains its flavor better than most herbs as a dried seasoning. After several weeks, when the herbs are completely dry, remove the leaves and store them in a sealed glass jar.

Use a light hand when seasoning with marjoram. A general rule of thumb for translating between dry and fresh herbs is one tablespoon finely chopped fresh herbs equals one teaspoon dried herbs. With the slightly more assertive marjoram, this ratio may not always hold true. Add a sprig to tomato sauce, sprinkle chopped leaves over potato gratin, or add whole leaves in a hearty winter stew. As Julia Child used to recommend, add a small amount, taste, then season again, until it tastes just right. *Bon Appetit!* 🌿

Ellen Ecker Ogden is an author and kitchen garden designer based in Manchester Village, Vermont.

Horticultural News and Research Important to American Gardeners



Calamint produces clouds of white flowers.

2021 PERENNIAL PLANT OF THE YEAR®

Calamint (*Calamintha nepeta* ssp. *nepe- ta*) has been chosen as the 2021 Perennial Plant of the Year® by the Perennial Plant Association (PPA), a trade organization based in Raleigh, North Carolina. Blooming summer into fall with clouds of tiny white flowers occasionally touched with blue, calamint is an undemanding, full sun perennial in USDA Zones 5 to 7. It thrives in full sun and good drainage. At about 18 inches high and wide, it can be woven through beds or line a hot sunny border. Pollinators flock to calamint and its minty foliage repels rabbits and deer. For more on the PPA and the Perennial Plant of the Year, visit www.perennialplant.org.

ANTS: GARDENERS OF WILDFLOWERS

Many of our beloved spring ephemeral woodland wildflowers such as trillium, wild ginger, and violets delight us due to ants. At the Ecological Society of America's annual meeting in August, researchers reported on a series of studies that examined the role ants play in dispersing wildflower seeds.

Ants have an important seed dispersal role in about 11,000 species of plants. As part of their evolution, these plants have developed a calorie-laden appendage called an elaiosome on their seeds that

ants seek out as a food source. It also provides a handy way to tote seeds sometimes larger than the ants back to their nests. After the ants consume their tasty reward, seeds are able to germinate in place, so you may find violets slowly but steadily moving across the garden year after year.

Researchers studying the relationship between ants and trillium found that the insects are choosy in their seed selection. They only picked seeds with the right combination of compounds. The study found that certain trillium species are common because ants chose their seeds the most. Ants in the genus *Aphaenogaster* are common seed-dispersers, but they also secrete antimicrobial chemicals to protect themselves and fellow ants. One research team found that ant-handled seeds of wild ginger, bloodroot, and twinleaf, exhibited antimicrobial effects and plants harbored fewer pathogens.

How can you assist our ant friends in their gardening endeavors? Leave the leaves. Ants thrive in leaf litter and logs where they have plenty of cover. For more information about the study, visit www.sciencemag.org/news/2020/08/don-t-crush-ant-it-could-plant-wildflower.



Research shows that ants play a role in dispersing the seeds of *Trillium cuneatum*.

BROOKLYN BOTANIC GARDEN SELECTS NEW PRESIDENT AND CEO

Adrian Benepe, former New York City Parks Commissioner, will join the Brooklyn Botanic Garden (BBG) as its new president and CEO, becoming the sev-



Adrian Benepe

enth leader in the New York garden's 110-year history. Over the last four decades, Benepe has been recognized as one of the nation's most accomplished leaders in green

spaces, gardens, and parks. He has led a variety of government and nonprofit organizations focused on open spaces and preserving plant communities. During his tenure as Park's Commissioner from 2002 to 2012, Benepe oversaw a major expansion of New York's green spaces, adding more than 800 acres of new parkland. He has served the past eight years as senior vice president for the Trust for Public Land. He initiated and led a national drive to ensure every city-dweller in the U.S. has a high-quality park within a 10-minute walk.

Founded in 1910, BBG is regarded as one of the world's leading botanic gardens. The garden recently finished a major \$125 million capital campaign to create new gardens and landscapes.

DECLINES IN CROP BREEDING PROGRAMS COULD JEOPARDIZE FOOD SECURITY

A new study from Washington State University (WSU), published in *Crop Science*, demonstrates that public plant breeding programs are declining across the United States. A team led by Kate Evans, a WSU horticulture professor specializing in apple and pear breeding, found that these programs are seeing marked decreases in funding and personnel.

Conducting a survey of 278 plant breeding programs across the U.S., Evans and her colleagues looked primarily at federal programs run by the U.S. Department of Agriculture or based at public research universities. They found an estimated 21.4 percent decline in funded full-time employee time over the past five years and an estimated 17.7 percent decline of technical support personnel. The team also found that retirement is on the horizon for a significant number of plant breeding program leaders. Of the respondents, over a third reported having leaders over the age of 60 and 62 percent are led by those over 50.

These statistics are alarming as these programs have a direct impact on food security. "Plant breeding is a long-term, sustainable way to address concerns over having enough food and keeping our food sources secure," says Evans, who is based at WSU's Tree Fruit Research & Extension Center in Wenatchee. It includes breeding for disease and pest resistance, drought tolerance, increased yield, and introducing new varieties.

Pathogens are always adapting, and plant breeding programs help growers stay ahead or respond to these threats.

University programs also can specialize in developing crops that thrive in local conditions. Expense is a key



Kate Evans, a specialist in apple and pear breeding, led a study showing a decrease in plant breeding programs in the U.S.

reason for programs' decline. It takes many years to develop new plants and crops and that means funding a program for that long is a significant expense. For details about the study, visit <https://news.wsu.edu/2020/08/07/decline-plant-breeding-programs-impact-food-security>.

NEW REPORT CALLS FOR EXPANDED PLANT COLLECTIONS, FINDS INCREASED EXTINCTION RISKS

Newly released, *The State of the World's Plants and Fungi 2020* is the result of an international collaboration organized by the Royal Botanic Gardens, Kew in the United Kingdom to show how people are currently using plants and fungi, what useful properties are being neglected, and what is at risk of being lost. In our era of climate change, herbarium collections are increasingly important. An herbarium is a collection of plants and plant parts that have been pressed, dried, and preserved for study including where, when, and by whom specimens were collected. There are currently 3,324 active herbaria in the world



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with nearly 400 million preserved specimens. Herbaria specimens have proved to be an invaluable resource for scientists as they become more digitized. They also can be used for DNA sampling. Researchers have called for an increase in support for digitizing collections, as only about 21 percent have been scanned. They have also recommended expanding collections of plants from Africa, tropical Asia, and the Pacific, that are underrepresented.

In 2016, the report had estimated 21 percent of plant species were at risk for extinction. The new edition shows that the extinction risk may be up to 39.4 percent due to more sophisticated conservation assessments and new analytical approaches to correct biases in current data. The report authors recommend using artificial intelligence to help iden-

tify areas for priority conservation. The demand for naturally derived medicines has risen globally, threatening some species. The data reported shows that of the 5,411 medicinal plants that have been assessed for their conservation status (out of 25,791 documented medicinal plants), 723 (13 percent) are categorized as threatened.

There is good news. The Kew report demonstrates there are 7,039 edible plant species that have potential as future foods. Right now, just 15 species provide 90 percent of humanity's food energy intake, and four billion people rely entirely on three crops—rice, corn, and wheat. With global population only increasing, scientists are looking for overlooked and underutilized crops. They are also examining plant species that would be good sources of

fuel or bioenergy and identified 2,500 species that could aid in that effort. To see the complete report, visit www.biodiversityinternational.org/e-library/publications/detail/state-of-the-worlds-plants-and-fungi-2020.

DROPLETS FOUND ON PLANT LEAVES SERVE AS NUTRIENT-RICH FOOD FOR INSECTS

A new study led by Rutgers University researchers has determined that droplets which form on blueberry leaves serve as a nutrient-rich food source for insects. Many plants perform 'guttation', secreting fluid or drops of xylem sap from pores at the edges of their leaves. It is commonly sipped by bees, wasps, and flies and biologists had considered them a water source. The Rutgers study has demonstrated that the droplets are also rich in carbohydrates and proteins that are essential for many



Droplets on the edge of leaves may be a source of important nutrients for insects.

insect species. The researchers used several blueberry fields to study the phenomenon. They found that the abundance of beneficial insects doubled in fields with the droplets. "These findings are important for the conservation of beneficial insects because they can find and feed on droplets when pollen, nectar, hosts or prey are scarce," says senior author Cesar Rodriguez-Saona, a professor and Extension specialist in the Department of Entomology in the School of Environmental and Biological Sciences at Rutgers University-New Brunswick, New Jersey. To read more, visit www.sciencedaily.com/releases/2020/09/200929123528.htm.

Written by Associate Editor Heather Prince.

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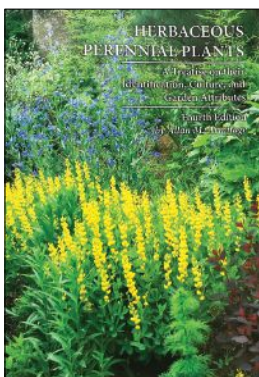
—David J. Ellis, Editor

Recommendations for Your Gardening Library

Herbaceous Perennial Plants: A Treatise on Their Identification, Culture, and Garden Attributes (4th ed.)

Allan M. Armitage. Stipes Publishing, Champaign, IL. 1,109 pages. Publisher's price, paperback: \$79.80.

FROM ITS publication in 1989, *Herbaceous Perennial Plants* has been the bible for anyone interested in or gardening with perennials.



Each successive edition, culminating with the long-awaited 4th edition, has reaffirmed this status. Despite retiring from the University of Georgia, Allan Armitage has not been idle during the 12 years since the last update. Building on the solid foundation of past editions, he has packed the pages with essential plant information and expanded cultivar lists that reflect the market trend of more is better. The purple coneflower list, for example, went from a mere 40 to nearly 100 cultivars!

The book covers a broad variety of perennials, bulbs, ferns, grasses, and vines—over 600 genera and thousands of species and cultivars—with relevance to gardeners across many hardiness zones. Readers will appreciate Armitage's citing of research findings, anecdotal observations, and historical facts. New to the 4th edition is an invaluable table featuring numerous nomenclatural changes that confound us all, as well as an important appendix on invasive plants including web resources for every state. Leaf and flower terminology drawings, a glossary of botanical terms, and a full index of botanical and common names are back again.

More photographs would be nice but given the density of the text at over 1,000 pages, photos for every plant would make the book even heavier than it is already. Line drawings sprinkled throughout help illustrate diagnostic characteristics, and line quality is more refined than in previous editions. My personal recommendation is to splurge for the hardcover, which holds up better to regular use than the softbound version. I have certainly gotten my money's worth out of every well-thumbed copy of this book!

Herbaceous Perennial Plants is much more than a compendium of perennial plants. It is the summation of a lifetime of teaching and research, and its pages are infused with Armitage's charm, wit, wisdom, and extensive plant knowledge. From where I stand, *Herbaceous Perennial Plants* is a necessity for any serious or novice gardener—for 31 years it's been within my arm's reach and the enhanced 4th edition will be there for many more.

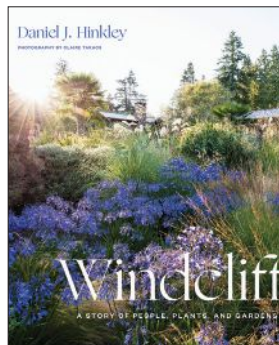
—Richard Hawke

Richard Hawke is Plant Evaluation Manager at Chicago Botanic Garden in Glencoe, Illinois.

Windcliff: A Story of People, Plants, and Gardens

Daniel J. Hinkley. Timber Press, Portland, OR. 280 pages. Publisher's price, hardcover: \$35.

OVER THE COURSE of a lifetime, few of us will make even one influential garden. Dan Hinkley has made two. *Windcliff: A Story of People, Plants and Gardens* lays out the story of how Hinkley and his husband, Robert Jones, followed up on their acclaimed Heronswood garden by creating another masterpiece atop a windblown cliff overlooking Puget Sound. "On many levels, I believe my garden at Windcliff is an attempt to evoke a multitude of moments in my life, my personal geography, my own intervals of space and time," writes Hinkley in his foreword.



In Claire Takacs' beautiful photographs, *Windcliff* is flooded with light. The plants sparkle—plumed grass flowers, fans of hardy palms—their forms picked out with crystal edges. Hinkley's writing is equally attentive. Plants' physical details are immaculately described, down to the colors of their leaf blades. But Hinkley's gaze turns outward as well. His plant descriptions are always enmeshed with stories of the people who grow them, share them, talk about them, and pass them on.

Windcliff is a book about a garden made by one of the most prominent plantspeople of the past 40 years. In making *Windcliff*, Hinkley has had unparalleled access to plants and people through his career of traveling the world collecting and introducing myriad plants. He's working with a spectacular site and collaborating with an architect partner to bring that vision to life. It would be foolish to separate the story of *Windcliff* from its context—the rush of '90s and early '00s prosperity in the Pacific Northwest that enabled a culture of plant collectors and fanatics. That context makes this book feel a little like a relic—or a dream.

Most readers of this book won't be able to grow the plants that Hinkley eulogizes. Many of the plants he describes aren't widely available and won't grow (at least, not well) in much of the United States. Few of us will have the opportunity to visit *Windcliff* or to live in a garden that looks like this. But this book lays out the wonder of a life spent discovering, testing, and growing.

My hope for this book is that it will enable a wider audience to see plants as clearly and carefully as Dan Hinkley. In doing so, maybe we'll see the world more clearly ourselves.

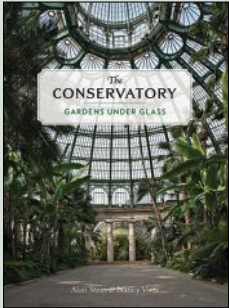
—Caleb Melchior

Caleb Melchior is a landscape architect and freelance writer living in Fort Myers, Florida.

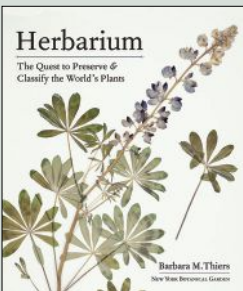
GARDENER'S BOOKS FOR GIFT-GIVING

WHAT DO YOU get the gardener who might have everything? We've found you can never really have enough gardening books. What better way to spend a quiet winter evening than curled up with some armchair travel or intriguing garden history? We chose a range of recent books to inspire, inform, and add a bit of garden magic to the holiday season.

The Conservatory: Gardens Under Glass (Princeton Architectural Press, \$60). This beautifully illustrated volume tours historic glass palaces from 17th-century utilitarian orangeries for royalty to Victorian showhouses and modern-day new sustainable designs that aim to collect and preserve vanishing species. Authors Alan Stein and Nancy Virts lovingly detail the stories of 56 conservatories across the globe. Gorgeous photographs give you a glimpse of overlooked details and behind-the-scenes vignettes as well as sweeping vistas and historic snapshots.



Herbarium: The Quest to Preserve & Classify the World's Plants (Timber Press, \$40). At its heart, an herbarium is a collection of dried preserved plant specimens collected by scientists to further botanical knowledge. Barbara M. Thiers provides a sweeping history of the origins, development, and future of herbaria and their role in plant conservation. Discover the idiosyncratic personalities of collectors, the tribulations of plant hunting, debates about classification, how herbaria affect diplomatic relations, and more as you enjoy bountiful images of specimens and their collectors.



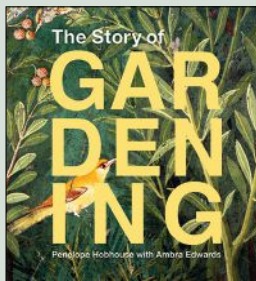
Sissinghurst: The Dream Garden (Frances Lincoln, \$45). Tim Richardson explores the history and evolution of this signature example of English garden design. Writer Vita Sackville-West and her husband diplomat Harold Nicolson transformed the medieval estate with their eclectic vision of garden rooms with specific themes. Richardson features the newest evolution of the gardens as recent work by its curators has turned back to Vita's and Harold's original plans, creating looser, dreamier garden spaces. Discover the unique partnership and forethought that created a magnificent garden enjoyed by generations. Filled with lush photography and historic vignettes, this new treatise on Sissinghurst gives depth and breadth to one of the world's most visited gardens.



The Life & Love of the Forest (Abrams, \$50). This sumptuous coffee table book from author Lewis Blackwell will have you longing for a walk in the woods. Gorgeous photography invites you to explore the many-textured world of forests. Blackwell's text juxtaposes the serene images with a varied discussion of the evolution of forests, the importance of human/tree interactions, new scientific research, and our role in preserving these complex, mysterious ecosystems. Tree lovers will find plenty here, but you'll also find rich macro images of the fauna that calls the forest home.



The Story of Gardening (Princeton Architectural Press, 2nd edition, \$60). The engaging voice of Penelope Hobhouse leads you through a few thousand years of garden history from its earliest recorded existence in Mesopotamia through today's trends. Beautifully illustrated, it is easy to dip in and out to visit specific time periods, gardens, or garden makers. The last chapter dives into modern garden trends including ecological landscaping, naturalistic gardening, and the New Perennial Movement. Hobhouse also threads the history of people and plants through each chapter, reflecting on the origins of garden styles.



Royal Gardens of the World: 21 Celebrated Gardens from the Alhambra to Highgrove and Beyond (Kyle Books, \$45). Slip into this colorfully illustrated book and travel to some of the world's most enchanting gardens from grand vistas to intimate vignettes. Author Mark Lane gives each garden a delightful thumbnail history from inception to today including helpful maps, fun facts, and portraits of their creators. The book's coverage is heavily tilted towards Europe, but India, Bali, and Japan are also represented. Historic photos and documents are sprinkled throughout, rounding out this beautiful compilation of centuries of garden artistry.



—Heather Prince, Associate Editor

GIFTS FOR GARDENERS

Looking for gifts for the gardeners in your life this holiday season? Here are some great ideas.



Small Bypass Pruner

This ergonomic pruner is small but sharp and does a great job trimming, deadheading, and harvesting. \$21.50. Garrett Wade. www.garrettwade.com.



Gardener's Soap Set

These soaps are handcrafted from natural ingredients, clean grime from hands after working in the garden, and are scented with essential oils. \$14.99. Garden Artisans. www.gardenartisans.com



Plant a Tree Kits

For every tree grow kit you purchase from the nonprofit One Tree Planted, it will plant a tree in the region of the tree's natural habitat. Each kit contains seeds, growing medium, and instructions. Choose from eight species. Each kit is \$9.95. OneTree Planted. onetreeplanted.org.



VegTrug Herb Garden Planter

Eight growing compartments in this portable raised planter lets you have all your favorite herbs at hand. Unit is made of cedar, stands 32 inches high, and includes a storage shelf. Light assembly required. \$149.95. Williams Sonoma. www.williams-sonoma.com.



Dramm ColorWear™ Apron

Made of cotton in berry (shown) and yellow, this garden apron keeps your clothes clean. Three mesh pockets provide light storage. \$24.95. Planet Natural. www.planetnatural.com.



TubTrug Colander

Rinse and drain your harvest in the garden with this rugged, lightweight, polyethylene colander, which fits into a TubTrug (sold separately). \$16.95. Gardener's Supply. www.gardeners.com.

Products profiled are chosen based on qualities such as innovative design, horticultural utility, and environmental responsibility; they have not necessarily been tested by the American Horticultural Society. Listed prices are subject to change.



LaMotte® Garden Kit

Do you know your soil's pH and N-P-K levels? Everything you need to perform a simple soil test at home is here—solutions, tablets, test tubes, spoons, pipets, charts, instructions, and educational handbooks. \$64.50. Carolina Biological Supply. www.carolina.com.



Fiddlehead Fern Stakes

Inspired by the tightly coiled heads of young ferns, these clear-coated steel stakes add artistic flair to the garden. They come in sets of three in varying heights: 32, 40, and 48 inches. \$56.95. Kinsman Company. www.kinsmangarden.com.



Kneelo™ Kneeling Pad

Manufactured in England and available in a range of colors, this generously sized kneeling pad features memory foam that will make planting and weeding easy on your knees. \$31. Corona. www.coronatoolsusa.com.

REGIONAL HAPPENINGS

Horticultural Events from Around the Country

Please note: The events here were scheduled at the time this magazine went to press, but be sure to check event websites for the latest information on openings, postponements, and cancellations.

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.ahsgardening.org/rap.

NORTHEAST

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

RAP NOV. 2–JAN. 2. **Gardens Aglow.** Coastal Maine Botanical Gardens. Boothbay, ME. www.maine gardens.org.

RAP DEC. 12. **Boxwood Table Tree.** Class. Tower Hill Botanic Garden. Boylston, MA. www.towerhillbg.org.

MID-ATLANTIC

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

RAP NOV. 13–JAN. 2. **Garden of Lights.** Norfolk Botanical Garden. Richmond, VA. <https://norfolkbotanicalgarden.org>.

NOV. 20–JAN. 10. **A Longwood Christmas.** Longwood Gardens. Kennett Square, PA. <https://longwoodgardens.org>.

RAP NOV. 23–JAN. 10. **Gardenfest of Lights.** Lewis Ginter Botanical Garden. Richmond, VA. www.lewisginter.org.

RAP DEC. 12. **Conifers and the Winter Garden.** Garden walk. Winterthur Museum, Garden & Library. Winterthur, DE. www.winterthur.org.

SOUTHEAST

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

RAP NOV. 14–JAN. 16. **Garden Lights, Holiday Nights.** Atlanta Botanical Garden. Atlanta, GA. www.atlantabg.org.

RAP NOV. 20–JAN. 10. **Holiday LIGHTS.** Cheekwood Estate & Gardens. Nashville, TN. www.cheekwood.org.

RAP NOV. 27–DEC. 22. **Enchanted Airlie.** Airlie Gardens. Wilmington, NC. <https://airliegarden.org>.

RAP NOV. 27–JAN. 2. **Galaxy of Lights.** Huntsville Botanical Garden. Huntsville, AL. <https://hsvbg.org>.

RAP DEC. 1–JAN. 3. **Dazzling Nights.** Harry P. Leu Gardens. Orlando, FL. www.leugarden.org.

RAP DEC. 3–23. **Holiday Lights in the Garden.** Cape Fear Botanical Garden. Fayetteville, NC. www.capefearbg.org.

RAP DEC. 9. **Year-Round Produce Gardening.** Virtual workshop. Yew Dell Botanical Gardens. Crestwood, KY. www.yewdellgardens.org.

NORTH CENTRAL

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

RAP NOV. 13–JAN. 3. **Lightscape.** Chicago Botanic Garden. Glencoe, IL. www.chicagobotanic.org.

RAP NOV. 20–JAN. 3. **Illumination.** The Morton Arboretum. Lisle, IL. www.mortonarb.org.

RAP NOV. 21. **Worm Composting 101.** Virtual class. Garfield Park Conservatory. Chicago, IL. <https://garfieldconservatory.org>.

RAP NOV. 27–29, DEC. 4–27. **Winter Wonderland Holiday Lights.** Wellfield Botanic Gardens. Elkhart, IN. <https://wellfieldgardens.org>.

RAP NOV. 27–DEC. 30. **Deck the Hall.** Stan Hywet Hall & Gardens. Akron, OH. www.stanhywet.org.

RAP NOV. 27–JAN. 2. **Get Glowing!** Green Bay Botanical Garden. Green Bay, WI. <https://gbbg.org>.

SOUTH CENTRAL

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

RAP NOV. 11–JAN. 2. **Garden Glow.** Missouri

Botanical Garden. St. Louis, MO. www.missouribotanicalgarden.org.

RAP NOV. 14–JAN. 9. **Illuminations.** Botanica, The Wichita Gardens. Wichita, KS. <https://botanica.org>.

RAP NOV. 21–DEC. 31. **Winter Garden Festival.** Garvan Woodland Gardens. Hot Springs, AR. www.garvangardens.org.

SOUTHWEST

AZ, NM, CO, UT

RAP NOV. 27–DEC. 31. **Las Noches de las Luminarias.** Desert Botanical Garden. Phoenix, AZ. <https://dbg.org>.

RAP DEC. 9–27. **Garden of Lights.** The Gardens on Spring Creek. Fort Collins, CO. www.fcgov.com/gardens.

NORTHWEST

AK, ID, MT, OR, WA, WY

RAP NOV. 26–DEC. 27. **Winter Garden Aglow.** Idaho Botanical Garden. Boise, ID. <https://idahobotanicalgarden.org>.

RAP DEC. 16. **Winter in the Forest.** Guided walk. Mount Pisgah Arboretum. Eugene, OR. www.mountpisgaharboretum.org.

WEST COAST

CA, NV, HI

RAP NOV. 20–DEC. 20. **Garden of d'Lights.** Ruth Bancroft Garden. Walnut Creek, CA. www.ruthbancroftgarden.org.

RAP DEC. 12 & 19. **Mushroom ID for Beginners.** Virtual lecture. Mendocino Coast Botanical Gardens. Fort Bragg, CA. www.gardenbythesea.org.

CANADA

RAP DEC. 13. **Plant Identification & Culture Workshop.** Horticulture Centre of the Pacific. Victoria, BC. <https://hcp.ca>.

PRONUNCIATIONS AND HARDINESS ZONES

Most of the cultivated plants described in this issue are listed here with their pronunciations and USDA Plant Hardiness Zones. The hardiness zones are listed in the form of an approximate range in which year-round temperatures are appropriate for growing each plant. A USDA zone rating of 0–0 means that the plant is a true annual and completes its life cycle in a year or less.

While the zones are a good place to start in determining plant adaptability in your region, factors such as soil type, light exposure, seasonal rainfall patterns, snow cover, and humidity also play an important role in plant survival. The zones tend to be conservative; plants may grow outside the ranges indicated.

Acer palmatum AY-ser pal-MAY-tum (6–8)
Agave bracteosa uh-GAH-vee brak-tee-O-suh (9–11)
A. colorata A. kul-ler-AY-tuh (8–10)
A. ferdinandi-regis A. fur-dih-NAN-dee REE-jis (8–10)
A. filifera A. fih-LIF-ur-uh (9–11)
A. filifera* ssp. *multifilifera A. fih-LIF-ur-uh ssp. mul-tih-lih-FUR-uh (9–11)
A. filifera* ssp. *schidigera A. fih-LIF-ur-uh ssp. ski-DIJ-ur-uh (9–11)
A. geminiflora A. jem-in-ih-FLOR-uh (9–11)
A. lechuguilla A. leh-choo-GEE-yuh (7–9)
A. ocahui A. o-kuh-HOO-ee (8–11)
A. parryi A. PAIR-ee-eye (7–10)
A. parryi* var. *couesii A. PAIR-ee-eye var. koo-ee-SEE-eye (7–10)
A. parryi* var. *neomexicana A. PAIR-ee-eye var. nee-o-mex-ih-KAN-uh (9–11)
A. parryi* var. *truncata A. PAIR-ee-eye var. trun-KAY-tuh (7–10)
A. parviflora A. par-vih-FLOR-uh (9–11)
A. polianthiflora A. pah-lee-an-thi-FLOR-uh (10–11)
A. striata A. stry-AY-tuh (7/8–10)
A. toumeyana* ssp. *bella A. too-mee-AY-nuh ssp. BEL-uh (8–11)
A. univittata A. oo-nih-vih-TAY-tuh (9–11)
A. victoriae-reginae A. vik-TOR-ee-ay reh-JEE-nay (9–11)
Calamintha nepeta* ssp. *nepeta kah-luh-MIN-thuh NEP-eh-tuh ssp. NEP-eh-tuh (5–7)
Chlorophytum comosum klor-o-FY-tum kuh-MO-sum (9–11)
Cornus alba KOR-nus AL-buh (2–6/7)
C. sanguinea C. sang-GWIN-ee-uh (4–7)
C. sericea C. seh-RISS-ee-uh (2–7)
Corylus avellana KOR-ih-lus ah-vel-LAN-uh (3–9)
C. maxima C. MAKs-ih-muh (4–8)
Dombeya wallichii dom-BEE-yuh wah-LICH-ee-eye (10–13)
Epipremnum aureum eh-pih-PREM-num AW-ree-um (min. 50 degrees F)
Fragaria × ananassa frah-GAY-ree-uh ah-NAN-ah-suh (4–8)
Hibiscus syriacus hy-BISS-kus sih-ree-AH-kus (5–9)
Itea virginica eye-TEE-uh vir-JIN-ih-kuh (5–9)
Origanum majorana o-RIG-uh-num may-jo-RAN-uh (9–11)
O. × majoricum O. muh-JOR-ih-kum (7–11)
O. vulgare O. vul-GAH-ree (4–9)
Rhus typhina RUS TY-fee-nuh (3–8)
Salix alba* var. *vitellina SAY-lik AL-buh var. vy-tel-LEE-nuh (4–9)
S. matsudana S. maht-soo-DAY-nuh (5–8)
Viburnum dentatum vy-BUR-num den-TAY-tum (3–8)
Weigela florida wy-JEEL-yuh FLOR-ih-duh (4–8)

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M/A: Promoting Plant Careers with Seed Your Future, 8. AHS's 2020 Spring Garden Market at River Farm, 8. AHS's River Farm Part of Virginia's Historic Garden Week, 9. Reminder: Special Discounts Available for AHS Members, 9. outh Garden Symposium Heads to California, 9.

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Through Collaboration with New Directions in the American Landscape, 8. Great American Gardeners Award Winners Provide Video Acceptance Speeches, 8. New AHS Member Benefit, 10. In Memoriam: Gilbert S. Daniels, 10.

J/A: AHS Garden Party: "Celebrating Together: Arriving Home", 8. New Gardens Join RAP, 8. In Memoriam: J. Landon Reeve, IV, 10.

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N/D: Terry Hayes is New AHS Board Chair, 8. AHS Cosponsors New Webinar Series Starting in January, 8. A 30% Discount from Princeton University Press, 8. Brent and Becky's Bloomin' Bucks, 8. Support AHS with Amazon Smile, 10. Virtual Garden Party Rescheduled for Spring 2021, 10.

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Index compiled by AHS Volunteer Anne Beamer.

PLANT IN THE SPOTLIGHT

Pink Ball Tree (*Dombeya wallichii*)

by Amelia Grant

MANY GARDENERS living in USDA Zones 10 and 11 who are transplanted from cooler regions miss plants they used to grow. Fortunately for those of us who like hydrangeas, there is a tropical lookalike that shines in warmer climes, displaying show-stopping flowers that mimic those of hydrangeas: pink ball tree. It flourishes in gardens of frost-free areas of the U.S., but grows well in containers, so can be cultivated elsewhere if brought indoors for winter.

STELLAR WINTER COLOR

Also called tropical hydrangea—although it is a member of the mallow family and not related to hydrangeas—pink ball tree (*Dombeya wallichii*, Zones 10–13) is an ever-green shrub or small tree native to East Africa, Madagascar, and India that can grow up to 30 feet tall and wide. Its fuzzy, nine-inch-wide, green leaves lend tropical texture to the garden year round, but the winter flowers are the main attraction. In December through January, five- to six-inch-diameter balls of pale pink, honey-scented flowers hang like Christmas ornaments below the leaves, attracting bees and butterflies.

Pink ball tree makes a lush, quick-growing, deer-resistant screen. The one in my South Florida garden attained a height of nine feet less than two years after I planted it. In the third year, I cut it back five feet, and it regained its former stature in about six months.

It should be noted that *D. wallichii* is sometimes confused with *D. ×cayeux*. However, *D. ×cayeux* is thought to be a hybrid of *D. wallichii* and *D. burgesiae* and is a shorter plant with smaller flowers.

UNDEMANDING IN THE GARDEN

Culture of pink ball tree in the garden couldn't be easier. Locate it where it gets full to part sun in very well-drained soil (it's not fussy about sand or loam). In Zones 10 and 11, fertilize garden plants



with granular all-purpose fertilizer after flowering and in March; container-grown plants should be fertilized in March with slow release fertilizer.

When it comes to pruning, pink ball tree is like hydrangea in that ill-timed pruning will keep the plant from budding and cause it to produce only leaves. Both garden and container plants can be pruned after flowering, but garden plants may be pruned again until midsummer. Container-grown plants, no matter the region, should be pruned by early June. Plants in containers may set flower buds earlier. Hard pruning, particularly for plants that must be brought indoors, may be needed to keep them to a smaller size where space is limited.

Aphids, soft scales, and sooty-mold may sometimes be a problem. Treat small



Left: The fragrant flowers of pink ball tree resemble those of hydrangea. Above: The plant grows quickly and makes a good screen.

infestations with a cotton swab dipped in rubbing alcohol; insecticidal soap may be applied for larger infestations.

CONTAINER CULTURE IN COOLER ZONES

North of Zone 10, container-grown plants must be taken indoors prior to the onset of freezing weather. Pink ball tree needs a high light level and cool greenhouse conditions—a low temperature of 45 degrees Fahrenheit with managed levels of humidity—during winter to stimulate flowering. If you don't have a greenhouse, place the plant atop water-filled pebble trays near a south-facing window in a cool location. This is not ideal, but worth trying to experience pink ball tree's delightful hydrangealike blossoms. The leaves may drop indoors, but they should grow back when the plant is moved outdoors again in spring.

Source

Logees, Danielson, CT.
www.logees.com.

Amelia Grant is a garden designer and author living in Jensen Beach, Florida. Her blog is www.theshrubqueen.com.

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