A publication of the Friends of the National Arboretum

ARBOR FRIENDS

FALL 2020

IN THIS ISSUE

FROM THE EXECUTIVE DIRECTOR

DEAR FRIENDS OF THE NATIONAL ARBORETUM:

2020 has been quite the year. All of us are facing incredible challenges that affect almost every aspect of our lives. It's not easy to find peace or maintain focus in today's world, but at FONA, we're inspired by the atmosphere here at the Arboretum to do both! Even though our offices remain closed, we still get to enjoy this wonderful place (open to the public daily 8am–5pm) and have taken this time to focus on the future.

You will read more about it in Dr. Olsen's letter, but we recently worked with our landscape architect partner to present the Core Framework of the Arboretum's Master Plan to the Commission on Fine Arts, the agency that reviews the "design and aesthetics" of all construction within Washington, DC. The feedback was quite favorable, and we were honored to participate in the process. There is still more work to do, but we are excited by the direction of this plan.

We have also put a lot of thought into the future of FONA. It's easy to get distracted these days, so the team wanted to identify some guiding principles for our work and to spread the word about what we do. When you think about FONA, keep these four things in mind.

- Green space is vital for mental and physical well-being—The Arboretum and FONA help people maintain their connection with plants and trees.
- Washington Youth Garden programming is needed now more than ever—Since many kids aren't in classrooms this fall, FONA is providing opportunities to learn from home and at the Arboretum.
- Our harvest feeds others—Since spring, we have donated more than 3,000 pounds of food from our Washington Youth Garden to those in need, and we're going to keep growing!
- Collaborating to improve our community—In the end, we can't do it alone, so we're working with like-minded organizations to help those around us.

While these principles support our team's work, in the end, it's about using the Arboretum to help others during this difficult time, and we couldn't do it without your support, so thank you!

Craven Rand, Executive Director
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ON THE COVER **The beautiful variegated leaves of the dogwood *Cornus florida* 'Sterling Silver' turn shades of pink in the autumn.**

Faith and Hope...

At the end of the government fiscal year on September 15, 2020, we began our review of the past 12 months and asked ourselves what we had accomplished and what we hope to accomplish in the coming year. Given that predicting the future under normal circumstances, let alone in our current situation, is not so much a science as an experiment in faith and hope, we turned our focus to what we can control.

This summer we presented our new Master Plan — which provides guidance for site improvements that support our strategic vision for the National Arboretum — for review by the U.S. Commission of Fine Arts. This presidentially appointed body of experts is charged with reviewing federal building projects in Washington, DC, to ensure excellence in design and aesthetics that preserve the dignity of the nation's Capital. It's a first and critical step in the review process for federal properties, and the result was unanimous approval and glowing remarks on its visionary yet realistic approach to master planning, which sets the standard for how these projects should be presented to the Commission. Up next, we are looking forward to presenting to the National Capital Planning Commission and working with their team to demonstrate our responsiveness to the local community, the District, and federal interests while honoring our history and unique landscapes. We have great faith in our team and the design by Reed Hilderbrand, and we look forward to passing these final reviews.

As I write this, we will be presenting the future of the National Bonsai & Penjing Museum to the U.S. Commission of Fine Arts. Through funding and support from the National Bonsai Foundation (NBF), the team of Reed Hilderbrand was engaged to articulate an updated museum experience, taking advantage of the need for significant renovations to create a new future for the museum that secures its place as a premier cultural resource in Washington, DC. We hope that the Commission recognizes the brilliance of our design team once again, this time with the addition of Trahan Architects for the building elements.

We truly cannot fulfill the vision of the National Arboretum without the engagement, advocacy, and philanthropy of stakeholders like FONA and NBF. Through them, we flatten the ups and downs of life in federal service with the flexibility of private support. Together, we can work toward a shared vision of the National Arboretum. I can safely say that at no time in recent memory have our efforts shown more synergy than right now. I have faith in and hope for a great future through this work.

Richard T. Olsen, Director
The United States National Arboretum

KOI HAVE RETURNED TO THE ARBORETUM

Koi have returned to the Arboretum's pond after a 9-year hiatus! In late September, Arboretum staff released about 30 koi fish into the pond surrounding the Visitor Center. We are excited to welcome them to their new home and hope you can visit them. Their new and improved home features updated, robust filtration and fountain systems to maintain water quality and a healthy environment for the koi.

Nutritious food is key to the koi's good health, and they are fed a specialized diet that varies throughout the year as their needs change with the seasons. Thank you for not feeding them, no matter how cute they are when they swim to the edge of the pool to beg!

As the weather cools, the koi will become less active and spend more time closer to the bottom of the water. Because they're exerting so little energy, the fish hardly eat. Even their breathing slows. Koi pass the winter in this state, called torpor, until springtime warming perks them up again. Although only two dozen or so fish are returning to the pool, expect to see many more by next fall. Koi breed by spawning every spring, which means the aquatic garden's going to be a busy place by next summer.

Hop plants (*Humulus lupulus*) and vines of a bottle gourd plant (*Lagenaria siceraria*) climb a trellis in the special exhibit. Did you know the gourds can be used as a fermentation and transport vessel for beer?
Photo credit: Piper Zettel

Karen Zill & Claire Broderick

BEER GARDEN SPECIAL EXHIBIT: Beer Like You've Never Seen It Before

The Arboretum's temporary Beer Garden exhibit in the National Herb Garden drew thousands of visitors from May through October in 2018 and 2019, with specially planted beds of vegetation, 17 temporary hop trellises, and creative signage about the history of beer.

Inspiration for the exhibit came from the International Herb Association's selection of the hop plant (*Humulus lupulus*) as the 2018 Herb of the Year. Hops are commonly known for being an essential ingredient in modern beer brewing. Expanding on the mainstream idea of the plants commonly used in beer making, Piper Zettel and Chrissy Moore, U.S. National Arboretum staff in the National Herb Garden, created the special exhibit *Beer Garden: Beer Like You've Never Seen It Before.* By using hops and a selection of the various plants that have been used to make beer as their tools for educating, they created an exhibit to showcase how culturally significant this beverage is to many regions around the world and how it historically involved many plants besides hops and barley. Although the Beer Garden was temporary, we can give you a glimpse of what visitors learned in the exhibit through signage and featured plants. Direct quotes below are taken from the exhibit's own signage.

"All About That Base"

"What makes a beer a beer? For most brewers, it's the base that defines the beverage. A base is the plant-derived source of sugar used to jump-start the fermentation process. Without sugar, there is no fermentation—and no beer." The plants used to make that sugary base vary

PROFILE:

PIPER ZETTEL

PIPER ZETTEL worked with curator Chrissy Moore to create the Beer Garden exhibit in 2018. Like many of her colleagues at the Arboretum, Piper has a deep knowledge of the plants in the Herb Garden where she has worked for years, and she's always happy to share her knowledge with visitors. If you've met Piper in the Herb Garden, you probably feel more connected to the plants there after talking with her and hearing her stories.

Piper has been interested in plants for as long as she can remember, but it wasn't until she started working at the Arboretum in 2011 that she decided to pursue a career in plant sciences. That was the year she graduated from the University of Maryland with a degree in Plant and Wildlife Management. Her career path has been spurred along by the research and garden staff at the Arboretum who have served as tutors and mentors and showed her just how interesting and rewarding a career in plant sciences can be.

She had two internships at the Arboretum: first in the Floral and Nursery Plants Research Unit, and then an internship split between the Gotelli Conifer Collection and the Introduction Garden. In 2012, she was hired as a full-time Agricultural Science Research Technician for the National Herb Garden.

In June 2020, Piper moved into a new position, Education Specialist, where she will work with external organizations and Arboretum staff to develop educational opportunities on various topics related to the Arboretum's mission. She's looking forward to the challenges and opportunities to teach others about the impacts of plant breeding and research, community engagement, and the importance of preserving outdoor spaces.

They created an exhibit to showcase how culturally significant this beverage is to many regions around the world and how it historically involved many plants besides hops and barley.

around the world. As beer aficionados know, hops—the flowers of the hop plant—are often a key ingredient in the production of the popular brew. Growing tall on vertical twine trellises, fifteen different hop varieties were chosen for the exhibit to represent the various uses for which hops are grown: flavoring, aroma, bittering, ornamental, heirloom, and medicinal. Generally, when we think of beer, we refer to a drink that is based on the Beer Purity Law introduced in 1516 by Duke Wilhelm of Bavaria. The decree allowed for hops, barley, water, and yeast to be used as the only ingredients.

While most commonly made from malted barley, did you know beer can also be made from other grains, such as wheat, maize, and rice? Cultures throughout the world and throughout history have developed their own forms of beer and other fermented drinks based on locally available ingredients such as sorghum in Africa, agave in Mexico, and cacao in parts of South America. As the exhibit affirms, "You use what you have!"

The exhibit also featured a wide variety of plants that figure in the history and production of beer—vanilla, prickly pear (flavor and aroma), wheat, sorghum (fermentation bases), chicory, chamomile (bittering), jute, larch (hop trellises), yarrow, bog myrtle (ingredients in the ancient herb mixture for bittering and preservation)—to name only a few of the hundreds of herbs planted for the exhibit.

An ancient and ubiquitous drink

Humans have been making and consuming beer for thousands of years. One of the first domesticated grains, barley—or an ancient relative—is believed to be the first grain used for fermenting into beer. Adaptable, resilient, drought tolerant, and abundant in temperate climates throughout the world, barley remains the most widely used grain in beer production today. Archeologists have found evidence of beer production, as far back as 11,000 years ago, in the Fertile Crescent (a boomerang-shaped area spanning portions of the modern-day Middle East) and other grain-growing regions of the world, including Iran, India, and China. The written record shows that beer was available in ancient Syria, Egypt, Babylon, and Mesopotamia. Centuries later, beer was widely consumed in medieval Europe, and during this same period, Christian monasteries produced beer and monks offered it, along with food and shelter, to pilgrims and travelers. There were also ancient beers like pulque and pozol in Mesoamerica.

The earliest brewers flavored and preserved their beers with gruit—a combination of bitter herbs and flowers such as dandelion, pot marigold (*Calendula officinalis*), ground-ivy, and heather. Beer flavored in this way was powerfully inebriating, and its consumption was frowned upon by the clergy. It troubled secular rulers that those making great profits from such a brew were also avoiding taxes. In the 700s, hops were being cultivated in what is now Bavaria, and in 822, Charlemagne's cousin, Abbott Adlard of Corbie, wrote of using hops to flavor beer. Being cheaper and less controversial than the ingredients in gruit, hops were found to have superior preservative properties, and their use as the flavoring agent eventually became mainstream.

Making a better beer

Today, beer is the third most popular drink in the world, after water and tea. Over many millennia, people in different cultures have created variations and improvements in its flavor. From the thick, gruel-like concoction that was imbibed thousands of years ago, beer has evolved into the smooth golden-bronze drink we know today. While early European beers were "consumed for their medicinal benefit" or in place of

Above: Interpretive signage throughout the planted beds engaged the exhibit visitors. ***Photo credit: USNA.***

Previous page: Plants that contribute to a pleasing taste include dill, pineapple, cardamom, allspice, vanilla, coffee, pineapple sage, basil, fig, lovage, pumpkin, and hops. ***Photo credit: Piper Zettel.***

Using the garden to "deconstruct" beer, the exhibit intended to get people thinking about what plants contribute to making beer. *Photo credit: John Winder*

contaminated water, the taste (which could be vile!) was secondary; nowadays, "consumers are looking for a beer that provides an experience," and creative brewers have a host of ingredients at hand to create beers with a unique flavor.

At the U.S. Department of Agriculture-Agricultural Research Service (USDA-ARS) Hop Breeding and Genetics program in Corvallis, Oregon, scientists are working to develop advanced hop germplasm and cultivars that incorporate superior pest and disease resistance, increase yield, and enhance brewing characteristics. Two hop varieties resulting from ARS breeding and research programs are *Humulus lupulus* 'Cascade' and 'Nugget', both very popular cultivars in the brewing industry, which were featured in the Beer Garden exhibit. ARS studies are also focused on another important beer ingredient: yeast. As visitors learned, the ARS Culture Collection, which houses almost 100,000 strains of bacteria and fungi, is also a repository for microbial resources from around the world, including many yeast species used to make beer.

Unsung heros

By using the garden to "deconstruct" beer, National Herb Garden staff intended to get people thinking about what plants contribute to making beer, one of the world's favorite drinks. And by the conclusion of the exhibit, visitors appreciated this truth of the exhibit's declaration: "Beer is one of the most economically successful industries in the world, but its story would not be complete without acknowledging the other plants that made that success possible. These are the unsung heroes of beer."

Although the special exhibit is over, many of the featured plants are in the permanent Beverage Garden plot of the National Herb Garden's Themed Garden, and the staff are always "on tap" in the garden, eager to continue discussing the topic.

KAREN ZILL *is a DC-based freelance writer. Her work includes discussion guides for film and public television programs, memoirs, essays, and nature writing.* *Many thanks to Piper Zettel and Chrissy Moore for sharing signage, photos, and expertise about the exhibit they created.*

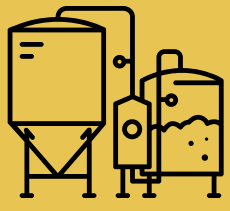
Whether done by a home brewer or a commercial enterprise, the basic process is the same: a starch source is steeped in water, producing a sweet liquid that is then fermented with yeast.

1 MALTING → Starting with a grain such as barley, wheat, corn, or rye, malt is made by soaking the grains in water until they germinate. Then they are dried with hot air. Since the malting process is complex, most beginning brewers use ready-made malted barley in the form of malt syrup or malt extract.

2 MASHING → The grains are steeped in hot water to activate enzymes that cause the grain to break down and release its sugars. The resulting sticky, sweet liquid is called wort, which is boiled while hops or other flavorings are added.

3 FERMENTING → The wort is cooled, strained, and filtered and put in a fermenting vessel where yeast is added. The yeast converts the sugar in the wort into carbon dioxide (CO_2) and ethyl alcohol (C_2H_5OH [ethanol]) to make beer.

4 CONTAINING The beer is put into containers (barrels, bottles, cans) for storage, shipping, and drinking.



DINNER UNDER THE STARS

Thank You!

FONA's 2020 Dinner Under the Stars, honoring Barbara Shea, was cancelled because of the pandemic. Thanks to you, our supporters, we still met our fundraising goal! Your support helped local families during this tough time: Washington Youth Garden continues to educate children and teachers remotely, we harvested more than 3,000 pounds of vegetables that we then donated to families and DC Central Kitchen, we've initiated a new partner network to strengthen local like-minded organizations, and the Arboretum's green space is more important than ever, promoting a connection with nature for our mental and physical well-being in this challenging time. You are our heroes! Thank you for standing by us in these tough times.

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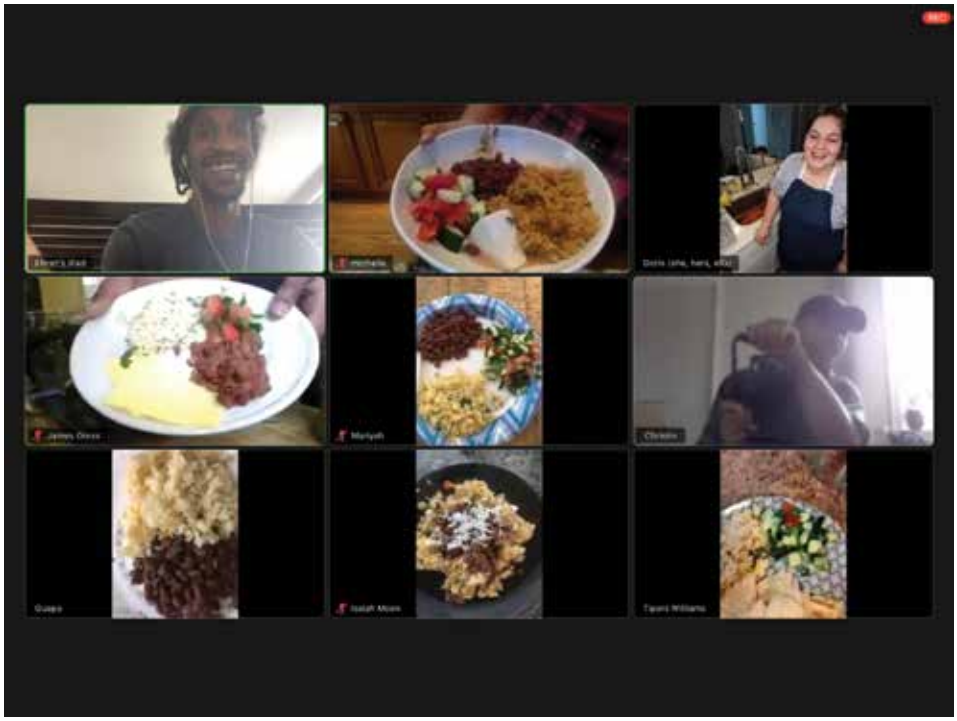
Summer 2020 With the Green Ambassador Interns

Christin Riddick

TO SAY THIS YEAR HAS BEEN DIFFERENT from previous years is an understatement. Never have we had to deal with such dramatic changes in our day-to-day lives than in 2020. In the beginning of the pandemic, there was a question of whether we would even have a high school internship program this year. But the fact that we did shows the resilience and dedication of the members of this year's Green Ambassadors Program (GAP). They were the ones who pushed themselves and the others around them to make an impact in their community despite the pandemic. This is their story.

First, let's start with food distribution. We had quite the task for this year's team. Our mission was to feed as many people as possible through our local school partnerships and food distribution networks like DC Central Kitchen. The Demonstration garden at the Arboretum, focused on growing plants for educational purposes and field trips, had to be transformed into something like the Garden of Eden in order to feed more people. With a somewhat new garden staff, aggressive weeds spreading everywhere, and a wily raccoon lurking about, we had our work cut out for us.

So eight Green Ambassadors stepped up to the challenge. We were led by Farmer Xavier and our Garden Coordinator Emilia. Although all our Green Ambassadors this year were veterans of



Above: The virtual portion of the internship included a virtual cooking class with chef Veronica Velasquez, with delicious results! Right: In addition to virtual activities, interns spent time in the WYG garden at the Arboretum each week, weeding, cultivating, learning, and harvesting food.

We had quite the task for this year's team. Our mission was to feed as many people as possible through our local school partnerships and food distribution networks like DC Central.

the program returning for their second or third year (or more), they still had plenty of new things to learn. Safety became the number one priority for the team this year, and we educated our crew on sanitizing the tools and materials we needed to get our work done. We had to be six feet apart, which came with its own challenges. But despite this new landscape, the team was able to push through. They harvested red noodle beans from our Three Sisters garden beds and dared to step in among some of the tallest and most itch-producing squash leaves known to man. With the leadership of Allie Arnold at our school garden at Armstrong Elementary School, weeds were kept at bay by using recycled cardboard boxes and tarps. And the pests were also stopped right in their tracks, no matter how big or small they were...well, for the most part.

We held the program this year not only in the garden but virtually as well. The Green Ambassadors had a split schedule each week, working in the garden some days and learning together virtually other days. Every week was a master course on different important subjects in the food and agriculture space such as local and global food systems, food is medicine, digital storytelling, and much much more. We had guests from all over the DMV region join our calls and share their expertise with our young GAP crew members. One of the highlights had to be our cooking class with Veronica Velasquez, a chef and founder of Vegan Feast by V, where she creates plant-based versions of traditional Latin American cuisine. The menu of the day included Arroz Con Zanahoria (rice and carrots), Ensalada de Tomate con Pepino (tomato and cucumber salad), Frijoles Guisados (stewed beans), and a signature vegan queso fresco specially crafted by Chef V herself. Yes, the food was as mouth-watering as it sounds and beautiful, too. But the story behind the dishes also made the moment special. While scooping out seeds from a garden cucumber during our live cooking demo, Chef V explained that

"[The seeds are] kind of like a diary that's passed down from generation

Gabe and the other interns provided critical assistance in getting the gardens to produce thousands of pounds of food to donate to local families.

to generation. The fact that we can still enjoy Pipián (a species of winter squash found in South America), knowing that it's an indigenous food that my ancestors ate, I'm able to have that connection with them and I feel like a sense of oneness with them and it's beautiful..."

This spirit of sustainability and the importance of food to various cultures would stick with the GAP crew throughout the summer and beyond.

Also new to the GAP crew this year was the introduction of Community Projects. Educator and Deanwood resident Patricia Stamper came to me with a burning desire to start a community garden behind the houses in her community. When I initially visited the space, it had a lot of potential because it was a sunny yard with nothing but grass. And some neighbors were already growing food in small containers in their backyards. So we had everything we needed for a successful community garden: we had space, we had people willing to maintain the garden, and we had people with a passion for growing green things. Now all we needed was someone to build raised garden beds, the best environment for plants to thrive in that location. That's where the Green ambassadors came in. Our GAP crew already had construction experience from GAP projects in other years like trellises, beehive fences, benches, and garden beds. We set off to gather the materials and tools to build the founding garden beds for this community. Two of our Green Ambassadors, Mariyah and Aliyah, made short work of the first two garden beds, building them from the ground up and filling them with soil within a few hours. Then Tiponi, another member of the GAP crew, along with our Youth Programs Educator, Ehren, built two more garden beds a couple of weeks later. Because of their work, Patricia has big plans for the community garden; she wants to use the garden beds as a center for community engagements, education, and of course a place to pick up healthy food—all activities to encourage self-sustaining gardens in neighborhoods with limited access to fresh foods.

Without the Green Ambassadors, these summer accomplishments would not have been possible. Because Aliyah, Mariyah, Isaiah, Gerzee, Tiponi, James, Gabe, and Michelle believed they could have an impact, they did just that. These students had every reason to stay at home this summer, but they chose to look out for others and better themselves in the process. This is just the beginning for these amazing young people. Some will go off to school to study their new-found passions, start new jobs, or even help out with our garden team this fall. I know that whatever they choose to do, their experiences this year will help them move forward with confidence and excellence, wherever life takes them."

CHRISTIN RIDDICK *is the On-Site Program Manager at the Washington Youth Garden. Formerly a second-grade educator at Miner Elementary School, Christin is an alum of the WYG teacher training program (Summer Institute for Garden-Based Training). Christin is taking his experiences from the classroom and implementing them in the garden.*

FONA DAVID FAIRCHILD SOCIETY

YOUR PATH TO DISCOVERY

David Fairchild Society Gets a Makeover!

FONA's David Fairchild Society has a new look. We've renamed the membership levels after the iconic plant collections at the National Arboretum.

The top membership level is the David Fairchild Level, which honors our namesake, David Fairchild (1869-1954), a botanist and plant explorer. With members of the Garden Club of America, Fairchild helped to establish the US National Arboretum in 1927.

David Fairchild – $50,000+

Azalea – $25,000

Boxwood – $10,000

Magnolia – $5,000

Crapemyrtle – $2,500

Holly – $1,200

Join us and enjoy the camaraderie with other like-minded members while knowing that your support is critical to the success and future of the Arboretum and to our work to support local families. Go to www.FONA.org/DFS for more information.

Brush Up On Botany

Learn some new words to describe plants – for fun, for understanding terms in gardening books, or for improving your scrabble game!

REMONTANT

One of the most desirable characteristics of flowering plants is their ability to bloom more than once each season. Such plants are called remontant, a word that comes from the French verb *remonter*—to come up again. Remontancy is most commonly associated with roses, and breeders have been selecting for this characteristic for thousands of years. Remontant roses have been grown in China for about a thousand years, and remontant cultivars began appearing in Europe in the 1600s. In recent years, remontancy has been bred into other plants, such as remontant roses, *Syringa* 'Penda' BLOOMERANG™ lilacs, and several cultivars of strawberries.

MARCESCENCE

Marcescence is when a plant retains dead organs that are normally shed. This is most obvious in deciduous trees that hold on to their dead leaves all winter. Picture the brown, dry, leaves on oaks, beeches, and hornbeams as other trees drop their leaves in autumn—this is marcescent foliage. From the Latin *marcescere*, meaning to wither. Often, only the juvenile foliage is marcescent, so a large tree might retain leaves on lower branches that are more juvenile and lose leaves on upper branches. There's no consensus on the evolutionary reasons for marcescence but one thought is that the dry leaves discourage deer and other animals that browse twigs since they get a mouthful of dry, tannin-filled leaves if they try to bite into twigs. *Photo credit: John Winder*

Narcissus bulbs with contractile roots.

CONTRACTILE ROOT

Contractile roots are specialized roots at the base of a corm, bulb, or other underground organ that initially grow long and straight. After they are fully anchored, they expand radially and contract vertically, to exert a downward pulling force on the bulb or corm. After contracting, they appear fleshy, vertical, tapered, and wrinkled. Plants with corms generally replace the current season's corm with a new one that grows on top of the old corm, and contractile roots ensure that the new corm is pulled into the proper position in the soil as it grows. Contractile roots also position bulbs and corms where they are harder for squirrels and other rodents to dig up and where there is less fluctuation in soil temperature and moisture. Familiar plants with contractile roots include daffodils, tulips, hyacinths, bulbous irises, gladiolus and lilies. If you plant your daffodil bulbs too close to the soil surface, contractile roots will pull them downward next spring just before the foliage dies back. *Photo credit: Ian Young, The Scottish Rock Garden Club*

Nancy and Pierre Motrier

Fall is bulb time!

With many of us being forced to spend more time at home, the need for a cheerful home garden is more important than ever. Gardens lift our mood, provide hope, and offer a pleasant way to connect with neighbors. Fall-planted, spring-flowering bulbs can be safely shipped right to your doorstep at the perfect planting time for your hardiness zone.

SELECTION

It is important to know the peculiarities of your site. Generally, bulbs do not like to be planted in wet areas. Bulbs tend to prefer sunny areas and perform best without competition from tree roots.

DESIGN

- **Plant in abundance.** A drift of tulips should be no less than fifty bulbs to create sufficient impact. Daffodils should be planted in groups of six to eight bulbs with a minimum of three groups. Smaller bulbs like snowdrops, crocus, and species tulips should be planted in swaths by the hundreds. Large ornamental onions, with their massive, spherical flowers, can pack a punch with just five bulbs.
- **Mimic nature's designs.** Nature does not place things in straight lines. Plant in organically shaped drifts leaving a few outside stragglers for a looser appearance.
- **Spotlight features:** use bulbs to mark an entry, define a walkway, or enhance a focal point.
- **Layer with varying heights**, bulbs with low growth in front and bulbs with taller growth behind.
- **Select for bloom sequence:** early, mid, and late spring.
- **Use color theory to make a statement:** a monochromatic color scheme is an easy no-fail approach. If you feel more confident, try an analogous or complimentary color scheme. To strengthen your composition, select bulb colors that coordinate with colors of your house or colors already present in the garden.

PLANTING

1. As a general rule, tulips should be spaced 6″-8″ apart; snowdrops, crocus, and species tulips (naturalizing species) 3″-4″ apart, and daffodils 6-8 bulbs per 18″-diameter hole. Lilies, whose flower head will be a minimum of 15″ in diameter, should be planted in clusters of five or more with bulbs spaced about 24″apart.
2. Dig holes with a digging knife, trowel, bulb drill, or shovel. Hole depth should be twice the height of the bulb. To minimize the need for staking lilies, plant these bulbs about 10″ deep.
3. Sprinkle a tablespoon or two of bone meal into the planting hole, mixing it with soil to avoid burning emerging roots.
4. Place the bulb in the hole, pointy side up. Be sure to pack the soil firmly.
5. Squirrels love crocus bulbs, foxes love bone meal, and deer love emerging tulips and lilies. Liquid spray products will help deter these marauders.

NANCY AND PIERRE MOITRIER *operate Designs for Greener Gardens, a boutique gardening company that specializes in designing, creating, developing, and maintaining distinctive gardens of all styles. Pierre hails from France and brings the charm of the Old World to their garden creations. Nancy's 40 years of gardening experience combined with her design knowledge and innate artistic eye add a superior dimension to their garden projects. Follow Designs for Greener Gardens on Facebook.*

FRIENDS OF THE NATIONAL ARBORETUM

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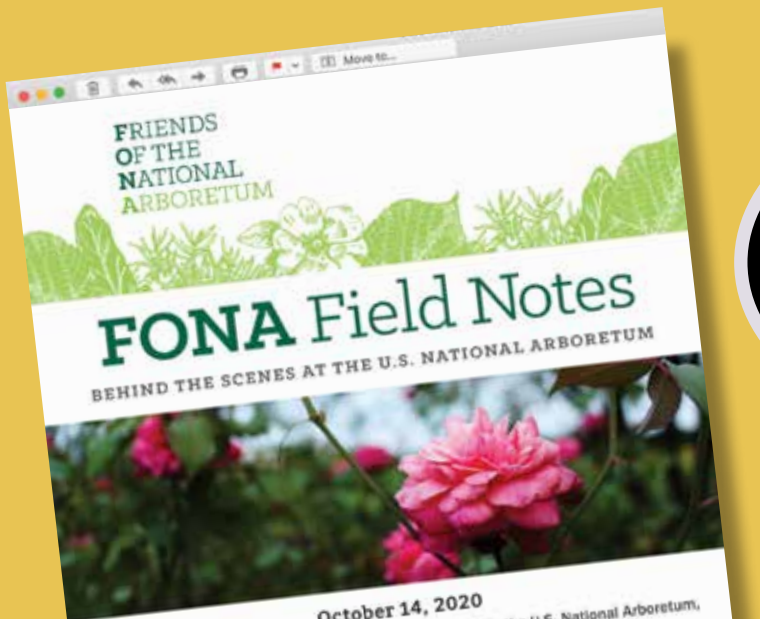
The Friends of the National Arboretum is an independent, nonprofit organization established to enhance, through public and private sector resources, support for the U.S. National Arboretum.

HAPPENINGS

For more information, visit usna.usda.gov/ or FONA.org

GET UPDATES BY EMAIL AND ONLINE

Sign up for the FONA Field Notes email newsletters at FONA.org to get regular updates from the Washington Youth Garden, behind-the-scenes stories, pictures of the Arboretum, and the latest updates — like the long-awaited return of the koi fish!



VISIT THE GROUNDS

Know Before You Go—the Arboretum posts updates for the operating status of USNA's public facilities on its website. Visit usna.usda.gov for more info.

EVENTS

The calendar of events is updated regularly at FONA.org. Meditative forest bathing walks are offered many days through the end of the year. Register online.

FOLLOW
@FONArboretum and @WashYouthGarden on Instagram and Facebook to see what's blooming, the food donations harvested from the garden, recipes, gardening advice, education activities, and "plant yoga" videos!