

The

REYNOLDA GARDENS
of Wake Forest University

Fall
2015

Gardener's

JOURNAL

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The American Lawn

by Preston Stockton, *RGWFU manager*

One of my favorite photographs of Reynolda is of Shropshire sheep idyllically grazing on the golf links. This was a perfect way to keep the grass short as well as provide food for the livestock. I have always wondered if the family hit balls around them or herded them back to the barn on days that they played golf. It is hard to imagine that there was a time when the American lawn that we see in every neighborhood, park, and office building was not common at all. No one loves their lawns more than Americans, but neither the lawn nor the lawnmower is American. We can thank the British for both.

The lawn may have originated in medieval settlements as enclosures of grass for grazing animals. The word "laune" is first seen in 1540 and is likely from the Celtic word "laun" which means enclosure. Lawns became popular with the Northern European aristocracy beginning in the Middle Ages and were often hard to distinguish from pasture lands.

Before lawn mowers were invented, lawns of the wealthy were maintained by scything or shearing. A good "scythesman" could cut a grassy area to about an inch. Since his scythe handle was designed for his height, he would add to the soles of his boots to



THE SHROPSHIRE SHEEP, PHOTO COURTESY OF REYNOLDA HOUSE MUSEUM OF AMERICA ART ARCHIVES.

make himself taller if he needed to leave the grass a little longer. Highly-maintained lawns like those of today first appeared in the 1700s after André Le Nôtre designed the gardens at Versailles. He included a small lawn called the *tapis vert* or "green carpet." It wasn't until after the American Revolution that the idea of lawns hopped across the Atlantic and was adopted by our own aristocrats, such as George Washington at Mount Vernon and Thomas Jefferson at Monticello.

Everything changed in 1830 after the invention of the lawn mower by Edwin Beard Budding, an engineer in Stroud, Gloucestershire, England. Budding worked in a textile mill and thought that a machine used to cut and even the nap of velvet could be adapted to cut his grass at home. Early mowers were large and heavy, but by the 1880s, the cost and weight of the push mowers dropped enough that they became popular in Britain and North America. The first power reel mower was produced in 1919 by American army colonel Edwin

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Air Quality Plants

by Michelle Hawks, RGWU horticulturist

Most people do not have the luxury of working outdoors surrounded by the sounds of nature and beautiful plants. They spend their time indoors behind a desk with fluorescent bulbs, the humming sounds of the office, and fake flowers. I cannot imagine being stuck indoors without nature or plants. I always try to have plants in my house year round; they are a sign of life. Bringing them into your home can liven it up, as well as filter and purify the air around you. Indoor air quality is an increasing health concern for all of us because it can be as much as twelve times more polluted than outside air due to paints, furnishings, and building materials.

Volatile Organic Compounds (VOCs) are chemicals that evaporate into the air at room temperature. Some are dangerous to human health and cause damage to the environment. Three harmful VOCs found indoors and in our homes are benzene, formaldehyde, and trichloroethylene. Some studies have found that houseplants can help remove hazardous VOCs from the air.

Benzene is colorless at room temperature. It has a sweet odor, is highly flammable, and evaporates into the air very quickly. Products that we have in our homes that contain benzene include glues, paints, furniture waxes, dyes, lubricants, and detergents. A major source of benzene exposure is tobacco smoke.

Two things come to mind when I think of formaldehyde—embalming fluid and cigarettes. Formaldehyde is a common chemical that has a strong, pungent smell. The frogs we all dissected in biology class were soaked in formaldehyde.

Particleboard, plywood, paneling, carpet, and pressed-wood have some form of formaldehyde in them.

Trichloroethylene can be found in many household products such as wood finishes, adhesives, paint removers, lubricants, and cleaners. Its vapors, which are also stored in the soil, can easily enter your home from cracks in the foundation and contaminate indoor air.

The National Aeronautics and Space Administration (NASA) researched houseplants and found that they were able to remove eighty-seven percent of air toxins in a twenty-four hour period. The NASA study used a plant for every ninety square feet of floor space. They recommend this same ratio for your house to ensure a similar level of detox. Below are some plants that I have in my home and recommend to improve indoor air quality.

Pothos, *Epipremnum*, can absorb VOCs like formaldehyde from your home. When you come to my house, you will see pothos in every corner. It is my favorite houseplant and easy to care for. Pothos has trailing stems, which gives it more surface area for eliminating household toxins. It works in a hanging basket or decorative container, can thrive in medium to low light, and likes to dry out between waterings.

If you don't currently have houseplants, then the Snake plant, *Sansevieria trifasciata*, may be the plant to start with. According to NASA, it is one of the best houseplants for absorbing airborne toxins. The snake plant grows in an upright form and will survive in a wide range of lighting conditions.

The Rubber plant, *Ficus robusta*, is known for being an easy plant to care for because it requires little light and can tolerate low temperatures. I love this plant. It will add a pop of greenery to any room. Tests have shown that rubber plants are especially efficient at removing formaldehyde.

Everyone has seen a Peace Lily, *Spathiphyllum*, with its beautiful evergreen leaves and pretty,

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The American Lawn

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George.

In the mid-19th century, beautification campaigns in the United States began in urban areas, and the concept of parks became popular. These were public areas with landscaped lawns, trees, shrubs, and, often, water features. The work of Frederick Law Olmstead moved the lawn from the park to the American home. Known for his park designs in New York, Boston, and Montreal, he also designed suburbs with lawns for each home.

There are two things that happened in the United States to really jump start the great American lawn movement. The first was the invention of the rotary blade mower in 1935 by Leonard Goodall from Warrensburg, Missouri. The reel type mower was not very suitable for cutting the coarser blade grasses that grow in North America and was time consuming to maintain and sharpen. The rotary mower was also cheaper to manufacture. Goodall's original mower used an electric motor attached to the deck. He then decided to give it more power and attached a two-cycle gas engine that he took off his wife's Maytag washing machine. I bet he was not very popular at the dinner table that night!

The second event was the need for affordable housing after World War II to accommodate returning GIs and their families. Abraham Levitt and his sons, William and Alfred, built Levittown on Long Island between 1948 and 1952. It was one of the first mass-produced, affordable housing suburbs built in this country. Originally planned for 2,000 homes, Levittown had over 17,000 when complete. Each house came with a lawn, and the new owner was expected to take care of it. The developers sent out newsletters to the homeowners on the importance of keeping a neat lawn and

advice on lawn care. The American dream of a home in the suburbs was not complete without a well-kept lawn.

You can see the explosion of the lawn in the United States by the sales of lawn mowers. In 1946, 140,000 mowers were sold. Just five years later, sales were at 1.2 million and by 1958, 4.2 million.

Today, it is estimated that 49,000 square miles are covered by lawns in this country, and Americans spend 40 billion dollars yearly to maintain them. It is interesting that what started as a sign of British wealth is now the symbol of the American dream—

Air Quality Plants

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curving, white blooms. The best attribute of this plant is that you don't need a green thumb to keep it around. It requires very little light, so if you have a room with fewer windows, this plant would be perfect. The Peace Lily removes benzene, the toxin that is found in paints, detergents, and tobacco smoke, from the air.

Every single one of these houseplants is wonderful for improving your indoor air quality. They are easy to care for, nice to have around, and will help you breathe easier, day and night.

The American Horticultural Therapy Association says the benefits of indoor plants go beyond physical health and include increased self-esteem, improved mood, reduced stress, and increased feelings of calm and relaxation. With our busy schedules, we could all use some of these benefits. Growing indoor plants is just as fun as having an outdoor garden. Not only are you decorating with them, but you are also cleaning the air in your home and de-stressing your life. So let the green thumb start working indoors. ☺

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A Lemon with a Sweet History: *Citrus x meyeri* 'Improved'

by Hayden Shuping, RGWFWU greenhouse manager

In 1905 the U.S. Department of Agriculture hired Frank Nicholas Meyer as an agriculture explorer to travel the world and discover and collect plants with economic value. Meyer introduced 2,500 plants to the United States. Of those plants, only one was named in his honor, the Meyer Lemon. He discovered the original plant in China, where it was primarily grown in containers and as an ornamental tree. Thought to be a cross between a true lemon and a mandarin orange, Meyer introduced the tree to America in 1908. However, he would never live to see the popularity of the plant that bears his name. Tragically, Meyer fell overboard into the Yangtze River and drowned while traveling to Shanghai, China, in June of 1918.

After the Meyer Lemon's introduction to America, the tree rapidly spread to citrus growers and individuals throughout California, Texas, and Florida. Cold hardy in zones 9 through 10, this hybrid gained popularity because of its prolific, fragrant, white flowers and high yield of fruit on young plants. The fruit has a high juice content that is slightly sweet and less acidic than true lemons, giving it a characteristic flavor. When fully mature at six to twelve feet, the plant is half the height of other varieties of citrus, making it easy to grow in any size yard or suitable for a container. The fruit is much more round than true lemons and has a thin skin that is bright yellow with an orange hue when ripe. Though the attributes of this lemon are highly desirable, it has never gained commercial value. That same thin skin and high juice content make it too fragile for commercial processing and a hindrance for transporting.

The Meyer Lemon was grown and propagated for decades until the 1940s, when it was discovered that it was a symptomless carrier of the Citrus Tristeza Virus. The virus



was deadly to other types of citrus and threatened the entire commercial citrus industry. Subsequently, Meyer Lemon trees were destroyed and almost eradicated to prevent spread of the disease. Fortunately, Don Floyd Dillon in northern California had started a nursery that later became Four Winds Growers, and he had an interest in dwarf citrus trees. Sometime in the 1950s, he was contacted by a woman, who lived nearby, with a healthy Meyer Lemon growing in her yard. That tree became the one Dillon would then propagate from for years. With the threat of the virus still lingering in the 1960s, the Department of Agriculture in California screened the citrus stock at Four Winds Nursery and deemed it the only stock of Meyer Lemons free of the virus. In 1975 those plants lead to the University of California's release of the Improved Meyer Lemon, *Citrus x meyeri* 'Improved'.

Here at Reynolda Gardens, we are lucky to have a Meyer Lemon with a history all of its own. Lydia McCabe, mother of our long-time friend Mary Dudley, was given a Meyer Lemon by her sister, Kate Labouisse, who lived in New Orleans. Lydia kept the tree inside on her sunporch in Greenville, South Carolina, for almost forty years. After her mother's passing in 1998, Mary cared for the tree for several months in her studio here in North Carolina. She was gracious enough to donate the tree to the Gardens, when she realized it needed a permanent home where it could thrive. Mary has fond memories of the sweet-smelling blossoms and the tasty lemon pies her mother would

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Deciduous Azaleas

by Forrest Allred, RGWFU head horticulturist

This past May a friend and I had the opportunity to hike and camp on the Blue Ridge Parkway at Doughton Park. A mile into the park, I saw the largest blooming Flame azalea, *Rhododendron calendulaceum*, I'd ever seen. Seeing such a beautiful specimen in its natural habitat gave me a greater appreciation for this species and its presence at Reynolda Gardens.

The 1917 plan for the Gardens, designed by landscape architect Thomas Sears, used native southern plants as well as hybridized plants of the late nineteenth and twentieth century. He included deciduous azaleas, which are azaleas that shed their leaves annually, such as the native Pinxterbloom azalea, *Rhododendron periclymenoides*, syn. *R. nudiflorum*; the native Pinkshell azalea, *R. vaseyi*; and Ghent Hybrid azaleas, *R. x gandavense*.

Pinxterbloom and Pinkshell azaleas have a rich native presence in North Carolina. Its habit is one of a dense, bushy, suckering shrub, averaging four to six feet in height. The flowers vary from pink to white and may be slightly fragrant. It blooms mid-spring, immediately preceding the emergence of the foliage. The Pinkshell azalea is native to Western North Carolina, growing exclusively at elevations of 3000 to 5000 feet. Its habit is irregularly upright, and it reaches five to ten feet in height. Pinkshell flowers are a beautiful coral pink, scentless, and bloom in early spring.

Ghent azaleas, on the other hand, are hybrids. In the early 1800s, species from the east coast of the United States were being bred with the European, Chinese, and Japanese deciduous azaleas. Some of the most significant breeding occurred in Ghent, Belgium. In 1836 there were over 107 named hybrids. Ghent hybrids became the standard because

of their wonderful qualities—their superior structure, range of color, and fragrance. By 1914 large shipments were coming to America, making them readily available to arboretums, nurseries, and private gardens. Based on their fine qualities and ready availability, it is quite obvious why Ghent azaleas were included in Sears' design and planted here at Reynolda.

As you walk around Reynolda Gardens today, you will not find the Pinkshell azalea or Ghent hybrids. Since the 1995 restoration, the Pinkshell has succumbed to the high temperatures of the Piedmont. We expanded our use of the Pinxterbloom azalea, which has proven to be more suitable to the heat, to those areas where Pinkshells did not survive.

The same robust hybridization that brought Ghent hybrids to North America in 1914 appears to have brought about the scarcity today. Despite their popularity at that time, hybridizers were still not completely satisfied with them and continued to search for the perfect deciduous azalea. They developed and refined such azalea hybrids as Exbury, Mollis, and Knaphill. In 1919 Lionel de Rothschild, an English banker, purchased Exbury Estate where he began planting and hybridizing rhododendrons. By his death in 1942, Rothschild had planted over one million rhododendrons on his estate and had created twelve hundred hybrids with 462 named varieties. Due to the rareness of the Ghent Hybrids in 1995, we installed *Rhododendron Exbury 'Fireball'*; *R. Exbury 'Gibraltar'*; *R. 'Northern Lights'*; and *R. 'Orchid Lights'* to replace them.

According to Larry Mellichamp, author of *Native Plants of the Southeast*, "There are no finer flowering shrubs than our native azaleas. . . at least sixteen species originate in the Southeast, more than everywhere else on Earth combined." Hybridization of the deciduous azalea has given us even more options. With all the beauty they provide, you should consider adding a few to your own garden. 🌸

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Sustaining Reynolda Gardens: Extreme Gardening in an Extreme Climate

by Amanda Lanier, RGWFU curator of education

In the last five years, our growing season has lengthened by five days. These extra days, however, come with a price. The changes in our climate has not only extended our growing season, but it has also subjected our plants to extreme temperature maximums and minimums, the stress of drought, increases in pests, and other uncertain weather events. With diligence, we can overcome these issues, and gardeners can manage their plants for the effects of climate change. Here are some ideas on gardening in an extreme climate.

Consult the Maps

The U.S. Department of Agriculture's (USDA) Hardiness Zone map, last updated in 2012, is the standard for many gardeners. However, with more frequent climate shifts, it is hard for this publication to keep up. To address this, the USDA and the National Oceanic and Atmospheric Association (NOAA) have collaborated to expand the data available to gardeners through an interactive version of the hardiness map. The USDA hardiness map, which is available online, has the ability to zoom down to your zip code and even your street! This fine-tuned data gives not only your hardiness zone but also the minimum, maximum, and average temperatures recorded for your area. The interactive map is a wonderful tool that reveals distinct local differences. So just because one side of town may have success with palms, it doesn't mean that your garden necessarily will.

Cold isn't the only factor determining whether our plants will survive and thrive; we are all aware of the impact that heat has on our plants. The effects of heat damage are more subtle than those of extreme cold and can be seen in flower buds withering, leaves dropping, the slowing of root growth, and in chlorophyll disappearing. Plant death from heat is slow, lingering, and can last for years. To address heat issues, the American Horticultural Society has teamed up with the USDA to create a Heat Tolerance Map. Twelve zones categorize regions and indicate the average number of days each year that a particular area experiences "heat days." "Heat days" are days when

temperatures exceed 86 degrees, the threshold where plants begin to suffer physiological damage. Our Gardens actually fall very close to the line that divides Heat Zones 6 and 7, where the days above 86 degrees are 46 to 60 and 61 to 90, respectively. These zones are now being added to plant labels and being used in catalogs, as hardiness zones have traditionally been used, making it much easier for gardeners to find plants that fit their particular backyard.

The Never-Ending Summer and Making Water Work

As our warmer seasons lengthen, weeds and invasive plants are growing faster, and pests and fungi now have more time to thrive. This makes keeping what you want in your garden a little more difficult. Preventative measures, such as integrated pest management and diverse plantings, are good solutions to these problems. Your local extension office can provide information on the latest in pest threats and help with integrated pest management plans. Maintaining smaller lawns for healthier and more diverse spaces is also beneficial, which reminds me, if you are not growing your own food in some capacity, now would be the time to start. Lawn space can easily be transitioned to crop space. Simply add raised beds or containers and mix with flowers that attract pollinators. There are many resources out there to help with this transition. Growing your own food decreases the demand for fossil-fuel based transportation, which can slow down production of gases that contribute greatly to climatic conditions.

Longer, warmer seasons can also mean less water in the soil, which is further impaired by rain events that are so intense that they do not allow seepage into the ground. When the rain does enter the soil in large amounts, it can cause root rot and other "wet feet" problems. Thoughtful irrigation, rainwater collection, and planting more drought tolerant species can help with these issues. Soil amendments can be beneficial too, especially high-quality compost that has the side benefit of storing climate-disrupting carbon dioxide.

Being the Change

Unfortunately, gardening for an extreme climate may mean that some of our garden favorites will need to be replaced as they become less suited to our backyards. Experimenting with new species and varieties can be enjoyable and beneficial. Garden visitors, such as birds and butterflies, still need habitat and food, so look for plants that can fill these gaps. Container gardening combined with faithful weather watching may extend the life

Swiftly From Peru

by John Kiger, RGWFU assistant manager

Monthly I mow the field that is immediately to your right as you pass through the main entrance to Reynolda, off Reynolda Road. The field consists of approximately eight acres and takes a full day to complete. One day this past July, I was performing my normal ritual of mowing but noticed something was different. It is not unusual for me to see a red-tailed hawk circling, waiting for me to scare out his next meal. I have actually even captured that scenario on video. With no hawk present, however, I observed a group of small birds flying very erratically over the field, and they seemed to be following me. At one point, I actually had to dodge one of these small creatures to keep us from colliding. I soon realized what was happening; the mower was forcing insects into the air, which the birds were eating. These birds were chimney swifts.

Chaetura pelagica, commonly known as the chimney swift, migrates from Peru to North America in early spring. During migration, it roosts in large numbers, taking refuge in hollow trees, chimneys, caves, and other structures that provide protection. When they arrive in the United States, they blanket the territory from the east coast to the mid-west and as far north as southern Canada. The chimney swift is very distinctive with a small body that is dull grey in color but seems black against a blue sky. In flight, it emits a constant chattering that can be heard over a mower. Often described as a "flying cigar with swept back wings," I think it resembles the fuselage of an airplane, minus the vertical and horizontal tail section. The chimney swift is in the same family as the white-throated swift and the black swift, but surprisingly, its closest relative is the hummingbird.

Monogamous by nature, the chimney swift will spend a large portion of its life airborne,

capturing insects, unless roosting or nesting. Even bathing is performed by dipping into a body of water and shaking its plumage while in flight. If it does rest, the chimney swift does not perch on tree limbs but rather clings to the side of rough surfaces. Nest construction is very different from what we are accustomed to seeing in trees. Nesting generally occurs in chimneys because of its protective brick and mortar construction. Typically, there is only one nest per chimney. Both male and female, using tiny twigs that are broken from trees while in flight, build nests, which are two to three inches wide and five inches tall. A sticky saliva produced by the birds is used to adhere the twigs to the vertical surface. A nest will contain two or three eggs, and hatchlings will only remain in the nest for two weeks; after which, they cling to the wall, sometimes before their eyes are open.

Migratory birds, such as the chimney swift, are protected under the Migratory Bird Treaty Act, which was passed in 1918. This legislation made it unlawful "to pursue, hunt, take, capture, kill, possess, sell, purchase, import, export or transport any migratory birds, parts of birds, nests or eggs unless permitted by regulation." The law also states "it is legal to discourage birds from nesting in inappropriate places by putting up barriers, diversions or by removing nesting material. However, the nest is considered 'active' when the first egg is laid. It is then illegal to interfere with the nesting process." This fact should be remembered if you find one nesting in your chimney.

The chimney swift begins its return to Peru by late summer, travelling in large masses. It is easy to recognize them, however, when they return. Thousands of swifts will circle a selected roosting site, such as a chimney, in a "tornado-like fashion," entering one at a time to claim a roosting spot by clinging to the vertical surface. I witnessed this event when I was a child in the mid-1960s. The chimney at Speas School, which is no longer there, would host thousands of chimney swifts. When I first saw them, I thought they were bats, but my Mother told me they were chimney "sweeps." In my mind's eye, I envisioned these tiny birds actually cleaning the inside of the chimney. A few weeks later, my teacher explained what type of birds they were and why they were invading our school. Of course, I corrected my mother. 🌱

Ms. Karen Wilson
Mrs. Sheila Wolfe

Other

James and Felicia Amidon
Marie Bagby
Winnifred McCleary
Mrs. Nancy M. Nading

Restricted Gifts

Tree Replacement by
Little Greens Garden Club
Young Naturalist Scholarships
by JoAnn Yates
Rose Garden Renovation Project
by Evergreen Garden Club

Memorials:

Martha Carlisle by Stella Surratt
Copey Hanes by Leslie Hollan
Wava Howard
by Robin and Robert Weisner
Sally Kelly by Stella Surratt
Mark Lively
by Dan and Francesca Fried
Mary Mann by Leslie Hollan
Dick Menish
by Kelly and Jack Stack
Mr. James E. Messick, Jr.
by Jean Messick
Mary Pullen by Stella Surratt
Andrea Rogers by Jane Rogers
Mr. and Mrs. Robert Stockton
by Emorie, Shana and
Bobby Stockton
Bunky Stockton by Stella Surratt
John Surratt by Stella Surratt
JoAnna Tudor
by Flower Lore Garden Club
Gene Wilson by George W. Crone

Honorariums:

Loy McGill by Lynn Jennette
James Richardson
by Larry and Anne Wise

A Lemon with a Sweet History: *Citrus x meyeri* 'Improved'

CONTINUED FROM PAGE 4

Sustaining Reynolda Gardens: Extreme Gardening in an Extreme Climate

CONTINUED FROM PAGE 6

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make. She said "it only took one lemon to make two pies, and there were always so many lemons." Her mother would give them away to friends, family, and even the postman. Mary remembers the plant having good and bad years, "Sometimes the plant would lose all of the leaves, and we thought that was it, but, with care, it would come back." Resilient as ever, that same tree has resided in the Conservatory here at the Gardens for over a decade.

Today, the Meyer lemon has regained prominence as a culinary favorite, especially in the last decade, due to American chef and pioneer of culinary philosophy Alice Waters of restaurant Ch ez Panisse in California. She was the first to reestablish the use of the lemon in culinary dishes. Martha Stewart also furthered the popularity of the lemon by featuring the fruit in her recipes. Frank Nicholas Meyer's name might not be recognized nationally, but the lemon that bears his name has reclaimed recognition and is now one of the most popular lemons grown by home gardeners and sold in garden centers. ♻

of some garden favorites that we cannot seem to part with.

In my opinion, perhaps the most important goal for all of us gardeners is making the effort to record what you see in your gardens and reporting it to national and local clearinghouses. Information on when buds burst, when pollinators arrive, and other natural phenomena are extremely important to all of us looking for solutions.

Resources for Gardening in an Extreme Climate:

- ♻ Zip Code Hardiness Zone Online Map: <http://planthardiness.ars.usda.gov/PHZMWeb/>
- ♻ Heat Zone Map, American Horticultural Society: <http://www.ahs.org/gardening-resources/gardening-maps/heat-zone-map#use/>
- ♻ American Public Gardens Association: <http://climatechange.publicgardens.org/>
- ♻ Monitoring Clearinghouse Project BudBurst: <http://budburst.org/>



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