

Horticultural News and Research Important to American Gardeners

PLANT SELECT UNVEILS TOP 2020 PLANTS

With a mission to identify and distribute the most exceptional plants that thrive in the Rocky Mountain region, Plant Select, a nonprofit collaboration of Denver Botanic Gardens, Colorado State University, and professional horticulturists, introduces top-performing plants to garden centers and wholesale suppliers each year. New for 2020 are seven plants that have been chosen for their superior robustness and ability to flourish in a range of conditions.

Dwarf leadplant (*Amorpha nana*) is a small native shrub that bears spikes of honey-scented purple flowers in June. This dryland shrub thrives with full sun in dry, rocky soils.

Mongolian snowflakes (*Clematis hexapetala*), a herbaceous clematis, features small, six-petaled, ivory-colored flowers atop



deep green foliage. Blooming May through summer, this durable plant does well in hot, dry climates.

A tidy, rounded perennial for early spring flowers, golden candles (*Thermopsis lupinoides*) sends up abundant elegant golden candle spires of showy blooms well into June. Happy in full sun to light shade, this adaptable plant becomes drought-tolerant with maturity.

Indigo blue dragonhead (*Dracocephalum ruyschiana*) is an elegant mounding plant with dark blue flower spikes and needlelike leaves. An adaptable perennial tolerant of average soils, it blooms in early summer and thrives in rock gardens and dry meadow areas as well as average soils.

Forming a dense mound of aromatic, soft, silvery-green feathery leaves, Leprechaun southernwood (*Artemisia abrotanum* 'Leprechaun') creates an attractive, compact, low garden hedge that can be grown in full sun, part shade, or full shade.



Pink cotton lamb's ear (*Stachys lavandulifolia* Green Form) features low mats of soft green foliage with spiky clusters of fuzzy pink flowers resembling cotton candy that bloom in late spring to early summer. Rabbit and deer resistant, this plant thrives in average to dry soils.

Among Plant Select's 2020 top performers for the Rocky Mountain region are indigo blue dragonhead, top left, dwarf lead plant, bottom left, and Mongolian snowflake, above.

And lastly, summer frost pink candy (*Stachys lavandulifolia* 'Po2oS', Silver Form), is an elegant

silver-leaved form of lamb's ear with similar cotton candy pink flower spikes that bloom in late spring.

Learn more about all of these plants at <https://plantsselect.org/plants/new-for-2020>.

FILLING A NEED FOR MORE PLANTMOJI

Strolling through the Missouri Botanical Garden's (MOBOT) 2019 Orchid Show, Cassidy Moody, MOBOT's Senior Digital Media Specialist, snapped a photo of the display to share on social media. To complement the photo, he naturally wanted to use an emoji. However, despite being one of the two largest

plant families on the planet—representing nearly 26,000 known species—orchids (Orchidaceae) surprisingly do not have their own dedicated emoji. Although there are flower emoji like the hibiscus or sunflower, using a flower not in the same plant family did not sit well with Moody. Disenchanted with the overall lack of emoji diversity for the plant kingdoms, he decided to delve into the emoji world and spearhead MOBOT’s push for an orchid emoji. “As a botanical garden striving to discover and share knowledge of plants, we’d like to see more plants represented by emoji, or what we’re calling plantmoji,” Moody notes.

Orchids make up a large category of flowering plants and come in extraordinary diversity. As Moody states in his proposal to the Unicode Consortium (the group that oversees the emoji selection process), “this is not simply a different species of plant but represents an entire family of flowering plants that is not represented by emoji.” Moreover, orchids, Moody says “hold meaning for many people beyond horticulture and botany.” MOBOT decided to base its orchid emoji design on the popular moth orchid (*Phalaenopsis* sp.) to symbolize the vast orchid family.



Designed by Sam Balmer, MOBOT’s proposed emoji depicts a phalaenopsis orchid flower.

MOBOT’s proposal has passed the first rounds of approval, meaning the orchid emoji could potentially come to fruition as soon as 2021. And there’s a good chance that this year’s World Emoji Day, on July 17, will bring even more plantmoji. Out of 117 new emoji proposed for 2020, five represent plants in some form—bell pepper, blueberries, olive, wood, and potted plants. Now with the garlic and onion (Amaryllidaceae) emoji added last year, there are 27 plant families represented.

Moody hopes MOBOT’s proposal encourages others to submit their own plantmoji and work toward expanding plants’ digital diversity. According to Moody, “the natural world, and specifically the plant kingdom, needs to be represented digitally so its importance to life on earth is not overlooked.” And while Moody realizes the digitized plants will never be substitutes for the real ones, he notes that because digital communication is increasingly important today, “plantmoji and other nature emoji can be a powerful tool for someone waging a conservation campaign, highlighting an endangered species, or simply calling attention to the beauty around us.”

To read MOBOT’s proposal for the orchid emoji, visit <https://discoverandshare.org/wp-content/uploads/2w019/07/orchid-emoji-proposal.pdf>.

BULB SIZE MATTERS

A study published earlier this year in the journal *Ecology and Evolution* offered insights into the evolution and ecology of bulb size. Researchers Cody Coyotee Howard and Nico Cellinese of the Florida Museum of Natural History at the University of Florida in Gainesville set out to explore why there are such large variations in bulb sizes among different plant



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varieties. The researchers analyzed more than 2,500 digital herbarium specimens representing 115 species. Their focus was on tunicate bulbs—those covered by a paperlike sheath that protects them from desiccation and physical damage.

As part of their study, Howard and Cellinese used analytical software to determine the correlation between climate and bulb size. In general, they found that larger bulbs tended to develop



in warmer regions with more stable climates. “Our results also suggest that species with bulbs may be evolving towards two different optimal bulb sizes; you can think of them as ‘big’ and ‘small’ bulbs,” says Howard. “There is a lot of variation in the data, but it appears that variation can be used by different species to adopt different life strategies, such as flowering without the leaves present.”

The researchers found that species that produce leaves and flowers at different times of the year—such as surprise lilies (*Lycoris* sp.)—also tended to have bigger bulbs. “Larger bulbs can sustain flowering outside of the more favorable growing season since larger bulbs can likely hold more resources to be used during that time,” Howard observes.

For Howard, the study opens up a host of other research opportunities. “The amount of variation in bulb size is what I find really interesting, and this small study has really made me want to pursue this further,” he says. “For instance, are there other factors that more strongly influence bulb size? Does the width of the stem influence bulb size more than the environment? Do hysteranthous species, which have larger overall bulbs, also have larger flower displays?”

To see the full study, visit <https://onlinelibrary.wiley.com/doi/full/10.1002/ce3.5996>.

HARVESTING METAL FROM PLANTS

Although a large number of plant species are unable to survive in metal-rich soils, there are a few that actually crave and flourish with high levels of metal intake. Botanists like Alan J.M. Baker, a visiting professor at the University of Melbourne, Australia, are taking a closer look at these plants and studying the potential of phytomining—the process of extracting particular metals, such as nickel, from hyper-accumulating plants species. Absorbing large amounts of metal compounds from the soil and concentrating them in their tissues, these vigorous plants can be useful for cleaning up previously mined or degraded areas and ultimately finding value in land with toxic soils. Harvesting the metals from these plants might serve as an alternative to traditional, environmentally costly mining practices.

In a study published in the *Journal of Geochemical Exploration*, Baker and other researchers set out to test this idea and studied the amount of metal harvested from nickel-hyper-accumulating plants growing on a designated plot of land in Malaysia. By planting *Phyllanthus rufuschaneyi*, a fast-growing tree native to Borneo that absorbs large quantities of nickel, the farmers were able to success-

fully collect enough green nickel-rich sap that, after a purification process, amounted to hundreds of pounds of nickel citrate. “The success of our first field trial is critical to provide ‘real-life’ evidence of the value of large-scale tropical ‘metal farming,’” the study notes. To read more on the topic, visit www.nytimes.com/2020/02/26/science/metal-plants-farm.html.

GROWING RED LETTUCE IN SPACE

Aboard the International Space Station (ISS), astronauts are assessing the best ways to harvest crops for potential healthier food options during long space expeditions. In March, a study published in the journal *Frontiers in Plant Science* elucidated the complex measures astronauts need to successfully grow crops in orbit, as well as analyzed the nutritional value of the crops grown. According to the study, “food crops grown in space experience different environmental conditions than plants grown on Earth (e.g., reduced gravity, elevated radiation levels).” To further examine these conditions, the



In 2014, the first year of the food crop experiment, NASA astronaut Steve Swanson harvests red romaine lettuce that was grown from seed inside the International Space Station’s Veggie facility.

researchers grew red romaine lettuce—*Lactuca sativa* cultivar ‘Outredgeous’—in Veggie, a plant growth chamber aboard the ISS. Rather than growing in soil, the red lettuce is being grown in a porous ceramic clay to help trap air and water around the roots in their weightless environment.

The researchers studied the lettuce grown from 2014 to 2016 and compared it with Earth-grown plants. In the end, the study found that the lettuce grown on ISS had just as much nutritional value as lettuce raised on Earth. The researchers ultimately concluded that the study indicates “leafy vegetable crops can produce safe, edible, fresh food to supplement to the astronauts’ diet, and provide baseline data for continual operation of the Veggie plant growth units on ISS.” To read the full study, visit www.frontiersin.org/articles/10.3389/fpls.2020.00199/full.

Written by freelance writer Charlene Chuquillanqui.

PEOPLE AND PLACES IN THE NEWS

SHIMIZU IS 2020 SCOTT MEDAL AND AWARD WINNER

Holly Shimizu is the 2020 recipient of the prestigious Scott Medal and Award. The award from the Scott Arboretum of Swarthmore College in Pennsylvania celebrates



individuals who have made outstanding national contributions to the science and art of gardening. Over the course of a long and storied career, Shimizu was the first curator of the U.S. National Arboretum's National Herb Garden, a host of PBS's "The Victory Garden" show, as well as a longtime executive director of the U.S. Botanic Garden in Washington, D.C. She also has an extensive list of previous accolades, including the Honorary Life Member Award from the American Public Gardens Association; the Thomas Roland Medal from the Massachusetts Horticultural Society; and the Professional Award and Liberty Hyde Bailey Award from the American Horticultural Society. Shimizu, who is based in the Washington, D.C. area, is currently a member of the American Horticultural Society's Board of Directors.

For more on the Scott Medal and Award, visit www.scottarboretum.org/learn/scott-medal-award.

RANCHO SANTA ANA BOTANIC GARDEN CHANGES NAME

The Rancho Santa Ana Botanic Garden announced in March that it has officially changed its name to the California Botanic Garden (CalBG). For almost a century, the garden



has been at the forefront of the conservation, research, and celebration of California's native plants. Showcasing an expansive collection of the state's diverse flora, the garden is the largest botanic garden dedicated to California's plants. The garden's rebranding was implemented to more

accurately represent its mission to conserve and celebrate the state's native plants, as well as more succinctly communicate the garden's vibrant history and public garden space. "We are proud to emerge as California's garden and to declare that the Golden State's native plants are worthy of admiration, respect, and preservation. California Botanic Garden is a name that sets the perfect stage to broadcast and enshrine this important message, that native plants are fundamental to the California experience and California's

identity," says David Bryant, Director of Visitor Experience. Bryant notes CalBG is excited to move into a new chapter of broader public engagement and wider community support. "In becoming California Botanic Garden, we celebrate our legacy and underscore our commitment to preserve and perpetuate the native plants that make our home superlatively special. We can't wait to greet Californians and visitors from around the world back to our public garden, newly renamed, when we have safely emerged from the Coronavirus (COVID-19) crises."

Learn more at www.calbg.org.

IN MEMORIAM: JOHN G. FAIREY

John Gaston Fairey, an esteemed professor, designer, and horticulturist, died on March 17 at the age of 89. A well-



known figure in American gardening, Fairey was the founder of the John Fairey Garden (formerly Peckerwood Garden) in Hempstead, Texas, and Regents Professor of Architecture at Texas A&M University. After acquiring seven acres of land near Hempstead in 1971, Fairey created Peckerwood Garden. Today, the garden spans 39 acres and is home to over 4,000 species

of rare and unique plants from the United States, Mexico, and Asia.

During his lifetime, Fairey was the recipient of many awards, including the American Horticultural Commercial Award in 1996 for his acclaimed plant exploration trips to northeast Mexico; the 2013 Scott Medal and Award from Swarthmore College for his outstanding contribution to the science and art of gardening; the American Horticultural Society's Liberty Hyde Bailey Award in 2016; as well as the 2016 Foundation for Landscape Studies Place Maker Award. Posthumously, Fairey will also receive the Garden Club of America's Medalist Award this May.

Fairey's legacy will live on with the John Fairey Garden Conservation Foundation, which is devoted to preserving the garden and conserving native flora. Learn more about the John Fairey Garden at <http://jfgarden.org>.

—Charlene Chuquillanqui, freelance writer