Trumpet Vine

Knowledge for the Community from Loudoun County Extension Master Gardeners

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LOUDOUN COUNTY EXTENSION MASTER GARDENER LECTURE SERIES

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April 6, "*The Real Dirt: Trade Secrets From a Loudoun Vegetable Farmer*" by Ellen Polishuk, Potomac Vegetable Farm

May 3, *"Tick Ecology: The Facts"* by Ron Circé, Manager, Banshee Reeks Nature Preserve

June 1, "*Butterfly Brunch: Inviting Winged Wonders into the Garden*" by Amanda Rose Newton Entomologist.

July 6, "*Creating a Year-Round Landscape filled with Color*" by landscape designer and artist Linda Hostetler.

August 3, "*A Video Presentation of the Gardens of Belle Grove Plantation*" by Lynn Hoffman, Extension Master Gardener and plantation volunteer.

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Spring, A Weather Roller Coaster

In late February and early March we had many warm days in the 70s and even the 80s. Then we plunged back into winter. How does this affect plants and which fare better than others?

Clearly the magnolia blossoms have not fared well. Cherry and pear blossoms are "to be determined." How well spring plants survive depends on several factors. Freezing temperatures can cause ice crystals to form inside plant cells, breaking the cell walls and killing that portion of the plant. This is what causes daffodils to fall over after a freeze. A portion of the stem has frozen and it can no longer support the flower. If water freezes outside the cells, it causes extreme dissection or drying out. Some daffodil flowers display that symptom after freezing.

Magnolia blossoms

Freeze damage

Damaged stems

Plants that accumulate dissolved substances in their cells, mainly sucrose, can depress the freezing point of water when the temperatures are not below 20 degrees F. An overnight frost will generally not cause any lasting damage. An extended freeze, with daytime temperatures that remain below 29 degrees F, especially when accompanied by wind, can do serious harm, often drawing moisture out and leaving the leaves limp and damaged. This is sometimes referred to as dry wilt. Snow actually acts as an insulating blanket, protecting the foliage and buds from extreme fluctuations in temperature.

If freeze damage does occur in bulbs, don't cut off foliage, even if it is damaged, because bulbs need the foliage to feed them.

Children's Education Team

The Children's Education Team (CET) works alongside the Loudoun County 4H program to provide youth-oriented activities as part of the larger Loudoun County Master Gardener and Virginia Cooperative Extension mission to educate county residents about safe, effective, and sustainable landscape management practices. To accomplish their mission, CET volunteers present programs in schools—through after school programs—and at various community events throughout the county.

During the 2016 calendar year, CET volunteers delivered nearly 60 programs and activities, reaching 3,000 youth. Approximately half of the presentations were given to elementary-age children in CASA (County After School Activities) programs run by the county Parks, Recreation, and Community Services. CET volunteers used games and hands-on activities to show that not all bugs are bad; worms are important to soil structure; and kitchen scraps can be kept out of the landfill to benefit the garden. They also showed how seeds grow, how to successfully nurture a garden, and how gardening can be healthful and fun.

Fewer programs, but reaching nearly half of the youth served, took place as part of school-day lessons. These often involved preparing the students to work in school gardens and advising them on planting days. Other in-school presentations were designed to meet Standards of Learning (SOLs) on plant needs and life cycles; pollinators, biodiversity, and ecosystems; and the importance of gardening for healthful eating.

While most programs were one-time presentations, the CET partnered with three groups last year for longer programs. The first was a six-week series as part of "Afternoon Adventure" at Sugarland Elementary School in Sterling, Va. The program, sponsored by Riverside Presbyterian Church, taught basic gardening skills to approximately 60 children, with take-home lessons for families, in an area where food insecurity is a reality and access to fresh vegetables is not always possible.

Master Gardener Peggy Maio and Thomas Garnett, the family programs manager at the apartment complex with some of the produce the children grew and harvested. Photo by L. Chandler

"Gardening FUNdamentals" was presented for the second year at the Sterling Library for six weeks, piggy-backing on the Summer Food Program. Approximately 30 children and adults attended each weekly event that included a story time and activity for children while parents learned how to plant and grow vegetables and herbs in containers.

A new eight-week summer program was developed in partnership with the Windy Hill Foundation in Middleburg, Va. In this project, CET volunteers offered gardening lessons and planting guidance as part of a summer camp for the youth residing in subsidized housing units. Each session began with games and a lesson that included identifying garden pals and pests, the importance of worms, composting, and the different parts of the plants that we eat. Following the lessons, the volunteers helped children in their

community garden to weed and look for bugs. Children and their families took responsibility for watering and care of the garden between the weekly sessions and took home the produce at harvest time.

In all their programs, the CET volunteers match the activities to the ages and interests of the children. The youngest children are likely to listen to stories as they see colorful pictures about gardens or garden critters. They then might have a chance to sound like or role-play actions of those critters. Middle school and high school students might have a lesson on reading seed packets in order to select appropriate plants for their school gardens. Elementary-age children will most likely hear a short lesson and then play games or do other activities like the pollinator game to help them understand gardening principles.

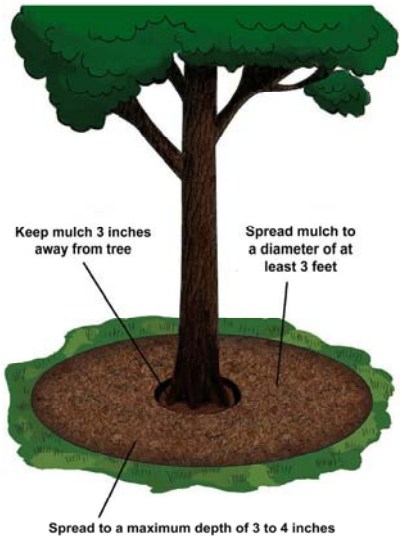
The Pollinator Game, photo by Diane Bayless

To learn more about the Children's Education Team, go to http://loudouncountymastergardeners.org/programs/childrens-program/. A link is provided on that page to request a presentation for your Loudoun County school or youth group. The CET's busiest time is the spring, and volunteer time is limited, so be flexible if seeking a presentation.

Diane Bayless, Loudoun County Extension Master Gardener

Make Sure Your Spring Mulching Doesn't Harm Your Trees

Please do not copy the mulching practices of many landscapers who practice in the area. Trees should not look like lollipop sticks emerging from a pile of mulch. Mulch should never be piled against tree trunks. Bark is not intended to be buried. Mulch touching against bark invites disease, decay, and chewing rodents. A fresh pile of mulch invites burrowing critters who will chew the bark and effectively girdle and kill the tree. This shape also encourages water runoff rather than facilitating water to soak in.



Mulch is intended to protect tree roots, not the tree trunk. Mulch should be no deeper than three inches and should ring the trunk but not touch it. There should be at least three inches between the mulch and the tree trunk. If the tree is mature and has a well-developed root flare, make sure the flare is not touching the mulch. A shallow layer of mulch can extend out as far as the limbs of the tree. This would mimic the forest floor and make your trees very happy. This is probably not practical, but a ring of mulch three feet in width will benefit the good health of a tree.

No Till Gardening

Gardeners have dug in soil and turned the soil over before planting for thousands of years. This makes planting crops and using fertilizers "easier." and speeds up decomposition of crop residue and other organic matter. Tilling is usually the gardener's most strenuous task and is the one that causes the most damage to the structure of the soil.

Digging into the soil disturbs the natural growing environment, which is a complex, symbiotic relationship between the soil surface and the underlying microorganisms. Digging also causes soil compaction and brings dormant weed seeds to the surface where they will sprout.

When European settlers arrived in this country, the Iroquois were no till farmers, and they out-produced the settlers.

With no till gardening, once the bed is established, the surface does not have to be disturbed. Amendments such as compost, manure, peat, and fertilizers are "top dressed." They will be pulled into the subsoil by watering and the activity of subsoil microorganisms. Mulch replaces weeding. By adding material in layers, you are replicating the way soil is produced in nature.

Tilling creates soil erosion, water logging, too much aeration, and compaction, made worse by heavy equipment. Even walking on the tilled soil causes formation of hard topsoil pan, which hinders earthworms and kills other beneficial organisms.

Soil layers tilled by machinery are turned upside down. Air mixes in and soil microbial activity dramatically increases. The result is that soil and organic matter are broken down much more rapidly and carbon is lost from the soil into the atmosphere. This, in addition to the emissions from farm equipment, increases carbon dioxide levels in the atmosphere. This is not a sustainable situation.

By eliminating tilling, leaving crop residues where they lay, and by growing cover crops, loss can be slowed and eventually reversed.

There are several methods that can be used to prepare a bed before adopting the no till method.

- One way is to "double dig" the area to at least the depth of two spade lengths. Remove, large rocks, roots, and other obstructions. Add amendments like compost or other organic materials and work into the soil. A good resource on double digging is the book *How To Grow More Vegetables Than You Ever Thought Possible, On Less Land Than You Can Imagine* by John Jeavons, who revolutionized double digging.
- Build raised beds. You can use untreated wood (we use white oak in the Loudoun County Master Gardener Demonstration Garden) as a frame, or leave the beds open. The best time to start this is in the fall. You can use a method known as "lasagna gardening" or "sheet composting." Start by laying down unwaxed cardboard and/or newspaper in the size of the area you intend on planting. Start layering organic material--straw, leaves, compost, grass clippings etc. By the time spring arrives, the layers have decomposed enough to add a thin layer of compost to plant in.
- Square Foot Gardening is another example of no till. This type of gardening is good where there is limited space.

For small scale gardeners anywhere, a digging fork and a garden rake with an occasional spade used for planting are adequate for no till gardening.

U-bar digger

A U-bar digger, or broadfork, is an ideal tool for the no till garden. *Why use a broadfork?*

1. A rototiller can kill beneficial fungi and worms in the soil.
2. A tiller can upset the soil layers because some of the beneficial organisms prefer to live at the surface, while others prefer deeper spaces.
3. A broadfork allows you to loosen the soil and keep the disturbance of soil layers to a minimum.
4. A broadfork works in wet soil where tillers will not.
5. It is a great tool for someone who wants to grow organically and sustainably.

Cover crops should be used in any type of gardening and are a perfect addition to no till. They protect the soil from erosion and help control weeds. They increase nutrients in the soil several ways. By using legumes (field peas, hairy vetch), nitrogen is fixed in the soil. Plants with long roots or tap roots pull nutrients up to the surface from lower layers (oilseed radish, rye).

The 12 raised vegetable beds in rotation in the Loudoun County Master Gardener Demonstration Garden are planted in cover crops in winter and some temporarily during the planting season to keep the soil protected and add nutrients. Some will be U-barred in the spring and used as "green manure." Some will be pulled out and laid on the beds for mulch. And some vegetables, like tomatoes and brassicas, will be planted directly into the cover crop and used as a living mulch. And some will go into our compost pile. *This is ideal no till gardening.*

A Japanese farmer, *Masanobu Fukuoka,* is the inventor and master of the modern natural no till technique. His book *One Straw Revolution*, published in 1978 by Rodale Press, has inspired many young farmers and small gardeners.

Fukuoka's farming is guided by four firmly practiced principles:

- No till.
- No fertilizer.
- No weeding.
- No pesticides.

In making the transition to this kind of gardening, some composting or weeding may be necessary at first, but gradually these measures will be reduced and the result is that the natural environment is not altered.

I've only touched lightly on the sustainable no till gardening method. There are many resources for no till gardening. Thanks to the Internet, there is a plethora of information at your fingertips.

The golden rule with no till gardening is to avoid inverting the soil and to *tread lightly or not at all* on your planting area.

And, the bottom line, the benefits of no till gardens:

- They are easy to build.
- They are virtually maintenance free.
- They mirror nature to create a rich, organic environment for your plants.
- They can be built anywhere, anytime to any design.

Happy Gardening!

Normalee Martin, Loudoun County Extension Master Gardener

Hail to the Hellebores!

In this time of seasonal transitions and uncertainties, I offer bright signs of hope...a genus of flowering perennials that seem to never disappoint: the Hellebores. They remain evergreen and frost-resistant with the emergence of their tender, brilliant green new leaf growth along with a glorious variety of blossoms that peak in the face of February's snows and March's unpredictability. Their common names are Christmas Rose and Lenten Rose, reflecting their special seasons.

The name Helleborus is from the Greek meaning "food to kill" because almost all of the genus are in fact poisonous. This may be why they seem to be so reliably deer and vole resistant, just one of many attractive qualities to the Northern Virginia gardener. They are in the Family Ranunculacae, Genus Helleborus, and their native habits are scattered around the globe, from Europe to Asia. Isolated varieties can be found along the Turkish-Syrian border and in Tibet, but the greatest concentration is in the Balkans. There are 22 species in all as well as a growing number of hybrids. The species and hybrids available to us in Northern Virginia are tolerant of climates from agricultural Zones 5a to 8b, though in "Our Life in Gardens," written about gardening in Vermont in Zone 4, a whole chapter is devoted to the Hellebores, "companion of snowdrops and witch hazel and other winter surprises."

The Hellebores are considered shade-loving perennials, but they can also thrive in dappled shade and even sunnier locations. Sun seems to encourage the flowering. They are ideal for a woodland garden and prefer moist but well-drained, humus-rich soil; however, I have also found them to be tolerant of drier conditions. In addition to their blooming season coming so early (when we gardeners are eagerly anticipating spring), the season is also lengthy with Helleborus blossoms playing a colorful companion role in the garden until late May or mid-June.

They grow slowly but surely as single mounding clumps that should be given plenty of "elbow room" because the plants, depending on the species, can reach two feet or more in height and breadth over the years. Happy plants will self-sow if blossoms are left on the plant to the seed pod stage. The mature mound does not necessarily require dividing, but the best time for division is

late summer because the flower buds form in early summer. Bare root seedlings from nurseries are also best planted in early fall.

Helleborus niger (named for its black roots) is the commonly called Christmas Rose (no relation to the Rose family), which in warmer climates may actually have pristine white flowers in December. The numerous Oriental hybrids available from nurseries tend to bloom at the beginning of Lent or in early spring, hence the name Lenten Roses. The flower buds begin to unfold as the new leaf growth gets started, often hidden by the previous season's foliage, which can be a bit weather-beaten by springtime. Careful pruning of the older leaves allows for easier emergence of the new foliage as well as flowers. The foliage in different species can vary from a brilliant green or chartreuse to a darker forest green to a stunning blue-gray green. The leaves usually are composed of 7 to 11 leaflets that fan out, often with a serrated margin. While the newest leaves have a tender consistency, they mature to a leather-like toughness, probably another deterrent to deer-browsing.

The number of hybrids is ever-expanding, encouraged by horticulturists like David Culp in Pennsylvania (We had the gift of hearing him speak at Loudoun County Master Gardeners Annual Gardening Symposiums in recent years). He champions their inclusion in a "layered garden," a garden that has color and interest in all seasons. The pallet of the hybrids ranges from a pure white, to soft yellow or golden, to pale green, blushing pink, and violet to dark purple almost black. The flowers are generally bell-shaped, hanging downward, with five petals, though hybrids with double and fringed petals are also available. The blossoms can be a pure single color or they can be bicolored or spotted or have rimmed petals; some petals become less colorful, even transforming toward a pale green, as the months go by.

Hellebores have a history of some medicinal uses despite the overall toxicity of the plant. Two kinds of Hellebore were originally described: the Black Hellebore (Helleborus as we know them) and White Hellebore, also quite poisonous (from a different plant family: Veratrum album in the Family Melanthiacene). The Black Hellebore was used therapeutically by ancient practitioners in cases of paralysis, gout, and insanity, but the plant produced a wide range of unpleasant and debilitating, sometimes fatal, toxicities.

Because of a growing number of hybrids and increasing availability from nurseries in recent years, we will see many more gardens and landscapes enhanced by this beautiful and practical low-maintenance addition to the list of perennial favorites. Quoting again from "Our Life in Gardens": "So wonderful are these plants that it is not hard for the whole place to go to Hellebores."

Beth Simms, Loudoun County Extension Master Gardener

Pest Spotlight

Insect Imposters: Going "Undercover" in the Garden

Insects owe their overwhelming success to several key adaptations including a waterproof exoskeleton, the ability to occupy all sorts of habitats, quick generation times, and plenty of offspring. One that is not so often mentioned, and perhaps one of the cooler tricks insects have, is their ability to put on a disguise.

Syrphid fly Photo by Sam Droege from Beltsville, USA [Public domain], via Wikimedia Commons

Costumes: Not Just for Halloween!

Of the 12 most common orders, all have representatives that use some sort of "costume" to evade predation. Despite the diversity, all insects at the costume party tend to subscribe to three main styles of dress-up including warning colors, behavior, and camouflage.

Warning! Contents Are Not as Tasty as They Seem

Just like how we humans enjoy scaring others with our costumes at Halloween, insects use this same principle when they apply "warning" colors to their ensembles. In nature, it has become common fact that bright colors such as reds and oranges usually mean "stay away" or "this doesn't taste good." One of our most loved insects, the Monarch Butterfly, is well known for its orange coloration, which predators immediately associate with "bad taste." Due to chemicals taken up through feeding on its beloved milkweed, it is likely to give those that take a bite quite the stomach ache. The Viceroy, another common garden butterfly, has taken a cue from the Monarch's success and gone with the orange look as well. This is a specialized form of mimicry known as aposematic coloration, in which animals choose certain colors based on the likelihood it will decrease predation. This is seen throughout the insect world from grasshoppers to flies. In fact, most gardeners are quite familiar with Syrphid flies, those beautiful bee mimics that nectar-feed through the summer months here in Virginia. Their outfits were chosen to carefully mimic a wide variety of wasp and bee species, and to the untrained eye, they can be quite difficult to distinguish! One of this entomologist's personal favorites, the Bombyilus major, even captures the "fuzzy" look of certain bee species.

Imitation Is the Best Form of Flattery

Some insects are not content with just wearing a scary costume and instead, copy a series of behaviors to fool another species. One of the privileges of summer evenings in Virginia is the ability to have our own light show put on by our native firefly species. If you ever were curious, most male fireflies will shine their light for roughly half a second and then wait about seven more seconds before lighting up again. The females, who do not fly and are hanging out in the grass below, will light up usually within a three-second window after the first light from the male goes off. Since they rarely "spice up" their routine, it has become fairly easy for different species of fireflies to mimic this and use it to their advantage. The female genus, *Photuris*, has made a habit around our parts of doing this for years, and draws in the males of the *Photinus* genus during the three-second window only to consume them for their efforts.

Camouflage: Hunt or Be Hunted

Probably the easiest way an animal (including us humans) can avoid being eaten is to blend in with the crowd, the landscape, and objects. No creature in the insect world does this better than the walking stick. Its order name is "Phasmida" or "Phantom" for a reason! These insects not only mimic leaves, stems, thorns, and bark of trees, but some species even have eggs that resemble seeds. If that weren't enough, they can mimic the way leaves and branches sway in the breeze and will move their bodies to do the same. Walking sticks are just one of many who have capitalized on this skill in the garden. Here are two of the most common you are likely to encounter:

- **Eye-Spot Mimics**:

  Imagine you were just getting ready to settle in to a tasty meal when it flashes huge eyes in your direction! Not so interested now, right? That is the general idea behind having eyespots, because they are generally enough to either scare off or confuse a predator.

- **Chameleons**:

Beautiful Wood Nymph Moth By Andy Reago & Chrissy McClarren via Wikimedia Commons

These are the insects who have decided to change their look to match their surroundings. Beetles, caterpillars, and grasshoppers are all well known for this. Several of our most hated garden pests, such as leaf beetles, tomato hornworms, aphids, and leafhoppers, are famous for pulling off that perfect shade of "plant green" all summer long. Probably, the winner of the best camouflage costume of all time goes to the moth, *Eudrays grata*, more commonly known as "Beautiful Wood Nymph" or perhaps more apt, "Bird Dropping Moth." As the common name suggests, it resembles the waste of birds. Even in plain sight, one would imagine it doesn't get many who come by for a closer look.

Perhaps searching for insect imposters will be a source of entertainment in your garden this coming spring. If nothing else, maybe it will help train your eyes for those easy-to-miss pests!

Resources:

Waldbauer, G.P. 1970. Mimicry of Hymenopteran Antennae by Syrphidae. Psyche 77: 45-49.

Cockerell, T.D.A. 1934. Mimicry among Insects. Nature 133: 329-330.

Amanda Rose Newton, BCE. Entomologist and Loudoun County Extension Master Gardener

Spring Lawn Maintenance

Photo taken from VCE website, Lawn and Garden - Turf and Garden Tips Podcast

Well, here we are looking forward to spring and to all the possibilities in the growing season. So many of us are planning vegetable gardens and landscaping, contemplating what can survive in sun or shade or attract pollinators to keep everything thriving. Another group is out there standing in their yards, heads tilted to one side, hands under their chins, surveying the large green sections of their domains. These green sections will involve mowing and edging. The sounds of power machinery will signal that these homeowners care and that these homeowners will be rewarded with yards that look *good*. Let's face it, when the lawn looks good, all the flower beds, shrubs, and trees go from pretty nice to *showcased*! And it's not just a pretty green face; a thick healthy lawn holds nutrients in the soil, resists weeds, and slows water runoff.

Although every homeowner wants a great looking lawn, that end state can be a bit elusive given that most of us live in developments where all the good top soil was removed during the neighborhood's construction phase and the fact that most homeowners really don't know what their particular lawns need. So many go to the store and put their trust in lawn product companies that tell them to buy more stuff and put more stuff on their lawns throughout the year. This doesn't help your lawn or your wallet.

So, what is a homeowner to do? Spring is almost here, so we have to start doing stuff, right? Yes, by all means, let's do stuff, but do the right stuff. The lawn requirements of every yard are unique due to different levels of care over the years and other factors such as soil conditions, shading, whether you have cool season or warm season grasses, etc. A great first step is to turn to your local Virginia Cooperative Extension Office for a lawn evaluation. The Loudoun County Extension Master Gardeners will analyze your lawn's condition and provide you a plan that will remove the guess work, helping you achieve a healthy lawn that will look great, save you money, stand up to the harsh summer months, *look great*, prevent the leaching of excess nutrients into our waterways (which is the result of applying excess products), and ***look great***!

What does the evaluation entail? The Loudoun County Extension Master Gardeners will measure your lawn space, take soil samples and send them to Virginia Tech for analysis, and evaluate shade, sun, weeds, and problem areas. In the end, the homeowner receives a full report based on Virginia Tech research telling **in plain English** whether or not the homeowner needs to add lime (since lawns only need lime when their soil pH levels are too low) and how

much, exactly what type of fertilizer to use and how much, how to deal with weeds, how much lawn compost to use, when to aerate, recommended grass seed, mowing heights, etc. They can even tell you how much and how often to water. The report provides the homeowner a schedule for the whole year specifying exactly how much right stuff to apply when.

So what sorts of things should we do in the spring? For cool season grasses, which most homeowners in this area have, spring is the time for defense (this discussion is oriented to cool season grasses, though if you have warm season grasses, your Loudoun County Extension Master Gardeners are ready to help you with that as well). Yes, it's the time to focus on weeds. In early spring when the forsythia is in bloom you should focus on grass-like weeds like crab grass, then later control broadleaf weeds while they are actively growing. Consider that broadleaf weed control is best conducted in the fall and in the early spring on a warm day before those weeds come into bloom, and some weeds require repeat applications at specified intervals. Remember that weed killers are herbicides, which can be harmful if applied in excess, so be sure to use the right product for the right purpose and follow the directions carefully. Try to avoid weed-and-feed products if you do not know your fertilizer requirements. Consult your local VCE website for more information and to help you develop the best strategy for weed control.

What about fertilizer? You could apply a minimal amount beginning around May 15 (this application is even optional) according to our lawn maintenance schedule. The major part of fertilization should be done according to your soil analysis and (for cool season grasses) in the fall, because fall is when cool season varieties grow best. This strategy definitely goes against big box marketing, since it is based on science--not on sales. For established lawns, do not go out and buy 10-10-10 fertilizer (readily available in this area) unless your soil analysis tells you this is what you need. Those three numbers found on every fertilizer bag represent the percentage of nitrogen, phosphorous, and potassium in the fertilizer and in that order. If you apply too much of any component, and it cannot be absorbed by your turf because it's not needed, then those excess nutrients will find their way into our waterways as pollutants.

To seed or not to seed? In general, if you have a cool season grass like fescue, spring is not--I repeat not--the best time to overseed. This is because new spring grass will generally not have enough time to develop a strong root system to withstand the very hot summer weather that arrives all too quickly. The optimal time to overseed is in the fall. However, if you simply cannot resist the urge to overseed in the spring, pay special attention to the type, timing, and selection of weed killers you might apply so as not to harm the seed you want to grow.

Mowing. Do not mow your grass too short. Mow at a height of three to four inches. Longer grass blades absorb optimal levels of nutrients from sunlight during photosynthesis. Longer grass blades reduce weeds by denying them sunlight. Longer grass blades slow water runoff, giving it more time to absorb into the soil where it's needed. Sharpen your mower blades every year and don't mow more than 1/3 of the blade height at a time. If possible, leave grass clippings where they fall to decompose and add nutrients to the soil, but remove large clumps of clippings.

Your Virginia Cooperative Extension Office stands ready to provide you the best lawn advice based on Virginia Tech research. Visit our website for links to a wide range of science-based articles to address your specific questions, or contact us directly. Remember, whether you want a great lawn for your own personal satisfaction, to maintain the health of our environment, to spark the envy of your neighbors, or all of the above, we're here to help.

Joseph Sanchez, Loudoun County Extension Master Gardener

Current Status of the American Elm

The American elm (*Ulmus americana*) was once a common and beloved tree in our towns and cities. Sadly, horticultural practices in use during the early-to-mid part of the 20th century have resulted in the near demise of this iconic city tree. In less than 100 years, the negative effects of urbanization and monoculture have become all too apparent.

J. Stripes, Virginia Polytechnic Institute and State University, via USDA Forest Service.

Background: Wild American elm was once abundant, covering much of the eastern half of the United States.[1] It is a species beloved by many for its graceful and stately stature, its ability to adapt to all types of soil conditions, its tolerance of air pollution, and its unusually high canopies with overarching branches that provide cooling shade. With all these beneficial attributes, the American elm quickly became the tree of choice in North American cities in the 19th century. People became more and more infatuated with the simplicity and gracefulness of the American elm and began planting them in great numbers along city streets—in many cases to the exclusion of other trees. So began the remarkable American elm monoculture. Nostalgic memories of elm-lined streets and avenues abound. Then, a deadly infectious pathogen known as Dutch elm disease (DED) arrived in North America during the 1920s and 1930s, and by the 1940s and 1950s, rows and rows of American elms began to fall at an alarming rate. DED is caused by a fungus (*Ceratocystis ulmi*) and the typically close spacing and monoculture of the city elms encouraged its rapid spread.[2] Today, almost 100 years after the first arrival of DED, the disease has wiped out nearly all American elms from our cityscapes.

Few American Elm Enclaves Remain: Today the species is making a precarious comeback. Only small enclaves of mature American elms still exist in the northeastern corner of the United States; the best known are in Central Park and along Riverside Drive in Tompkins Square Park in New York City.[3,4] Some stand on the National Mall in Washington, D.C.[5] and also in Georgetown. These enclaves survive because they receive intensive care (constant monitoring, pruning, and proper fungicide injections at the right time) under the best stewardship programs available.[6]

Before and after views of an elm-lined street in Detroit between 1971 and 1984. Photos by Jack Barger/U.S. Forest Service.

How Monoculture Accelerated the Spread of Dutch Elm Disease (DED): In addition to DED, American elm also has its share of other infectious diseases, such as elm phloem necrosis, elm yellows, and bacterial leaf scorch. But it is DED that caused much of the most devastating American elm mortality through the 1970s. DED infects the vascular (water conducting) system of the tree. Infection prevents water from reaching the crown, eventually causing the tree to wilt and die. Roots of American elm trees growing close to each other often cross and then fuse—creating perfect conduits for pathogens. That, coupled with damage from elm beetles (native and non-native), enables the fungus to progress rapidly from tree to tree. Horticultural professionals have said unequivocally that elm monoculture was to blame for the disastrous downfall of most of the mature American elms—particularly the ones lining the streets—an inadvertent result of a single species of trees planted too closely together.[7]

Are Native Elms Rare? After several decades of devastation by Dutch elm disease, most of us now believe that American elms are hard to find. In fact, the American elm—and its lesser known native "cousins" such as slippery elm, rock elm, and cedar elm—are not rare in nature at all.[8]

Some Wild American Elms Survived DED Decimation: Young American elms have been observed popping up from decayed elm stumps in the woods. While still carrying the pathogen that killed their parents, national data have shown that most of these saplings are not bothered by DED in their first 20 years, although as they mature they eventually succumb to the fungus.[9]

Some mature majestic American elms still stand like lone sentinels in bottomlands or on terraces where the ground is dry in summer. Throughout its range, American elm seldom grows in pure stands and is usually found mixed with other species.[10] We can sometimes spot American elms by roadsides or in open fields. I was both elated and perplexed at the sight of a full grown wild (very likely) American elm last year; this sighting led me to learn more about the current state of the species. How did this tree manage to survive the odds by itself? Studies have shown it is most likely because of a combination of isolation from other elms, which caused the DED fungus and elm beetles to miss it, and its unique superior genetic arrangements.[11]

Hybridized Elms Are Non-Native, Very DED Tolerant: It is difficult to hybridize the American elm, which has a chromosome number twice that of all other elms (56 versus 28). Thus, most of the elm hybrids found on the market do not carry the American elm genome. Even though very DED tolerant, most of them do not have the same characteristics as the beloved true native American elm, and some will not even look like American elms as they grow. These hybrids are crosses between Asian, European, or Siberian elms, seldom American elms.[12,13]

American elm 'Jefferson' on the National Mall at Washington DC.
Photo by: National Park Service.

Clones From Wild American Elm Trees Are Mostly DED Tolerant: Cultivars are plants produced in cultivation by selective breeding or via vegetative propagation from wild plants identified to have desirable traits. Scientists, breeders, and arborists have been working relentlessly for decades to prevent American elms from fading into oblivion. After testing a plethora of mature American elms in their natural habitat, cloning and planting their shoots, and then inoculating them with the DED fungus, a few cultivars of highly disease-resistant American elms have been developed.[14] These trees have inherited the classic traits of their parents. All are tall and graceful, but come in two forms—the most recognized form has vase-shaped branching, and the other form is more upright.[15,16] Both are about 96 percent resistant to DED and are widely available in nurseries. [17,18] Examples are:

- Valley Forge (*Ulmus americana* "Valley Forge"): Developed by the U.S. National Arboretum; probably the most resistant to DED; also resistant to elm leaf beetle; vase-shaped.
- New Harmony (*Ulmus americana* "New Harmony"): Excellent resistance to DED; also resistant to elm leaf beetle; vase-shaped.
- Jefferson (*Ulmus americana* "Jefferson"): Excellent resistance to DED; vase-shaped; considered sterile.

- Prairie Expedition® (*Ulmus americana* '"Lewis & Clark"): Excellent resistance to DED; vase-shaped.
- American Liberty (*Ulmus americana* "American Liberty"): Good resistance to DED, but not as strong as other cultivars; also resistant to elm leaf beetle; vase-shaped.
- Princeton (*Ulmus americana* "Princeton"): Developed in the 1920s before the threat of DED; good resistance to DED; some resistance to elm leaf beetle; vase-shaped; fast growing.

Lessons Learned: According to the U.S. Department of Agriculture Forest Service, American elm seldom grows in pure stands and is usually found mixed with other species throughout its natural range. This offers us insight into how we should plant elms in the future. Arborists and foresters agree on this idea, but the public is not yet as attuned. The biggest lesson learned from the devastation of DED is the importance of having a diversified plant community with trees, shrubs, herbaceous plants, and grasses. A healthy and diverse plant community helps ensure long-term habitat stability. In a monoculture, it takes only one parasite or disease that affects a particular species to wipe out the entire stand in one sweep. If we must plant more than one American elm, then we should allow ample spacing between trees so that root grafts will not occur.

Conclusion: Elm hybrids on the market most likely will not have the characteristics of the American elm, although they are very DED tolerant. On the other hand, studies have shown that cultivars will carry the desirable American elm traits. Although caution is still in order, hybrids are roughly 96 percent resistant to DED, but they may still succumb to the disease without acute care or if a poor diversity of plants surrounds the trees. For those lucky homeowners who currently have mature American elms growing on their property, or are considering becoming stewards of this struggling species, it would be best to consult professional arborists for specific care instructions. Loudoun County Extension Master Gardeners can provide a list of nearby certified arborists, offer timely research-based information, and give planting guidelines if needed.

Ling Lay, Loudoun County Extension Master Gardener

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[1] ODNR Division of Forestry website: http://forestry.ohiodnr.gov/americanelm.

[2] USDA Forest Service, Northeastern Area State & Private Forestry, NA-PR-07-98: https://www.na.fs.fed.us/spfo/pubs/howtos/ht_ded/ht_ded.htm.

[3] Central Park Conservancy website: http://www.centralparknyc.org/tree-guide/american-elm.html.

[4] Nature calendar – Erik Baard's Guide to NYC's Wilderness Community website: https://naturecalendar.wordpress.com/tag/vernal-pools/.

[5] Casey Trees website: http://caseytrees.org/elm/.

[6] New York Times Magazine article by Michael Pollan: http://michaelpollan.com/articles-archive/look-whos-saving-elm/.

[7] USDA Forest Service, Northeastern Area State & Private Forestry, NA-PR-07-98: https://www.na.fs.fed.us/spfo/pubs/howtos/ht_ded/ht_ded.htm.

[8] USDA Forest Service, Northeastern Area State & Private Forestry: https://www.na.fs.fed.us/spfo/pubs/silvics_manual/volume_2/ulmus/americana.htm.

[9] ODNR Division of Forestry website: http://forestry.ohiodnr.gov/americanelm.

[10] USDA Forest Service, Northeastern Area State & Private Forestry: https://www.na.fs.fed.us/pubs/silvics_manual/volume_2/ulmus/americana.htm.

[11] Theweek.com article by Zach St. George http://theweek.com/articles/613609/cloning-save-american-elm.

[12] USDA Forest Service, Northeastern Area State & Private Forestry: https://www.na.fs.fed.us/pubs/silvics_manual/volume_2/ulmus/americana.htm.

[13] The Morton Arboretum website: http://www.mortonarb.org/trees-plants/tree-plant-descriptions/elm-cultivars.

[14] Theweek.com article by Zach St. George http://theweek.com/articles/613609/cloning-save-american-elm.

[15] ODNR Division of Forestry website: http://forestry.ohiodnr.gov/americanelm.

[16] Casey Trees website: http://caseytrees.org/blog/american-elm-restoration/cultivars-of-the-american-elm/.

[17] The Morton Arboretum website: http://www.mortonarb.org/trees-plants/tree-plant-descriptions/elm-cultivars.

[18] University of Illinois Extension website: https://extension.illinois.edu/treeselector/detail_plant.cfm?PlantID=593.

Recommended Vegetable Gardening Resources

Planning the Vegetable Garden: http://www.pubs.ext.vt.edu/426/426-312/426-312-PDF.pdf

Vegetable Planting Guide and Recommended Planting Dates: https://pubs.ext.vt.edu/426/426-331/426-331_pdf.pdf

Virginia: Vegetable Planting Calendar: http://www.ufseeds.com/Virginia-Vegetable-Planting-Calendar.html

Container Vegetable Gardening – Healthy Harvests from Small Spaces: http://extension.umd.edu/growit/food-gardening-101/container-vegetable-gardening-healthy-harvests-small-spaces

University of Maryland's "Grow it Eat It" page: https://extension.umd.edu/growit

Cornell University home gardening links: http://essex.cce.cornell.edu/gardening/home-gardening-links

Photo by Normalee Martin

Water in the Private Garden

Naturally occurring water is abundant in spring. Still-melting snow may be keeping the ground moist and boggy, or even constantly pooling. Spring is also when vernal pools in or around one's property are most visible, each glistening like an oasis and noticeably teeming with wee amphibians and small vertebrates and rare plant life. And then, of course, there is rain, which is usually frequent and substantial.

Water from nature supports flora and ground cover turf coming back to life in early spring. Now, play in your mind memories of past springs in your home grounds. Did spring rain pour with perfect timing and then seep in or flow out through impervious surfaces? Did excess water dissipate? Did rain come back only when the ground needed it again?

What if there are actually issues with excess water on one's property that need to be dealt with? Devoted gardeners tend to welcome a gardening challenge in the guise of another opportunity for a more satiating gardening life. Casual gardeners, however, may be forced to take on a project that then ends up satisfying. Consider these water-related garden challenges and opportunities:

Photo: Courtesy of City of Arlington, VA

Vernal pool in woodlands in Spring

Photo: Vernal Pools Association

Spotted salamander

Photo: Vernal Pools Association

Vernal pools or ponds and the unique life they host are so interesting that property owners should appreciate and nurture them should they have a pool or pond right within their boundaries. Simply, "*A vernal pool is a seasonal, ephemeral or temporary type of wetland habitat that's formed by the accumulation of winter rains and snowfall, typically in shallow depressions in woodlands."* See Vernal Pools for Salamanders.

For a fuller picture, these ephemeral bodies of water are described as:
"*… a form of temporary, freshwater wetland that contains water for a portion of the year and supports a fantastic array of wildlife and plants, some specially adapted for these habitats and many being rare species in Virginia.* Vernal *pools are often found in the floodplain of a stream, in seasonally-flooded woodlands, as sinkhole ponds, or where rainwater and snow collect in forest depression. Vernal pools typically dry up in the summer time and fill up with rainwater during the fall and winter."*

The water that accumulates in ground depressions is referred to as "vernal" because in addition to supporting rare spring ephemeral plants, they host a variety of wildlife (e.g., amphibians, crustaceans, insects) that migrate to the formed pools in the spring to breed. For example, adult semi-aquatic salamanders hiding in forest litter, or under rocks, or hibernating underground throughout the winter come out in spring to find water where they will seek a mate and breed. The pools have to be available and naturally accessible for them to fulfill their lifecycle.

Vernal pools are dwindling in our area due to expansive development. The continuing availability of this habitat crucial to the unique life it hosts is threatened. What is a private property owner to do? Conscious individuals can either preserve what already exists on their property, or help add to the inventory of the habitat by allowing the development of a new one. It can be a small-scale do-it-yourself garden project in an already suitable spot, it can be more ambitious. Awareness is a good starting point.

Rain Gardens

If the uniqueness and scale of vernal pools seem out of reach for the average gardener with only a yard, a rain garden is within easier reach. Designing and planting a small yard-friendly ornamental garden may be more realistic and closer to the home gardener's skill set.

http://www.12000raingardens.org

"A rain garden is a depressed area in the landscape that collects rain water from a roof, driveway or street and allows it to soak into the ground. Planted with grasses and flowering perennials, rain gardens can be a cost effective and beautiful way to reduce runoff from your property. Rain gardens can also help filter out pollutants in runoff and provide food and shelter for butterflies, song birds and other wildlife."

Designing and creating a rain garden will depend on a particular spot's needs or a homeowner's wants, and the possibilities are many. But a deeper consideration than the need and want of creating this garden style is how it also benefits the greater environment. As Virginia Tech claims, "Rain gardens conserve water quantity, preserve water quality."

So with that greater good assured and being cared for in the background (clue: Chesapeake Bay health), the property-improving gardener focuses on the joy of deciding how the rain garden will look and choosing the plants that will go in it. Virginia Tech publications provide plant lists: Rain Garden Plants and Rain Garden Plant List.

Find the motivation to explore possibilities. Further research facilitates getting started. Because of the greater environmental benefit of rain gardens, informational resources are numerous. See Department of Forestry Rain Garden brochure and Rain Gardens across Maryland, 54 page document with diagrams.

Photo: MA Watershed Coalition c/o EPA

https://sailorstales.wordpress.com/2015/08/26/i-never-promised-you-a-rain-garden/

Maria Daniels, Loudoun County Extension Master Gardener

The Winter-Blooming Witch Hazels

If you can't wait for the first woody plants to bloom, winter-flowering *Hamamelis* species and cultivars are just the plants for you. Two winter-flowering species are usually available: *H. vernalis* (native to the south-central United States) and *H. mollis* (native to China). In addition to the two species, hybrid witch hazels (*Hamamelis* x *intermedia*) are widely available and popular choices for homeowners.

Hamamelis x intermedia. Photo by jacki-dee, licensed under *Creative Commons*.

Witch hazels usually have multiple trunks and grow as low shrubs, tall shrubs, or small trees. They're available in several different shapes, such as upright, spreading, vase, or oval. There are now more than 100 named cultivars. Although not all of them are available commercially, there still are lots to choose from. And more are in plant hybridizers' pipelines.

Depending on the species and the cultivar, flowers range from shades of yellow, to gold, to shades of red. Individual petals range in size from ½ to ¾ inches long. On cold days and nights they curl into tiny fist-like balls; then, when the weather warms, they unfurl. Three to six flowers form a cluster; on some cultivars, the clusters are very close together, making for a particularly showy plant. After the petals fall, the sepals remain attractive.

Hamamelis x intermedia 'Sweet Sunshine'. Photo by Brenda Skarphol, Courtesy of Green Spring Gardens Fairfax County Park Authority,

Flowering occurs only after a chilling period with temperatures of 30°F or less, and bloom time is governed by the requirements of the specific species or cultivar. Some, such as *H. vernalis*, require only 30 days and can bloom as early as December; others, such as *H. mollis* and *H. japonica* (the parents of most of the hybrids) have a longer chilling requirement and both they and their hybrids bloom later, in mid-to-late January, February, and March. Of course, this is all weather dependent!

The leaves are attractive in three seasons. Many have bronze to reddish new leaves in the spring, becoming mid-to-dark green in the summer. In the fall the leaves are varying shades of yellow, orange, and even red, with the color holding sometimes for as long as three weeks. The leaf interest, coupled with the winter flowers, make witch hazels plants with true four season interest.

***Hamamelis* foliage is generally very colorful in the fall**
Photo by Mihai Costea, from Phytoimages .

All of the *Hamamelis* species and cultivars are moderate to slow growing. Pruning is not necessary, but since they tend to spread, pruning (done in the spring right after bloom) does keep them in bounds. Of course, if you plant them in open lawn where they have room to grow, spreading isn't an issue. There is

one exception; since most witch hazel cultivars are grafted on *H. virginiana* stock, if suckers appear below the graft union, it's necessary to prune them out immediately.

Plant witch hazels where they can be seen from a window in the depth of winter or near a path where their fragrance can be enjoyed as you pass by. They do well in shrub borders, as specimen plants in the lawn, or in small groupings. The yellow flowering types show off particularly well when they have a background of evergreens, such as boxwood; the darker flowering cultivars are particularly effective when given a light-colored background.

Hamamelis vernalis, Photograph by Julie Makin, Lady Bird Johnson Wildflower Center,

All witch hazels are easy to grow and have very similar cultural requirements. They are happiest in good well-drained, moist garden soil that has a pH of 6.8 or less. After they are established, most witch hazels are drought tolerant but should never be planted in areas where the soil is normally dry. All of them prefer full sun to part shade, with bloom and plant form being better in full sun. In full sun, however, the soil must be moist. If not, the leaves may scorch in the hot summer sun. They all are hearty to 10°F and survive our winters without difficulty.

Witch hazels generally are problem free, low maintenance plants. Insect-caused galls may occasionally mar the leaves, but this is a minor problem that does no long-term damage to the plant. Anthracnose, leaf spots, and powdery mildew may occasionally be an issue for a particular plant, but these aren't common problems.

Hamamelis x intermedia 'Aphrodite'. Photo by Dominicus Johannes Bergsma, under license from Creative Commons.

As for deer, witch hazel species are listed on both the NC State University and the Blandy Deer "Resistant" Plant Lists as "Occasionally Damaged" trees, i.e., deer will eat witch hazel twigs, leaves, and buds) but only after other favored foods are gone. Keep in mind, however, that deer in various areas have different tastes, and starving deer will eat virtually anything in sight. The wise gardener will protect newly planted trees and shrubs with wire cylinders securely anchored in the soil for several years until the plants are large enough to survive attack.

Hamamelis vernalis. ©2003 Steven J. Baskauf available under license from Creative Commons.

The easiest way to acquire witch hazels is to buy them balled and burlapped (never bare root) or in individual pots in spring or fall. While they can be grown from seed, their complex and lengthy dormancy requirements make sowing seeds an exercise in patience. Cuttings are difficult for different reasons.

Hamamelis vernalis (vernal witch hazel)

Vernal witch hazel is native to the midwest, particularly the Ozark Plateau area of Missouri, Oklahoma, and Arkansas. In the wild, it is usually found on rocky stream banks, on gravel bars, and in moist open woods along with sycamore, sweet gum, and red maple. It is tolerant of floods and poorly drained clay soils and thus is particularly useful in a rain garden. Because it has a short chilling requirement (about one

month), it is usually the earliest witch hazel to bloom, flowering sometimes as early as December and continuing its show for three to four weeks, depending on the weather.

Vernal witch hazel grows as a shrub, generally six to ten feet tall, occasionally to 15 feet, but only rarely rising to small tree status. It frequently suckers from its base, establishing large colonies in the wild (and in your yard, if the suckers aren't removed).

***Hamamelis vernalis* foliage and developing fruit in May.** Photo by Julie Makin, Lady Bird Johnson Wildflower Center.

The flowers are small, only about ½ to ¾ inches across with curled and crinkly petals. But what they lack in size they make up for in an impressive array of colors: ranging from pale yellow to orange to deep red and reddish purple. The fall foliage is golden yellow, but unfortunately, it is held on the plant throughout the winter, detracting from the flowers when they bloom, a problem that plant breeders are working to solve. There are several garden-worthy cultivars of *H. vernalis* already available, with more surely to come. Some of the best currently available are "Autumn Embers" (with brilliant fall color and orange flowers) and early flowering "Christmas Cheer" (with red-purple flowers sometimes as early as December). "Sandra" is frequently mentioned as a worthwhile cultivar; however, some authorities find it disappointing, and perhaps better grown further north, where it may be more satisfactory. While the idea of a weeping witch hazel may be intriguing, the only named weeping cultivar, "Lombart's Weeping," should be avoided; unfortunately, these plants have become confused with others in nurseries, and the plant you get probably will not be "Lombart's Weeping" at all.

Hamamelis mollis (Chinese witch hazel)

H. mollis is native to central China and is one of the parents of the hybrid *Hamamelis* x *intermedia* cultivars (the other parent being *H. japonica*). It's a large shrub or small tree, upright and oval when young, but more rounded and spreading as it grows older, growing slowly to 10 to 15 feet tall (occasionally 20 feet) and 10 to 15 feet wide. It has some clay tolerance if the soil is well drained.

***Hamamelis mollis* 'Princeton Gold'.** Photo by Brenda Skarphol, Courtesy of Green Spring Gardens.

Chinese witch hazel is the most fragrant of the witch hazels. Its large spidery yellow flowers have longer, strap-like petals than other species and are not crinkled. They appear in late winter (February) and bloom on into March. In the fall, its leaves turn yellow to yellow-orange, and it's just as showy in this season as when it's blooming in late winter. There are several cultivars available, such as "Goldcrest" and "Princeton Gold"; more are on the way.

Hamamelis x *intermedia* (hybrid witch hazels)

When we speak of witch hazels, these are the ones with which most people are familiar, the interspecific hybrids with *H. mollis* and *H. japonica* as the parents. They grow as small trees or large shrubs, upright and oval in shape when young, maturing slowly to a more rounded, spreading shape. They range from 15 to 20 feet tall, depending on the cultivar, with some as small as six feet tall and a few reaching as much as 25 feet.

Hybrid witch hazels are very showy when in bloom in late winter (January to March) and then again in the fall when their leaves turn to various shades of yellow, yellow-orange, and even red for some cultivars.

There are numerous cultivars with flowers ranging from shades of yellow, gold, and copper to various shades of red and maroon. “Arnold Promise,” the first named hybrid (1963), is still one of the very best, with bright yellow flowers and reddish calyces, petals almost an inch long, and good fragrance. Another great hybrid is, “Jelena” (sometimes listed as “Copper Beauty”) with flowers progressively lightening from red-maroon bases through coppery-orange in the middle, to yellow at the tips and highly showy orange-red fall leaves. “Pallida” (previously classified as an *H. mollis* hybrid and still sometimes sold as such) has fragrant pale yellow flowers and yellow fall foliage and is called by some authorities “one of the best.” Other excellent selections include “Barmstedt Gold,” “Sunburst,” “Diane,” and “Westerstede.” Hybridizers are working on breeding even more, so the selection should grow in the future.

Hamamelis x intermedia ‘Birgit’. Photo by Brenda Skarphol, Courtesy of Green Spring Gardens,

The species and most of the cultivars commonly available are discussed in detail on the Missouri Botanical Garden website. If you are considering a particular plant, you can probably find a thorough discussion of it there.

In addition, we here in Northern Virginia have another source readily at hand: Green Spring Gardens in Fairfax, which is developing a national collection of *Hamamelis* species and cultivars. Green Spring already has more than 200 plants, spanning all the species; more than 100 of the plants are cultivars. To see a slide show of some of the witch hazels in their garden go to the website, click on the arrow in the photograph and you’re in for a treat. Prime time for viewing the late winter-flowering witch hazels is January to March. After seeing the Green Spring photographs, it would be hard to resist a late-winter road trip there to see them and another trip to a garden center this spring to bring some home!

Lina Burton, Loudoun County Extension Master Gardener

***Hamamelis* x *intermedia* ‘Arnhem’,** Photo by Brenda Skarphol, Courtesy of Green Spring Gardens .

THE HERB REFERENCE: Lemon Balm *(Melissa officinalis)*

Lemon balm is an herb favored by gardeners, herbalists, and cooks. Thanks to its irresistible fragrance, a walk through a garden filled with lemon balm is a special treat. The genus name *Melissa*, from the Greek word "bee," indicates its bee-friendly nature, and anyone who has grown lemon balm can attest to the humming of honeybees on the plants. As a medicinal herb, lemon balm is treasured as one of the most important members of the extensive mint family. Cooks use it as a culinary herb in salads and soups, and I find it to be a delightful addition to herbal teas and smoothies.

Lemon Balm photo U. of Illinois Extension

History of Lemon Balm

It has been well documented that lemon balm has been a cultivated herb in the Mediterranean region for thousands of years. Thomas Jefferson was known to keep lemon balm in his garden at Monticello. The Carmelite nuns in the late 16th century were the first to make Carmelite water, which was a secret alcoholic infusion based on lemon balm. It was meant to cure headaches and nerve pain (neuralgia). Still sold today, some versions of Carmelite water do not even contain lemon balm. Culpepper, a 17th century herbalist, suggested that the herb "be kept in every gentlewomans house … It causeth the Mind and Heart to become merry … and driveth away troublesome cares." Lemon balm was often used as a calming and soothing cure-all, healing wounds and bites, treating cold sores, calming the nervous system, and relieving sleeping disorders.

Today, research confirms that lemon balm's volatile oils have a calming effect on the central nervous system, and when combined with valerian, lemon balm aids insomnia and anxiety. Some of the strongest scientific evidence explains the effectiveness that lemon balm has on herpes viruses, from cold sores to shingles.

Growing and Harvesting Lemon Balm

Lemon balm is a very easy perennial herb to grow from seed. Once established, it will reseed vigorously, if allowed, and be with you forever. The seeds require light for germination and can be successfully propagated by division, direct seeding, or starting seeds under lights. Lemon balm grows best in any fertile well-drained soil, reasonably moist, with a pH of 6 to 7.5, in full sun.

The leaves of lemon balm are best harvested before the plant flowers. Try to harvest in the afternoon, when the oils are strongest. If you are drying the leaves, be sure they are completely dry before you store them in an air-tight container and place them in a cool, dark location. Light and/or moisture will degrade the herb's flavor.

Lemon balm will die back to the ground during freezing weather and regrow each spring. This bright, lemony herb will brighten any day.

(Please note that many herbalists consider lemon balm to be a thyroid inhibitor and recommend anyone with hypothyroidism or low thyroid activity to use lemon balm under the guidance of a health-care practitioner.)

Karen Olgren, Loudoun County Extension Master Gardener

Raising Monarch Butterflies at Home

My 2016 Experience and Preparation for the 2017 Season

Raising butterflies at home can be fun and easy with a little preparation.

Background:

The monarch butterfly (Danaus plexippus) is brightly colored orange and black and easy to recognize. The life cycle consists of four stages (the egg, the larvae (caterpillar), the pupa (chrysalis), and the adult butterfly. The caterpillar feeds almost exclusively on milkweed and, as adults, monarchs get their nutrients from the nectar of flowers. Recently, their numbers have been in decline due to loss of habitat (mostly by logging at sanctuary sites), changes in weather patterns, and the use of toxic pesticides by farmers throughout the nation. Survival is tough for the monarch, and it is estimated that only one to two percent will survive from egg to butterfly.

Monarchs are international travelers. They journey from Mexico to the United States and Canada. Ongoing studies on the migration patterns and the life cycle processes of the monarch are helping us to understand how they survive the 1,000-mile migrations.

The International Union for Conservation of Nature has listed the monarch migration as a "threatened phenomenon." In 1986, the Mexican government created the Monarch Butterfly Biosphere Reserve, which protects 62 square miles of forests where millions of butterflies spend the winter.

It is now spring and I remember back to the release of my last monarch butterfly in September 2016. I urged him on to begin his southern journey to Mexico. He was the last of my brood, and as the winter--and possible snow--was approaching, the faster he left Virginia the better.

Beginning to Raise Butterflies:

I never planned to raise 29 monarch butterflies this past summer. It all began when I found three small monarch caterpillars on a milkweed plant in my garden. The three were on a plant that had just one leaf left. How could they survive?

I cut the stem and put them in a bucket. I called my neighbor, who is an expert at raising monarch butterflies. She has done this for years in her home and trains local schools to participate in student Monarch Waystations. She was very happy to show me the basics.

First, Have a Local Milkweed Source: My garden had a few plants scattered at the end of the woods. I had not planted milkweed in my garden. I did have some butterfly-friendly plants

but not enough milkweed, the main staple of the caterpillar. My neighbor had planted extra milkweed, so I was able to use some of hers when my garden ran low. Lesson learned: To increase the availability of milkweed in my garden this year, I gathered milkweed seed pods this past fall. Because the seeds need to have a simulated natural winter condition before germinating in Spring, I made sure that the seeds were stored outside in the cold so that cold stratification was completed. I will soon be planting those seeds in my garden.

If you do purchase milkweed at a nursery, make sure you purchase pesticide (including neem oil)-free milkweed.

Second, Housing the Caterpillars: You can go online and purchase butterfly habitat sets and kits. They include pop-up enclosures with clear mesh sides and handles. Small kits can be ordered for as little as $15. However, I found these kits hard to work with and expensive. Instead, I wanted an easy-to-clean and inexpensive safe space for the caterpillars, who voraciously eat milkweed leaves all day and poop (frass) a lot.

I chose to buy covered baking pans (9" x 12" x 2 1/2"). The foil pans with clear plastic tops are in your local grocery store, usually two to a package. The height of the pan with top on is just enough to accommodate the butterfly when it first emerges.

The butterfly can unfurl its wings and rest as its wings dry off. There is enough space in the pan for the monarch to flap its wings and walk a bit. You will see that the butterflies get stronger and are ready for release within four to eight hours. A strong healthy butterfly will take off when the lid is opened. It is a glorious site to see it fly to the top of the tallest tree.

Third, Feeding the Caterpillars: Each day I gathered new milkweed leaves – just enough leaves for the caterpillars I had. (My group fluctuated from three to about 15 throughout the summer.) I picked the leaves in the morning and washed them off with a ten percent bleach solution. Then I dried them before putting the leaves in the cleaned pans.

Be alert before washing and look for small eggs on the bottom of each leaf. Those leaves with eggs cannot be washed. I would place them in a separate pan so the eggs could mature to the caterpillar stage.

Fourth, Preparing the Pan: I first placed clean paper towels on the bottom of each pan. Then I added the new milkweed leaves. Sometimes I would put in a stick for the caterpillars to climb on. By the next day, the leaves were eaten and the paper towels needed to be changed. The foil pans made it an easy cleanup each day. It is important to keep the pan and area as clean as possible. There are many illnesses that affect Monarchs, so this process of disinfecting the leaves helps stop spreading disease among caterpillars.

Fifth, Check Each Day to See If You Have a Sick Caterpillar. This is most important if your

caterpillar was taken from the wild. Symptoms can include either the caterpillar or the crysalis turning black and falling to the bottom or either of these growing smaller. There is a protozoan parasite that caterpillars ingest on milkweed. That is why you should rinse off milkweed. Monarch diseases also include a virus, NPV, commonly referred to as black death. If you see a caterpillar turn black, you should isolate any sick ones and disinfect the area with bleach solution. If you use the covered pans, just discard to avoid spreading the illness. You should also isolate any new group picked from the wild until you can determine if its members are healthy.

I did have a few wild captured caterpillars that did not make it. Some people raising Monarchs have a more controlled environment by taking eggs versus caterpillars and feeding them home-grown milkweed. I was not able to find the eggs that were just placed on leaves. By the time I found the caterpillars, they were about one-half inch to two inches.

Sixth, Turning From Caterpillars to Butterflies: When the caterpillars are ready to pupate, they stop eating the leaves and go to the top cover of the pan. The clear plastic allows you to watch them change into the J formation. The J formation occurs when the caterpillar goes to the highest point and spins silk strands to hold it in place. The caterpillar then goes into a J shape where the chrysalis formation stage begins.

When the chrysalis forms, there is no more eating. The maturing process takes approximately 12 days and a butterfly emerges. No more cleanup; just wait and see.

I note on my calendar when the chrysalis forms. The butterfly appears usually after 10 to 14 days. I did find that at the end of the season, emergence took a bit longer.

Seventh, Emerging Butterfly Ready to Fly Off: The chrysalis is a beautiful jade green with a golden jewel-like circle. As the butterfly matures inside, the green walls turn transparent and you begin to see the black of the wings. As the butterfly begins to emerge you see it move back and forth and its wings drop down. The wings are wet and need to dry and stretch. The pan suggested is just tall enough for a full stretch of new wings. Sometimes, a chrysalis would form on a stick or elsewhere. I found that if the wings could not stretch out fully, they would become deformed in the drying process. I had one whose wing tips were bent a bit. He was able to fly, but I was careful to keep that from happening again. The drying process takes about four to eight hours. If monarchs emerged in the morning, I would release them by midday to early evening. If there was to be a storm, I would hold them until the next day to give them a better chance to fly off.

Eighth, Flying Away: A monarch release is beautiful to see. When its wings dry, the monarch begins to flap them and walks around the pan. I have opened the top and some strong ones have just flown straight to the tops of my oak trees. Others are more cautious and will stay on a flower for an hour or so just getting

used to the area. This, by the way, is a great time to take close-up photos of your monarch.

If you want to undertake this interesting endeavor, I suggest that you review the many sites on the Internet that give outstanding information on raising monarchs. I have learned a lot by reviewing the literature and the in-depth discussions of diseases, migration patterns, and the international efforts to save this beautiful insect. Many local groups work with schools to educate children on saving the monarch and developing Monarch Way Stations supplied with milkweed and many native plants.

This summer, when you see a milkweed plant, stop and take a look. You may get to see one of life's mysteries before your eyes. And, if you are so inclined, you may want to raise a few monarchs to help save this beautiful species.

Nancy Feeney, Loudoun County Extension Master Gardener

All photos by Nancy Feeney

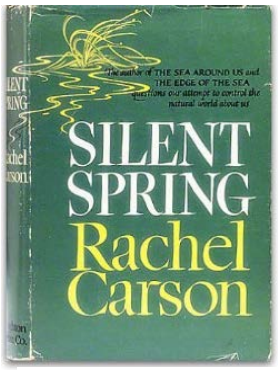
The Fleeting, Enduring Offerings of Spring

Spring ephemerals, vernal pools, and chanting peepers are among those wonderful and welcome springtime gifts that are, by their nature, fleeting. We hope they are also enduring and will reliably cycle back, returning to signal assured renewal each new spring.

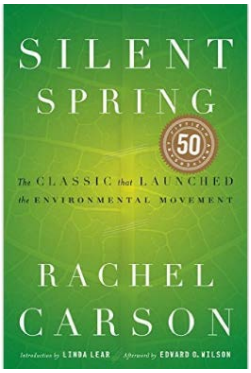
The onset of spring not only brings renewal to our natural surroundings, but it also reminds us, willing landscape stewards, to do our part (or not do our part) to encourage the natural cycle. To care or not to care about stewardship of our natural surroundings is a choice. Yet when something appreciated is fleeting, one can forget and then it is no longer there.

Remember that seminal book from 1962, *Silent Spring* by Rachel Carson?
http://library.uniteddiversity.coop/More_Books_and_Reports/Silent_Spring-Rachel_Carson-1962.pdf

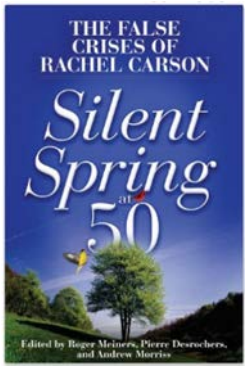
Apparently, some people do not buy what Rachel Carson put forth and what many have generally heeded for the last 50 years. In five years, check for yourself to catch up with the still contentious discourse. Whatever side you are on, understand that divergent positions on environmental stewardship exist, and however positions are manifested, they have lasting results.



The original book, 1962



50th Anniversary Release, 2012



Critique and Opposing Argument, 2012

We talk about sustainability. To sustain something is to make it enduring. So for conscientious gardeners and stewards of our properties, neighborhoods, and communities, our efforts are never done. And since we generally self-select to take on these stewardship efforts, we are already inspired and motivated to keep going. But those on this side of the argument have to also realize that not all gardeners who want and wish for beautiful gardens, attractive landscapes, and award-winning blooms are guided by the mantra of stewardship and sustainability. We can realize shared beneficial results by providing education and reaching out to others

Spring is a good time to remember that from dormancy and drabness, those plants that awaken and renew are courtesy of healthy environments. For example, a springtime walk in the woods and forests reveals a wealth of ephemerals such as blankets of well-established colonies of Virginia bluebells, trillium patches, or bloodroot clumps here and there. Then one may have to maneuver around vernal pools and catch a glimpse of the unique teeming life within, such as breeding salamanders, frogs, and fairy shrimp.

The sights and sounds of springtime are a boost to the human spirit, and none are so welcome as those viewed right after a winter's bleakness. With that for inspiration, what will it take to re-create some of those natural ephemeral wonders right where we live? We can then enjoy the fleeting joys up close and remember that they must be made to return, as sure as spring returns.

Maria Daniels, Loudoun County Extension Master Gardener

In the News

Emerald Ash Borer Control

In a healthy environment insect populations control one another and maintain a balance. Non-native insects can be very destructive because they have no natural enemies in their new environment to keep them in check. Emerald ash borers in Asia have not devastated the ash trees there because of natural controls that exist along with the ash borers in Asian forests.

One way to control non-native insects is to introduce some of their natural enemies to the new environment. However that opens the door to allowing another insect to run amok. So the concept of introducing yet another insect has to be implemented very carefully if at all.

Spathius galinaep Photo Entomology Today.

Scientists are looking for a parasitoid that can check the emerald ash borer but not become invasive in the United States. A parasitoid is an organism that lives on or in a host organism and ultimately kills the host. Most insect parasitoids are found in the Order Hymenoptera; for the lay person, think "wasp." Scientists have identified a tiny wasp, *Spathius galinae*p, which is native to Russia and that they have tested and are now breeding in hopes of releasing in EAB-infected areas. See this article in Entomology Today.

Scientists are also studying native wasps that have shown interest in the emerald ash borer. See this issue of Entomology Today. A parasitic wasp release will be implemented in Virginia starting next year.

Two Approaches to the Urban Heat Island Effect

In 2007, NYC Parks launched an ambitious Million Trees NYC initiative—to plant and care for one million trees in New York City. The goal is positive environmental, aesthetic, social, and economic results. This project is moving ahead with innovative strategies and good results.

Los Angeles faces a similar but more pressing problem. Globally, 2016 was the warmest year on record. In Los Angeles, temperature records were shattered last summer during scorching heat waves that saw highs of 100 degrees for five days straight. As part of a plan to help Los Angeles live within its environmental means, Mayor Eric Garcetti has pledged to reduce the average temperature in the metropolis by three degrees over the next 20 years. This reduction in heat will make residents more comfortable, reduce energy consumption, improve air quality, and save lives.

A group of researchers is examining where and how to use strategies that include planting more trees, planting grass on roofs, and using high tech reflective material on sidewalks. They have discovered that the current zeal for xeriscaping saves water but increases daytime warming by limiting the amount of evapotranspiration that occurs. However xeriscaping promotes evening cooling. This is a complex problem that is being approached in a very prescriptive way. Read the full article in the February 9, 2017, Los Angeles Times to appreciate the challenges and possible solutions to this problem.

Carol Ivory, Loudoun County Extension Master Gardener

Thanks to Master Gardeners Becky Hutchings and Alta Jones for the news articles

Notes From the Help Desk:

Q: I love the spring bulbs that dapple landscapes; what are the most popular and when should I plant?

A: The emergence of bulbs brings many smiles as it signifies the beginning of spring and beautiful things to come. Pictured below are some favorites. Start to identify your favorites now so you can plant them in the fall.


Double Tulip


Crocus


Daffodil


Scilla


Anemone


Muscari (Grape Hyacinth)

Photos by B. Bailey. Muscari photo from free press MaxPixel.

For spring blooming bulbs, plant in the fall. For fall bulbs (cholchicum), plant in August. For summer bulbs (dahlia, canna, etc.), plant in the spring after the threat of frost.

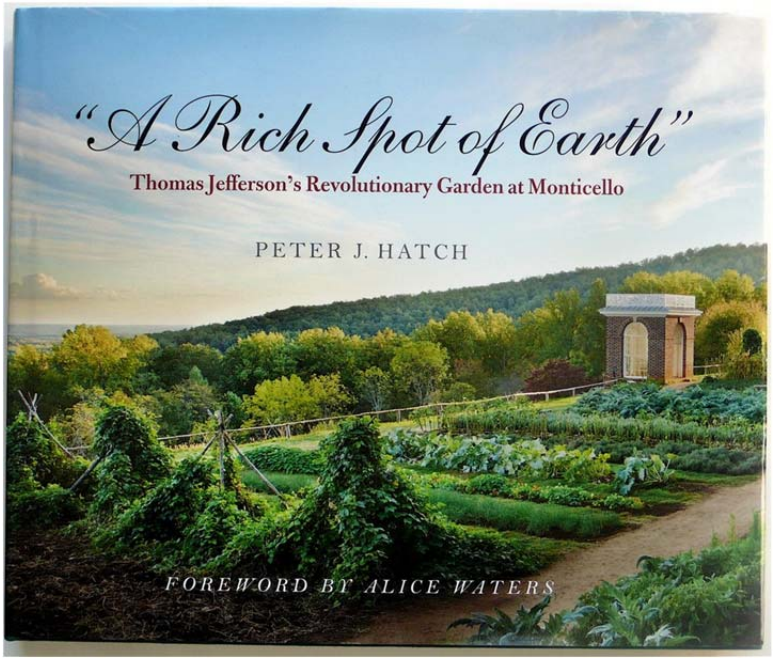
For more information, see the VCE Publication: https://pubs.ext.vt.edu/426/426-201/426-201_pdf.pdf.

Barb Bailey, Loudoun County Extension Master Gardener

A Rich Spot of Earth

Thomas Jefferson's Revolutionary Garden at Monticello by Peter Hatch

Peter Hatch, Director of Garden and Grounds, responsible for the maintenance, interpretation, and restoration of Monticello's 2,400 acre landscape from 1977 until 2012, presented at our Gardening Symposium in 2014. He spoke from the heart with such eloquence and deep knowledge about Jefferson's vegetable garden that the audience was spellbound. I usually don't buy books about vegetables but I got caught up in the moment and bought this handsome book with more than 200 full-color photos and parked it on my bookshelf.



Last year when a friend was preparing to visit Monticello, I thought she might enjoy the book. I decided I should look at the book myself so I could actually recommend it.

No matter where I opened the book and started reading I was drawn into the story. Whether it was about okra and gumbo, the garden's southeastern exposure, Jefferson exchanging seeds with his neighbors, the archeological excavations to uncover the original gardens, or Jefferson's lifelong passion for gardening, it was a pleasure to read.

The first part of the book, Thomas Jefferson's Revolutionary Garden, recounts its history—the garden as an extension of Jefferson's intellectual curiosity and belief in science, the establishment of the garden, its cultivation, and the commerce that developed around the garden. I especially appreciated Hatch's treatment of the enslaved gardeners, identifying them by name and describing their special skills and contributions and their relationship to the Jefferson family.

The second part is a catalog of selected Monticello vegetables, rich in research and anecdote.

I must read this entire book!

Carol Ivory, Loudoun County Extension Master Gardener