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Loudoun County Extension Master Gardener

FREE IN PERSON LECTURES

Container Gardening
March 26, 6 p.m.
Purcellville Library

Landscape Design with Native Plants
March 30, 6 p.m.
Rust Library

Container Gardening
April 11, 11 a.m.
Sweet Run State Park

Lawn Maintenance
May 2, 2 p.m.
Rust Library

Pollinators
May 9, 1 p.m.
Sweet Run State Park

Check the event calendar on our website for virtual lecture links and updates on topics and speakers.

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Trumpet Vine

Knowledge for the Community from
Loudoun County Extension Master Gardeners

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Is Your Property Getting Enough Rain?

Carol Ivory, Loudoun County Extension Master Gardener

As I compose this message, just a few seemingly forever piles of glacier ice remain from the big weather event that began at the end of January. It finally melted after a couple of days of rain and higher temperatures. Then we had a few glorious clear days and the birds sang. Today started with a drizzle and now we have a steady mix of rain and snow, and warnings of a huge weather event across the northeast. Am I crazy to be worried about getting enough rain?

Consider 2025. The year started off with "plenty" of spring rain; it was cool and wet well into early summer. But the actual spring rainfall in Leesburg was an inch short of normal. Rainfall continued into summer, and then it stopped abruptly. It was suddenly very hot and very dry. The drought lasted through the fall. Data indicate that even when average annual rainfall remains consistent, the distribution within the year is becoming more erratic. Instead of moderate, steady rainfall, it is more likely to be torrential downpours that cause flash floods and run off rapidly with little or no effect on the water table. The swing between extremely dry and extremely wet conditions is widening, creating challenges for gardening, agriculture, and water management infrastructure.

Another challenge is understanding the probability of precipitation described in forecasts. The percentage of rain represents the likelihood that a specific point in the forecast area will receive at least 0.01inches of rain during a given time frame. It is not a measure of how much of the area will get rain, nor how long it will rain, or if the entire forecast area will get rain. The intensity of the rain—light, moderate, or heavy—describes the rate of accumulation.

How do you know how much rain you have gotten in your yard? Can you depend on the "Official Record" on the Weather page of the newspaper? No, not unless you live right next door to one of the three airports that record and report daily temperatures and precipitation. Ronald Reagan Washington National Airport (DCA) is coastal and Washington Dulles International Airport (IAD) is in the piedmont, and their weather stats vary significantly. Plus, summer showers can be hard and very local. The best way to understand the amount of precipitation you are getting in your yard is to get a rain gauge.

Your rain gauge should have a large opening at the top and be placed in a location that is easily accessible, shielded from winds, and in an open space free from trees and any structure that might obstruct the rain. Develop a routine and record your rainfall measurement at the same time each day or keep it simple by recording and emptying the rain gauge on a weekly basis. This way you will know how much rain you are getting. See Dulles Precipitation Record (1964–current). It's interesting and serves as a comparison for your results.

Add a Little Joy This Spring: Plant Native Spring Ephemerals

Barbara De Rosa-Joynt, Loudoun County Extension Master Gardener

I am ready for spring. This cold and gray winter has me craving some spring colors in my garden. I can't wait. That said, I doubt that I am particularly unique. I don't think I have met a gardener yet that doesn't eagerly anticipate spring each year.

Many people think of the classic bulbs—crocuses, tulips, and daffodils—when they think of spring flowers. These are classics for a reason, and they have much to recommend them. Don't get me wrong. I have crocuses and daffodils in my garden too. This is a "yes, and" situation, so this year I encourage you to expand your horizons and find room in your garden for some gorgeous native spring ephemerals too. As a bonus you will help wildlife and perhaps even rethink your notions of beauty. In my garden, with some exceptions over the years, the deer generally leave these native gems alone. I wish I could say the same for my non-native crocuses! As always, nothing is completely deer proof. But the fact that many of these plants survive—if not thrive—in our natural areas, which as we all know are under very heavy deer pressure in Northern Virginia, is just one more reason to give them a try. Most of these plants are found in forests or at forest edge in nature and thus they thrive in leaf litter—yet another good reason to leave the leaves in your flowerbeds! I know I don't have to say this, but I will just in case: please never ever ever take any of these plants from the wild. Information about where to buy the plants featured here is found at the end of this article.

Native spring ephemerals are native plants that bloom for a short time in spring, typically before trees leaf out and the trees' canopy shades the ground below them. As a result, these plants are built to flower and complete their life cycle pretty early in the season, and then they die back and other plants take over the show from there. The upshot, however, is that they bring color—and most importantly—vital pollen and nectar resources for our early-emerging native pollinators—early in the growing season. Some species in this article support native specialist bees (see article in the Spring 2024 Trumpet Vine for more information), as well as other early-flying bees, butterflies, and other pollinators.

The plants highlighted below are some of my favorite spring bloomers in my garden. Finding places in your garden that approximate the conditions these plants are found in in nature will give you the best shot at success. However, these plants don't all read the rules, and some thrive in areas where you might not expect them to do so. More on that below. Note that some of these plants contain toxins, which is presumably why the deer avoid eating them. While I have not had any problems, I nonetheless recommend taking normal precautions like wearing garden gloves when handling them to prevent the possibility of any skin irritation.

American Robin (Turdus *migratorius*).
Photo by Ai Yukino

Spring ephemerals: Toad Trillium (*Trillium sessile*), Dutchman's breeches (*Dicentra cucullaria*), and star chickweed (*Stellaria pubera*).
Photo by Toni Genberg

Cutleaf toothwort (*Cardamine concatenata*)
Photo by Toni Genberg

Some of the plants featured have leaves that take longer to die back, similar to daffodils, or otherwise persist into early summer, but others listed will disappear much sooner. Choosing companion plants for spring ephemerals is an important consideration, much like you do with spring bulbs, so you can camouflage the foliage as it recedes while allowing it to fully die back on its own timetable so it can refuel the plant. You should not cut back the dying foliage—leave it in place until it is completely brown and crispy, just as you would do for bulbs.

Seed of twinleaf (*Jeffersonia diphylla*) with elaiosome. Photo by Hans Stuessi

Many of the plants in this article benefit from myrmecochory. Myrmecochory is the fascinating collaboration between some plants and ants through which the plants provide food and the ants help disperse their seeds (this was also discussed in the Spring 2025 edition of Trumpet Vine.) Ants can help spread the seeds of about 1/3 of Virginia's native plants, and most of the species featured in this article use ants to help them move around your property. Plants engaging in myrmecochory produce seeds that have a jelly-like substance called elaiosomes attached. Elaiosomes attract ants, which are drawn to them because they are high in lipids and proteins. Ants lug the seeds with elaiosomes back to their nests and feed the nutritious elaiosomes to their larvae, later discarding the seeds in the colony's trash pile, which contains other organic waste material and provides optimal germinating conditions for the seeds. The end result is new plants popping up in seemingly random parts of your garden. Please be sure to avoid using chemicals, particularly pesticides, in your yard so you don't accidentally harm the ants that are helping propagate your plants.

I have broken the plants into groups with roughly similar characteristics. All plants featured below are native to Loudoun County except the wild hyacinth (*Camassia scilloides*), which is native elsewhere in Virginia.

Delicate Drifters

Violet wood-sorrel (*Oxalis violacea*). Photo by Barbara De Rosa-Joynt

In natural settings these plants will often carpet the ground, though I note that replicating this in your garden takes some time, so patience is in order. In my garden, both also defy common wisdom that they prefer shadier conditions, and they bloom happily in some areas of my backyard where they receive a fair amount of sun. Both have seeds that are spread by ants, so they have a tendency to pop up seemingly randomly elsewhere in the garden, which I think is fun. Because of that, they appear in my lawn in addition to my flowerbeds. But in fairness, I did not plant either of them. Mother Nature brought them both to my garden, so it seems only fair that the ants that carry them get to decide where to put them. Both have leaves that disappear relatively early compared to the showy clumpers below.

Spring beauty (*Claytonia virginica*) is a sweet little charmer with strappy grass-like green foliage and soft pink flowers in bloom from March to May. It mingles well with other plants and will create patches like soft pinkish-white clouds in your garden just as it does in the forest. You need to look closely to see the little pink-striped nectar guides on the low-hanging flowers because these plants typically grow only 3 to 6 inches tall, though they can reportedly grow to 10 inches. Spring beauties prefer part sun to full shade, but in my garden, they grow in locations from full sun to relatively deep shade, though most are in part-sun conditions. It takes a lot of energy to create pollen and nectar, so when it is too cold, wet, or dark for bees to be flying, the flowers will close to protect those vital


Left: Spring beauty (*Claytonia virginica*). Photo by Barbara De Rosa-Joynt
Right: Spring beauty bee (*Andrena erigeniae*) on spring beauty (*Claytonia virginica*). Photo by Judy Gallagher

resources in a phenomenon called nyctinasty. Interestingly, although most plants' pollen is yellow or yellow-white, spring beauty's pollen is pink. This plant has a native specialist bee pollinator, appropriately named the spring beauty mining bee (*Andrena erigeniae*), and females of this species will only feed pollen from spring beauty flowers to their offspring. You can see the pink pollen on the brushy hairs, called scopae, located on the hind legs of the spring beauty mining bee pictured below. If you have no spring beauty plants, you will have no spring beauty mining bees in your garden. Other early-flying pollinators, including native bumblebees, mason bees, and butterflies, will also pollinate spring beauty plants. Spring beauties will spread slowly around the garden in time and create patches, reproducing via corms and seeds—the latter approach occurring with help from ants. Because spring beauties are so delicate, you are encouraged to avoid heavily mulching around them, which can inhibit their spread.

Trout lily (*Erythronium americanum*) is a wonderful small gem, 3 to 6 inches tall, with upside-down clear yellow trumpet shaped flowers held above pairs of mottled green leaves that bloom from late February to April, often in drifts. Trout lily is native to forests and naturalizes well in shady garden beds under deciduous trees because it prefers part sun to full shade. Mine mingle happily with my golden ragwort (*packera aurea*) in a moister, shade-to-part shade area of my garden, as well as with spring beauties in other parts of my garden, sometimes venturing out into sunnier areas as well, with some in close-to-full sun. There are two stories I have seen about how trout lily was named. One is that the spotted leaves look like trout, and the other is that trout lily blooms when trout start running in streams. You choose which origin story you like better.

Trout lily (Erythronium americanum).
Photo by Doug McGrady

Trout lily is not for the impatient. A seed-grown trout lily can take four to seven years to bloom, so this is not one to plant from seed unless you are very patient; nursery grown plants are likely a better option for most people. You will often see single trout lily leaves within a colony. These are immature plants that will not bloom until the second leaf of the pair matures in a future season. In the meantime, they help create a lovely very low groundcover. The trout lily mining bee (*Andrena erythronii*) is a specialist bee that only collects pollen for its offspring from flowers in the genus Erythronium, which is part of the lily family. Trout lilies reproduce via corms as well as seeds transported by ants. Like spring beauty, they are nyctinastic, so their flowers will close at night. These flowers will also track the sun, which is called heliotropism.

Showy Clumpers

These plants grow in slowly expanding clusters, with new plants commonly growing as offsets at the edge of or near the cluster, though the offspring will sometimes be found further away from the mother plant. This group includes some plants with seeds moved by ants and some that are windborne or move in other ways, and it contains plants with bulb, rhizome, or corm root structures. The plants in this group all have leaves that stay green longer and die back more slowly than the delicate drifters above, so plan accordingly.

Eastern shooting star (*Primula meadia* or *Dodecatheon meadia*) grow 10 to 12 inches tall and have dainty white or pink upside-down flowers with reflexed petals that look like they have been blown backwards by a strong fan. Their green leaves form a nice rosette at the base and look more visually substantial compared to the delicate flowers, making a nice contrast in form. This plant can bloom from late March until early June with the leaves sometimes persisting well into the summer before fading away. Shooting stars prefer part-sun to full-shade conditions. My shooting stars thrive in a sloped full-sun south-facing bed between mature Possumhaw viburnum (*Viburnum nudum*) shrubs that soon leaf out. They are assisted by emerging tall coreopsis (*Coreopsis tripteris*) and eventually create part-shade conditions that become close to full shade as the sun-loving coreopsis reaches its full 7- to 9-foot height. Shooting stars will create offshoots from the mother plant to steadily expand the clump and will also reproduce by seeds dispersed by the wind. They do not offer their pollinators a nectar reward but are pollinated by newly emerged queen bumblebees and other early-flying native bees such as miner bees, mason bees, and leaf cutter bees. Shooting stars require pollinators to perform "buzz pollination" to receive the pollen they are seeking to feed their offspring. Buzz pollination, the scientific term for which is sonication, requires bees to grasp the flowers with their jaws and vibrate their flight muscles, which creates a high frequency buzz that dislodges the pollen from the flowers' anthers and knocks it down onto the bees. While bumblebees are the bees best known for buzz pollination, all the aforementioned bee species can perform this trick. Fun fact: the sound created during buzz pollination is sometimes described as being like a middle C or a C sharp above middle C.

Eastern shooting star (*Primula meadia*). Photo by Barbara De Rosa-Joynt

Virginia bluebells (*Mertensia virginica*). No list of native spring ephemerals for Virginia is complete without our stunning native Virginia bluebells. Growing 1 to 2 feet tall and commonly found along moist, shady river or stream banks, they can make themselves at home in your garden under or near trees. Bluebells prefer part sun to full shade, ideally in sites where they will be shaded under trees once they leaf out and the later spring sunshine becomes more intense. Mine are thriving beneath some river birch trees (*Betula nigra*) where they

Virgina bluebell (*Mertensia virginica*). Photo by Barbara De Rosa-Joynt

receive close- to full- sun until the birches leaf out and create dappled shade. Bluebells bloom March to May, often peaking in April, and their foliage can take until June or later to fully disappear. They will spread by underground rhizomes as well as by seeds dispersed by ants. Bluebells are pollinated by butterflies, moths, hummingbirds, and long-tongued bees. Bumble bees and short-tongued bees will frequently "rob" nectar from bluebells' tubular flowers by biting holes in the base of the flowers so they can access the nectar that their tongues are otherwise too short to reach. Why are they robbers? Plants use nectar, which is resource-intensive to create, to attract, and to reward pollinators for their service in pollinating their flowers. Since plants like bluebells (and all the ephemerals in this article) are not wind pollinated, pollination is mostly occurring when a pollinator comes into contact with a flower's pollen, usually knocking some onto itself and then transferring it to another flower of that same species. When robbers access nectar in a way unforeseen by a plant, they reap the nectar reward intended for bluebell pollinators while avoiding contact with the pollen-storing anthers, so they do not pollinate the flowers. Naughty or clever? You decide. Bluebells are the host plant for several moth species.

Wild hyacinth or **quamash lily** (*Camassia scilloides*). Wild hyacinth is an outlier among the plants in this article in that—as its common name suggests—it is a bulb, it prefers full sun but will grow in dappled shade, and it is the sole plant in this article not native to Loudoun, though it is native to Bath, Highland, and other counties further south and west in Virginia, where it is considered critically imperiled. Growing 1 to 3 feet tall, wild hyacinths feature white to light lavender spikes of star-shaped flowers that open from the bottom to the top from April to May. I have *Camassia lechtini* too, which is also called wild hyacinth or quamash lily and looks very similar but blooms purple. This is a reminder why the botanical name is important, since you cannot always rely on common names to tell plants apart! *C. lechtini* is native to the U.S. west coast. My *C. lechtini* bloom slightly later than the *C. scilloides*, more like May to June. Both plants have strappy foliage that behaves much like daffodil leaves and takes a long time to turn yellow and die back. Most camassia species that are native to the United States are native to western states, and the genus name Camassia comes from the Indigenous American Nez Perse names for the bulbs, kamas or quamash. Camassia species' bulbs were an important starchy food staple for indigenous peoples from multiple tribes as well as early U.S. settlers, particularly in the west. Camassia seeds are dispersed by gravity and simply fall to the ground below the mother plant, creating dense slowly spreading colonies. After the seeds have ripened and fallen, I cut back the flower stalks but wait for the leaves to fully die back before removing them.

Wild hyacinth (*Camassia scilloides*).
Photo by Doug McGrady

Somewhere in Between

Colony of mayapple (*Podophyllum peltatum*). Photo by Nicolas A. Tonelli

These plants are somewhere in between the kinds of drifters and clumpers described above, with the Dutchman's breeches being a delicate clumper and the Mayapple a dramatic drifter. Ants and—in the case of the mayapple, turtles and some mammals— disperse the seeds of these plants. The foliage on Dutchman's breeches fades relatively early, while Mayapples' foliage can last well into summer. Neither fits neatly into the two categories I chose above.

Dutchman's breeches (*Dicentra cucullaria*) is one of the absolutely cutest plants you can have in your garden. The common name comes from the flowers, which look like upside down old timey white pantaloons—they are just darling! Dutchman's breeches grow 6 to 12 inches tall with fernlike foliage, and they bloom from March to April and sometimes later, depending on the weather. They prefer part sun to full shade, though in my garden they receive nearly full sun until nearby maples leaf out to create part shade conditions. Two of its relatives in the dicentra genus, wild bleeding heart (*Dicentra eximia*) and squirrel corn (*Dicentra canadensis*), are also native to Loudoun and they are unusually shaped too. I haven't tried to grow squirrel corn, though in the wild it thrives in sites similar to those that support Dutchman's breeches, and it is also ephemeral. I had wild bleeding heart some years ago but though I thought I sited it well, it disagreed and disappeared permanently after a few years. Bleeding heart is not ephemeral and if sited properly it can keep its foliage through the summer and sporadically rebloom in summer and fall. Queen bumblebees are a primary pollinator of Dutchman's breeches, because pollinators need to be strong enough to pry open the quirky flowers and have long enough tongues to reach the nectar tucked deep inside the flowers. Shorter tongued bees may rob nectar from these flowers. Dutchman's breeches forms clumps and will slowly expand via corms, and ants will also disperse the seeds.

Dutchman's breeches (*Dicentra cucullaria*). Photo by Barbara De Rosa-Joynt

Mayapple (*Podophyllum peltatum*) does not technically grow in my garden, but it grows robustly a few feet beyond my property line in the adjacent woodlot, so I claim it as my own since it is in my viewshed. Mayapples are typically found in forested areas, and they prefer the shade of deciduous trees and will do well in part-sun to full-shade conditions. The patches near my property line are in part-sun conditions and there are other Mayapple drifts further back in the woodlot that are in full shade. These cool plants make a strong visual statement as they form drifts—and eventually a carpet—of parasol-shaped plants about 12 inches tall. A colony or drift will contain single and double-leafed stems, but only the double-leafed ones will flower, with the waxy white flowers hidden under the leaves from March to May. The single-leafed stems will die back in late spring, but the double-stemmed leaves typically persist until the summer, sometimes until July or August. It may take a few years for flowers to form on plants grown from

seed, so you will need some patience before new seedlings appear. Mayapple does not produce nectar, but it is pollinated by queen bumblebees and other long-tongued bees as well as butterflies and moths. This plant spreads primarily by rhizomes, but ants disperse the seeds, and the Eastern box turtle, which eats the Mayapple's fruit, is considered an important seed disperser for this plant. Some sources indicate other mammals like white-footed mice, opossums, and foxes, among others, may also disperse seeds. Mayapple is a host plant for the variegated fritillary butterfly (*Euptoieta claudia*) and several moth species.

Mayapple (*Podophyllum peltatum*). Photo by Tom Potterfield

Companion Plants

Many companion plant options exist for spring ephemerals; below I have listed just a few. Just as with traditional spring bulbs, the idea is to avoid having an empty spot in your flower bed for the rest of the growing season after your beautiful spring ephemerals have receded. Key desirable characteristics of companions can include any of the following (in addition to being compatible with the sun and moisture conditions of the site): they emerge later, their growth habit otherwise permits the ephemerals to come up among them, their leaves will cover ephemerals' dying foliage, they are shallow-rooted, and they move around via surface level rhizomes.

Left: Zigzag goldenrod (*Solidago flexicaulis*).
Right: Nodding onion (*Allium cernuum*).
Photos by Barbara De Rosa-Joynt

For shady conditions: Canadian ginger (*Asarum canadense*); Solomon's seal (*Polygonatum biflorum*); white wood aster (*Aster divaricata*); woodland stonecrop (*Sedum ternatum*); zigzag goldenrod (*Solidago flexicaulis*). Many native ferns would also work.

For sunny conditions: Butterfly weed (*Asclepias tuberosa*); field pussytoes (*Antennaria neglecta*); nodding onion (*Allium cernuum*); swamp milkweed (*Asclepias incarnata*); woodland stonecrop (*Sedum ternatum*).

Sources for Native Plants

There are a number of native plant nurseries in Virginia, including in Loudoun County, and some nurseries from elsewhere also come in for native plant sales in spring and fall. Two of the earliest native plant sales this spring are the Loudoun Wildlife Conservancy's spring native plant sale, which brings five native plant nurseries to Morven Park in Leesburg on April 11, 2026, and has lectures and volunteers if you need help selecting plants. Your very own Loudoun County Extension Master Gardeners will be selling native plants at our booth at the Leesburg Flower and Garden Festival April 18 and 19—please come see us! There will be other sales around Northern Virginia throughout the spring. In addition to these sales, most native plant nurseries have open hours for shopping, and some sell their plants at farmers markets or other venues that are not included in the links. Check the nurseries' websites for details, including lists of plants they grow. You are always encouraged to plant straight species. Note that while regular bench nurseries and big box stores sometimes carry straight species of native plants, they will not necessarily know whether their plants have been treated with systemic or other pesticides, which can harm the pollinators and other wildlife you are trying to support—you do not want to attract butterfly caterpillars only to poison them. Native plant nurseries are typically small and often family-owned, and they will know exactly what has gone into and onto their plants—and as a bonus, you are supporting a locally owned small business.

The 50-Degree Rule…Yes or No?

Barbara De Rosa-Joynt, Loudoun County Extension Master Gardener

Many gardeners have heard of the so-called 50-degree rule. There are variations on the theme, but the general idea is that you should not clean up your garden to remove leaf litter or cut back your plants until you have experienced five sequential 50-degree days in spring. Some sources say five sequential 50-degree nights. Some sources say three or seven or ten or other numbers of days of 50-degree days or nights. Some say soil temperatures of 50 degrees. I have referenced this concept before in articles I wrote for the Spring 2024 Trumpet Vine.

Top: Native Carolina mantis egg sac. Bottom: Spicebush swallowtail chrysalis. Photos by Barbara De Rosa-Joynt

What is the problem with the 50-degree rule?

More and more evidence is showing that this is not the straightforward solution many of us had hoped, no matter which variation of the concept you preferred. Moreover, the existence of this so-called rule may have given some people the idea that as long as you wait until that 50-degree mark, you can remove all the leaves and other debris from your garden without causing any harm to the insects you sheltered all winter by leaving the tree leaves and dead plant stems in your flowerbeds.

The challenge is that pollinators and other insects are more complicated than that. Noted entomologist Doug Tallamy from the University of Delaware refers to the 50-degree rule as an urban legend. He points out that while insects do rely on some combination of day length and a certain number of days above a certain temperature to become active or to complete their development cycle, each insect species requires a species-specific temperature, number of days, length of daylight, etc. As a result, no single number of days above 50 degrees-—during the day or overnight—is a one-size-fits-all solution for all insects. Dr. Tallamy notes that various species of moths, butterflies, bees, beetles, etc. emerge all season long—some in the spring, others in the summer, and some even in the fall as they meet their respective day and temperature requirements. Why? Insects' life cycles are timed for when their larvae's food source is available. That can mean leaves or other plant parts—including seed pods for moth and butterfly caterpillars to eat—or flowers from specific genera—are blooming and making pollen for specialist bees to feed to their larvae or even prey or other sources of food becoming available.

What is in the leaf litter anyway?

A study conducted by Max Ferlauto and Karen Burghardt studied pesticide-free residential yards in Maryland and found that in a square meter of yard in which leaves were retained, there were on average almost 2,000 insects that would eventually emerge over the course of the spring. Note that they conducted their experiment through late June. These scientists found that removing leaves reduced the diversity of moths and butterflies by about 40 percent, with the greatest impacts on species that overwinter as larvae or overwinter in fallen leaves, among others. The more leaf biomass that remained, the more butterflies and moths that would emerge.

What do we do?

Dr. Tallamy indicates that the best option is to put your leaves somewhere on your property in the fall and then leave them there forever, and he specifies that the best place for that by far is under the tree that created them.

What if that isn't possible? Many people have smaller yards or other reasons why this might not be practical. If it is possible in your space, I encourage you to do what Dr. Tallamy recommends above as well as the other practices described in the Fall 2024 Trumpet Vine Stems Up Leaves Down article. The good news for those of us that can't leave every leaf where it falls, is that Dr. Ferlauto and Dr. Berghardt's study suggests that there are still benefits to raking leaves off the lawn and placing them under trees or in garden beds, and importantly that there are benefits to insects even if you only retain some of your leaves on your property.

The bottom line: do what you can.

The Xerces Society for Invertebrate Conservation has some helpful questions to ask yourself before you tidy up your garden, including: have I put away the snow shovel, mittens, and winter coats? Would I plant tomatoes now? Is the lawn growing tall? Have I paid my taxes?

Mittens. Photo by Kara Babcock

Waiting until later in spring instead of during those first beautiful days to tidy your garden is a good idea no matter what. And the later you wait, the better. Regardless of when you tidy up, try to keep the following in mind:

1. Try not to walk in any of your flowerbeds—both so you don't compact your soil and so you don't crush overwintering bees, butterflies, amphibians, spiders, etc. Lean or kneel into your beds if you can, using a kneeling pad to distribute your weight and spending as little time in the bed as possible.
2. Consider focusing solely on highest-visibility areas and leave other parts of your property until later. I often trim the vegetation immediately around my crocuses since they are up so early, but I leave the rest of the bed intact until a month or two later.
3. Cut nondiseased stems back to a height of 8 to 24 inches instead of taking them back all the way to the ground, leaving the cut stems tucked into the beds if you can. This will safeguard overwintering butterfly or moth chrysalides that may be attached to the stems, often disguised as dead leaves and difficult to spot, and offers places for cavity nesting native bees to lay their eggs (note these bees will not emerge until the following year so you need to leave them in place for the duration.) You will be surprised how quickly the emerging plants cover last year's cut stems. Learn from my mistakes: I was cutting back the stems in one of my beds last spring and realized that the stem right next to where I just cut had an overwintering Polyphemus moth (*Antheraea polyphemus*) cocoon attached. I was aghast at the close call. I paused cutting back that entire plant until the moth emerged—in early June. In that same bed I realized too late that I had already cut a small stem that contained a spicebush swallowtail chrysalis and tucked it back into a sheltered area so it would not blow away before the butterfly could emerge.
4. 4) Leaves that have spent the winter in your flower beds can be left in place. You may want to move them within your bed to spread them around more evenly after they have been tossed around by winter winds, but try to keep them in the bed somewhere. Your plants will come up just fine through a moderate coating of leaves. Last spring I was moving leaves in one of my beds from where they piled up around plants to other areas with less leaf litter. I noticed that one lumpy bit was surprisingly heavy and realized that it was a luna moth (*Actias luna*) cocoon, which was wrapped in a leaf. I tucked it back under some leaves at the base of a plant and marveled at the discovery.

Crocus.
Photo by Barbara De Rosa-Joynt

Cutting back stems in spring.
Photo by Barbara De Rosa-Joynt

Luna moth (*Actias luna*) cocoon.
Photo by Diane P. Brooks

Cold Weather and Garden Pests: What Northern Virginia Gardeners Should Know

Sharon Murphy, Loudoun County Extension Master Gardener

This year's extended cold weather might have had some local gardeners silently praying that the cold weather will reduce the number of pests they have to battle during this upcoming gardening season. It seems logical that if warmer winters bring increases in pests then colder winters should reduce the numbers of insects using my garden as their personal supermarket. But alas, the natural world does not necessarily work according to our framework of logic and insists on dashing our hopes of a less pest intensive season and the ensuing harvest of flowers and vegetables.

Insects are some of the most resilient organisms that have existed on Earth. Fossil evidence suggests that they were present some 480 million years ago, displaying resilience to climate changes and extreme weather. For that, we need to be grateful because insects are economically and ecologically of immense importance. They are an integral part of the natural world food-web, providing nutrition for higher order animals as well as serving as pollinators, supporting the reproduction of plants.

When *Homo sapiens* began to shift toward agriculture-based societies, there developed a concomitant trend toward creating monoculture plantings for sustaining a burgeoning population of humans. Insects took advantage of the smorgasbord before them with gusto, gathering pollen (good) and eating the plethora of tasty leaves and fruit (bad). The line had been drawn and the battle for dominance had begun—people versus pests. Using sulfur, wood ash, and essential oils were strategies deployed to deal with nuisance pests; none were wholly effective at controlling insect pests.

The winter weather of 2025-26 has certainly been fierce, with extreme cold temperatures and persistent snow on the ground. Still, most insect populations in Northern Virginia are unlikely to be significantly reduced. You see, most NOVA insects will enter diapause, a form of hibernating, in the debris left over from fall and deploy a clever system of producing "antifreeze" internally, which prevents them from freezing. Combined with the persistent snow cover we had during the coldest of days that acted as a ground insulator, many of our pests were as snug as a bug in a rug, overwintering in style.

There is some evidence that extreme cold *can* reduce pest numbers under certain conditions. Research conducted at Virginia Tech after a severe cold event in January 2014 found that up to 95 percent of brown marmorated stink bugs died when exposed directly to extreme cold. The key detail, however, is exposure. Stink bugs that found shelter experienced much lower mortality. Given that it's February and I'm still finding those little stinkers inside my house, I'm not expecting noticeably fewer of them this summer.

Other familiar pests follow a similar trajectory. According to Douglas Pfeiffer, Professor of Entomology at Virginia Tech, cold weather may kill adult spotted lanternflies, but their egg masses are highly resistant to freezing temperatures. Japanese beetle larvae can burrow as deep as 11 inches into the soil, safely below the frost line. With insulating snow cover on top of our dense clay soils, many of them likely overwintered just fine.

As Rhonda Ferree, retired horticulture educator with Illinois Extension, notes, severe winter weather rarely leads to meaningful long-term declines in insect pest populations. As frustrating as this may be for gardeners, it's also a testament to how remarkably adapted insects are to their environments.

Top; Brown Marmorated Stinkbug eggs and first instar.
Bottom: Late nymph BMSB.
Photos by W. Hershberger and D. Owens

That brings us back to the home garden, where many of us experienced significant pest pressure last year. While this winter's cold is unlikely to dramatically reduce insect populations, it underscores how well adapted these organisms are to our region. Rather than relying on weather to manage pests, gardeners are best served by utilizing Integrated Pest Management. Practices that support healthy soil and vigorous plants—such as improving organic matter content and minimizing unnecessary disturbance—play an important role in reducing pest problems. With realistic expectations and an integrated pest management approach, we can still look forward to a productive and rewarding gardening season.

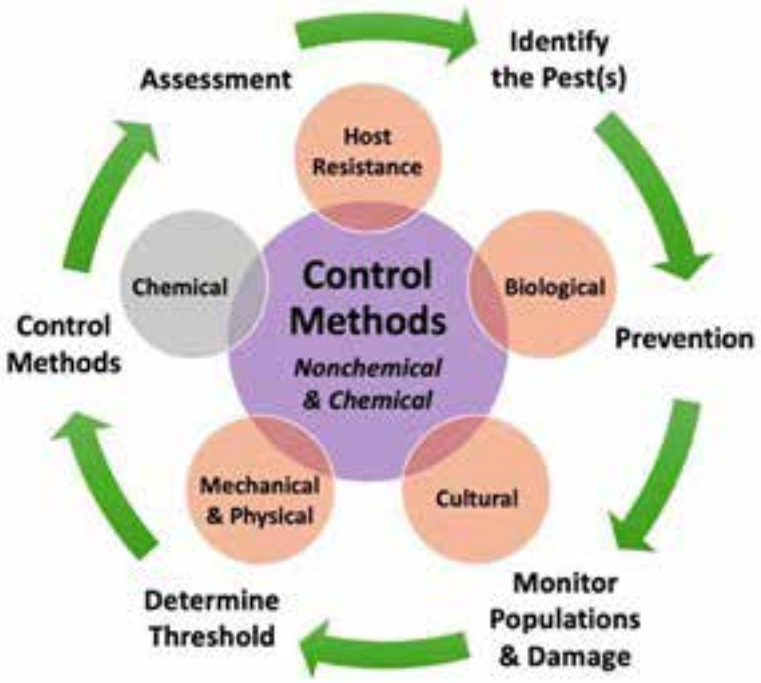
Integrated Pest Management (IPM) is an **ecosystem-based approach** that focuses on **long-term prevention of pest problems** rather than routine use of pesticides. IPM emphasizes understanding pest biology, monitoring pest populations, and selecting management strategies that are effective while minimizing risks to people, beneficial organisms, and the environment.

Key principles of IPM include:

- **Accurate identification** of pests before taking action.
- **Regular monitoring** of plants and pest activity.
- **Establishing action thresholds**, recognizing that some pest damage is acceptable.
- **Preventive cultural practices**, such as improving soil health, proper plant selection, sanitation, and spacing.
- **Using the least disruptive management option first**, including cultural, mechanical, and biological controls, with pesticides used only when necessary and applied correctly.

Healthy plants growing in healthy soil are better able to tolerate pest pressure and recover from damage, making soil health an important foundation of IPM.

IPM Components and Management Tactics



Graphic of the circular nature of Integrated Pest Management practices.
Image by VT Pubs

Dandelions: An Appreciation

Carol Ivory, Loudoun County Extension Master Gardener

Greens. Photo courtesy Specialty Produce

Dandelions are on my mind. A BBC Health newsletter suggested that we all need to eat more dandelion greens. More? An acquaintance told me she drinks a coffee substitute made from dandelion root. Ugh! But after reading the health newsletter listing all the nutritional benefits of dandelion greens, backed up by additional reading, I started thinking about where I might get dandelion greens—certainly not by foraging in my neighborhood—too many dogs walk along the sidewalk; too much uncertainty about chemicals added to the soil. A quick search "dandelion greens near me" listed some surprising sources. I was off to a nearby grocery produce section. The dandelion greens were next to the Swiss chard, on the top shelf occupying about eight inches of shelf space, no plastic packaging, just bunches of dandelion greens each held together with some wire and a tag, origin—Texas.

I sauteed some of them in olive oil and garlic, and they were very good. I promptly made a second, larger batch. They were young, tender, and fresh. They were peppery but not bitter. All parts of dandelions are edible. Because the safety of eating dandelions hasn't been thoroughly studied, it is recommended that you limit your consumption to one cup per day.

Flower.
Photo courtesy U. Of New Hampshire Extension

Dandelion seeds.
Photo by Antonio DiTommaso

Amazingly, all parts of the dandelion are edible, and all parts are good sources of vitamins K, A, and C and folate along with fiber, calcium, iron, and potassium. Dandelions act as a natural diuretic; they are rich in antioxidants, and they aid digestion.

I remember my grandfather talking about making dandelion wine. I thought it might have been a way of dodging prohibition and that might be right. The wine is 8 to 14 percent alcohol and similar to a white wine. Making dandelion wine is simple, and you can make it in small batches. Recipes vary but usually involve one quart of dandelion petals, water, sugar, oranges, lemons, and yeast. The wine typically ferments for three to four weeks in the primary stage; then it ferments in an aging or secondary fermentation period of six weeks to over a year. Definitely drink it before it is two years old. It becomes bitter with age. It's good with soft cheese, salads, and light entrees.

Dandelion flowers can also be dipped in batter and fried as fritters. You can find recipes for both tea and coffee made from the dandelion root and even 12 recipes that use dandelion seeds. Remember to always source dandelions from clean, chemical-free spaces.

Native to Asia and Europe, the dandelion has been recorded in ancient writings, and Arabian physicians used the plant in medicine in the 10th and 11th centuries. For centuries, Chinese

and Indians have grown the dandelion to treat various diseases and digestive problems. Traditionally, the milky sap from dandelion stems was applied to the scalp to cure baldness.

Dandelions are members of the aster family along with sunflowers, daisies, and marigolds. Approximately 250 to more than 300 accepted species of dandelions exist. They can be found in all temperate climates worldwide. They will grow just about anywhere regardless of soil conditions. They prefer full sun but will grow in part to full shade. *Taraxacum officinale*, the common European dandelion, and *T. erythrospermum*, the red-seeded dandelion, were introduced to North America around the time of the Mayflower. The word "dandelion" originates from the Old French dent-de-lion, lion's tooth, from the jagged edge of the leaf.

While dandelions are considered naturalized non-native weeds, they are not an ecologically invasive species. They rarely displace native plants in a healthy undisturbed ecosystem. Remember turf grass is also non-native. Healthy turf grass will out-compete dandelions.

Dandelions do benefit the environment.

- Their deep taproots (up to 15 feet) break up hard, compacted soil and clay providing aeration and improved soil health.
- Those deep roots also cycle nutrients from deep in the soil, bringing up calcium and other nutrients to enrich the topsoil.
- Their flowers are one of the first commonly available critical food sources—nectar and pollen—for bees and butterflies in the early spring.
- Dandelions cover bare soil quickly, protecting it from wind and water erosion, acting like a living mulch, keeping the soil cool and moist.

Soon dandelions will be popping up and starting to bloom. You may have too many and want to remove some, but please remember to give these hearty and very versatile plants some well-deserved respect and awe.

References:

- Can You Eat Dandelions
- Web MD Benefits of dandelion greens

Roots. Photo courtesy U Wisc. Extension

Bee on dandelion. Photo by Charlotte Anderson

The Great Veggie Debate: Heirloom or Hybrid?

Amy Jones, Loudoun County Extension Master Gardener

As spring draws near, now is a good time to plan your vegetable garden, contemplating the many heirloom and hybrid seed options.

Heirloom vegetables come from open-pollinated seeds, meaning pollination happens naturally, and saved seed generally produces plants true to type year after year. Heirlooms are often older varieties that have been preserved over generations.

Hybrid, also know as F1, seeds are the result of controlled crossbreeding between two genetically distinct parent plants. The "F1" stands for "first filial generation," meaning these seeds come from the first generation of this cross, bred to express specific desirable traits in that first generation.

A Brief History

For thousands of years, farmers and gardeners saved seeds from their best plants. Over time, this practice created open-pollinated varieties. Seeds were selected for flavor, adaptability, storage, or local climate, while pollination occurred naturally via wind and insects. As a result, genetic diversity was high, but yields and plant performance were variable. This system worked well, but it relied heavily on experience and local knowledge rather than controlled science.

Hybrid seeds developed after scientists began understanding genetics in the late 1800s, following the rediscovery of Gregor Mendel's work on inheritance. In the 1920s and 1930s, plant breeders in the United States created the first widely successful hybrids in corn, demonstrating hybrid vigor—offspring that were more productive, uniform, and resilient than their parent plants. This success led to the expansion of hybrid breeding into other vegetable crops such as tomatoes, peppers, and cabbage during the mid-20th century, with goals of improving yield, disease resistance, and consistency for farmers and consumers. By the 1950s to 1970s, hybrid varieties were often found in home gardens as well.

Today, modern hybrids are produced through controlled cross-pollination (not genetic modification) and are designed for productivity, resilience, and garden performance, while heirloom varieties remain valued for flavor, diversity, and seed saving. Many gardeners grow a mix of both.

"Vintage Botanical Tomato." Released by Martina Stokow under Public Domain license.

Pros & Cons: Heirloom Vegetables

Advantages

1. **Seed Saving and Genetic Continuity:** Heirloom seeds can be saved and replanted year after year, producing consistent plants when isolated from cross-pollination. This supports self-sufficiency and long-term preservation of varieties.
2. **Genetic Diversity:** Open-pollinated varieties contribute to biodiversity in the garden and seed banks, which is valuable for resilience to future challenges and retaining rare traits.
3. **Flavor, History, and Unique Traits:** Many gardeners choose heirlooms for flavor, texture, color, and historical/cultural heritage traits that aren't prioritized in commercial breeding.
4. **Cost:** Saving seeds instead of purchasing new ones each year can reduce long-term costs.

Disadvantages

1. **Lower or Variable Yields:** Vintage heirloom plants often produce less overall yield than hybrids, which have been selected for productivity.
2. **Increased Susceptibility to Disease and Stress:** Without deliberate breeding, heirlooms may lack strong resistance to common diseases and environmental stresses.
3. **Inconsistency in Appearance and Maturity:** Heirlooms tend to be less uniform in size, shape, and ripening time, which can present planning and harvesting challenges.

Pros & Cons: Hybrid Vegetables

Advantages

1. **Increased Yield and Vigor:** Hybrids often produce higher yields in less space and show stronger early growth, a phenomenon called hybrid vigor.
2. **Enhanced Disease and Stress Resistance:** Breeders can select parents with disease, pest, drought, or cold tolerance, which makes hybrids easier to grow with fewer losses.
3. **Uniformity and Predictability:** Hybrids typically deliver consistent size, appearance, and harvest timing, which is especially helpful for preservation, storage, or market gardening.

Disadvantages

1. **Seed Saving Not Reliable:** Seeds from F1 hybrids do not produce the same plant in the next generation; the offspring can vary widely and lose the desired traits.
2. **Higher Seed Cost and Dependence:** Hybrids can be more expensive and require annual seed purchases, increasing costs and dependence on seed suppliers.
3. **Potential Loss of Flavor and Heritage Traits:** Because breeders often prioritize yield and disease resistance, some gardeners feel hybrid vegetables may lack the complex flavors or unique traits seen in heirlooms.

Local Recommendations for Flavor and Performance

There are many heirloom and hybrid choices for tomatoes to grow in Loudoun County.

Heirloom Favorites

- Cherokee Purple—Indeterminate heirloom with rich, smoky-sweet flavor; good garden classic for fresh eating.
- Brandywine—Large beefsteak heirloom with excellent flavor (though slower to mature); great choice if taste is priority.
- Roma and Paste Types—Classic paste tomato for sauces and canning; determinate habit helps concentrated harvest.
- Black Cherry or other cherry heirlooms—Sweet, flavorful small fruits; productive and fun for snacking.

Heirloom varieties like Cherokee Purple and Brandywine may lack the disease resistance of hybrids, so good spacing, staking, and vigilant disease monitoring can help maximize success.

Popular Hybrid Options

- Celebrity Plus—Determinate hybrid with good yield, uniform fruit size (~7–9 oz), and better crack tolerance; part of VCE's 2025 tomato variety trials.
- Celebrity—A classic Virginia recommended hybrid, productive with disease resistance and reliable performance.
- Better Boy—Indeterminate hybrid known for large, flavorful fruits and built-in disease resistance (e.g., wilt resistance).
- Early Girl—Fast-maturing hybrid, producing ripe fruit earlier in the season; helpful if you want tomatoes before midsummer heat.
- Juliet, a grape tomato—A productive hybrid grape tomato that performs well in warm climates like Virginia; great for snacking, salads, and sauces.

Why hybrids? They're often bred for disease tolerance, uniform yields, and consistent performance in variable summer conditions—all useful traits in Loudoun County gardens.

Bottom Line

Hybrid vegetable seeds represent over a century of plant-breeding science—not a replacement for heirlooms, but a complement to them. Choose heirlooms if you value saving seed, flavor, history, and biodiversity in your garden. However, choose hybrids when yield, disease resistance, and uniform performance are priorities—especially if you don't plan to save seed. Or grow a mix of both, picking and choosing to prioritize traits that best fit your goals in the garden.

Birdbaths: Importance to Birds, Selection, and Care

Heather Keith, Loudoun County Extension Master Gardener

Water has an incredible drawing power for most birds for feather care, hydration, refreshment, feather care and a quick dip. During summer months, bathing in water helps the birds cool down and prevents overheating. Bathing is enjoyable for the birds and is often a social activity with some birds bathing in groups. They like to splash energetically, dip and flutter and then fly off to perch in the sun to dry. The backyard that offers a steady source of water along with food and shelter will always attract larger numbers and more species of birds.

Feathers are critical for survival, so a great deal of care goes into feather care. The bird will preen their feathers each day making minor repairs to their feathers, cleaning out any dirt or debris, removal of parasites, and applying protective oil to the feathers. Many bird species take immense pleasure in bathing and will spend lengthy periods in any shallow source of water as long as they are not threatened in any way.

They need to bathe frequently because the water helps to rejuvenate their feathers. Bathing also helps to restore the shape of the feathers. Their feathers can be bent out of shape and misshaped by various events during the day. The wetting and drying of the feathers help the feathers to regain their original shape. Intensive preening will follow the bath to restore alignment and shape.

Birds need safe, clean sources of water both for drinking and bathing. Birds are not at all fussy in their quest for a water source. They will use everything from a pan of water set out each day to a full pond capable of supporting a flock of waterfowl.

The only requirement for most backyard species is that the water source be shallow. Two to three inches is the maximum for most species. It should have gently sloping edges and a bottom that offers non-slip footing. The optimal depth would be 1-2 inches at the edges, with a gentle slope toward the center. The gentle slope allows them to walk slowly into the center to a depth they are comfortable with. A basin with steep sides and deep water feels like a trap. One of the reasons birds ignore a birdbath is because it is too deep. Stones, pea gravel, and flat rock can always be added to the bottom of the basin so the birds can stand safely if the water is over this depth. This creates both a shallow area and a safe perch within the water. The diameter of the bird bath is not as important as the depth. A shallow, sloped basin will provide them with the security to drink, preen and cool off.

Bird Bath. Photo by arbyreed

The material must be durable since it will be outside in the wind, rain, heat, and snow. The cold winters in Loudoun County need to be considered. A heated birdbath or the use of a de-icer keeps water available for the birds during our cold winters. They need water even more in the winter than in the warmer months.

When buying a bird bath, try to think about the bird more than the decoration for your yard. Many designs that may appeal to us may be impractical or even dangerous for the bird. The traditional, concrete birdbaths are not always the best they should be sturdy and firmly seated on the pedestal but easy to empty and handle.

Birds need traction so the best birdbaths would have a safe, non-slippery surface. Birds do not like a slippery, wet surface. Textured surfaces work best such as concrete, unglazed terracotta, rough ceramic, and stone. Baths made with glazed ceramic or smooth plastic models are too slick for birds to get a secure footing. When they cannot grip the

bottom, they are less likely to use the bath. Material that harbors algae and bacteria would not be ideal for the birds. Tough plastic will work in this area of the country because it will not break if the water freezes or is knocked over.

The height of the bath should be 2 to 3 feet to help the birds feel protected from their predators. Traditional pedestal baths are about this height and will attract a variety of songbirds. Some species such as the Robin will always prefer ground level bathing. Ground level is also attractive to the birds because they mimic ground puddles which will attract most species. If space is available, both a ground level and a pedestal style of bath will invite a greater number and species of birds.

The bath water can be dumped and refreshed daily. This is desirable in times of heavy use and during mosquito season to prevent mosquito eggs from hatching. Monitor the condition of the bird bath and at least once a month scrub and sanitize it. Harsh chemicals should not be used in cleaning, but soft soaps and mild detergents will work. Sanitize with a bleach solution of nine parts water and one part bleach. Rinse well and allow air to dry before refilling.

Birds also like moving water such as a small pond with a recirculating pump and filter. They find moving water attractive and are even attracted to a dripping garden hose supported above the edge of the bath on a forked stake. Consider a small solar fountain, or a simple drip jug above the bath. They will be drawn to the sound and sparkle. Moving water will also discourage mosquitoes from breeding.

Simple birdbaths can be made from anything that is non-toxic and can hold shallow water. To accommodate several birds at a time, the surface diameter needs to be at least twenty inches. Garbage can lids do nicely and the dark-colored ones are the best.

Placement of the birdbath is important both in terms of safety and temperature. During hot months, the placement in partial shade will keep the water cooler and cleaner. It will also slow down evaporation on the hot days of a Virginia summer. When placed near shrubs or trees, the bird can escape if frightened but not close enough for the predator to hide. While bathing birds are not as vigilant as they normally are. Birds are cautious and vigilant to their environment and need to feel safe when bathing. A birdbath placed in the middle of a wide-open lawn will leave them feeling exposed and uncomfortable. The placement in dense shrubbery is also undesirable because predators such as cats may attack them.

Trees and shrubs should be about 10-15 feet away, so the bird has a quick getaway if needed. The branches also give them the opportunity to dry off and preen their feathers after bathing.

There are a wide range of birdbaths but most that birds like are simple and affordable. There are bird baths at the entry level price between $10 to $50; the mid-range price of $40 to $100. The decorative/premium baths can be found anywhere between $100 and over $1,000. Keep in mind that once you meet the safety needs of the birds everything else is about the people. The more features the bath has, such as a heating element or fountain will add to the cost. People on a very tight budget can make their own using a garbage can lid, shallow dishes, or even an old frying pan. The budget birdbath is usually made of basic plastic and resin, the mid-range are made with better materials and aesthetics, while the premium price is usually stone, metal, handcrafted or decorative models.

Buy or devise a simple bird bath and watch them come!

Helping Our Plants Survive Weather Extremes

(Second article in a series on Landscaping for Climate Change)

Gaye Mara, Loudoun County Extension Master Gardener

"We destroy plants at our peril. Neither we nor any other animal can survive without them."
David Attenborough, *The Private Life of Plants*, 1995.

As David Attenborough reminds us, human survival depends on plants. Apart from their many other beneficial uses, plants provide all our food–both directly in the plant parts we eat and indirectly through the meat and dairy products that come to us from other animals that eat plants, too. We would all starve without plants.

Plants also help to mitigate climate change and air pollution. In the process of photosynthesis, they breathe in carbon dioxide, incorporate the carbon into their tissues, and breathe out oxygen. The bigger the plant, the more carbon it takes out of the air. Trees store a lot of carbon; lawn grass, not so much.

Now climate change and other impacts of human activity are putting plants at risk. The extreme weather that climate change is bringing us–high heat, extended droughts, torrential rains and flooding, high winds, drastic sudden temperature changes–is devastating to most plants, in agriculture and our food supply and in our home gardens.

So what can we do on our own properties to help plants survive extreme weather? And how can we help to push back at climate change, or at least avoid contributing to it?

This article attempts to answer the first question. The second will be addressed in the next article.

What Plants Need

The basic needs of plants are simple, because they make their own food out of air and sunlight. To those requirements add temperature, for which all plants have a survivable range; soil, in which most plants need to be anchored and from which they obtain essential nutrients and services; and water, the basis of plant life and indeed all life on our planet.

Temperature

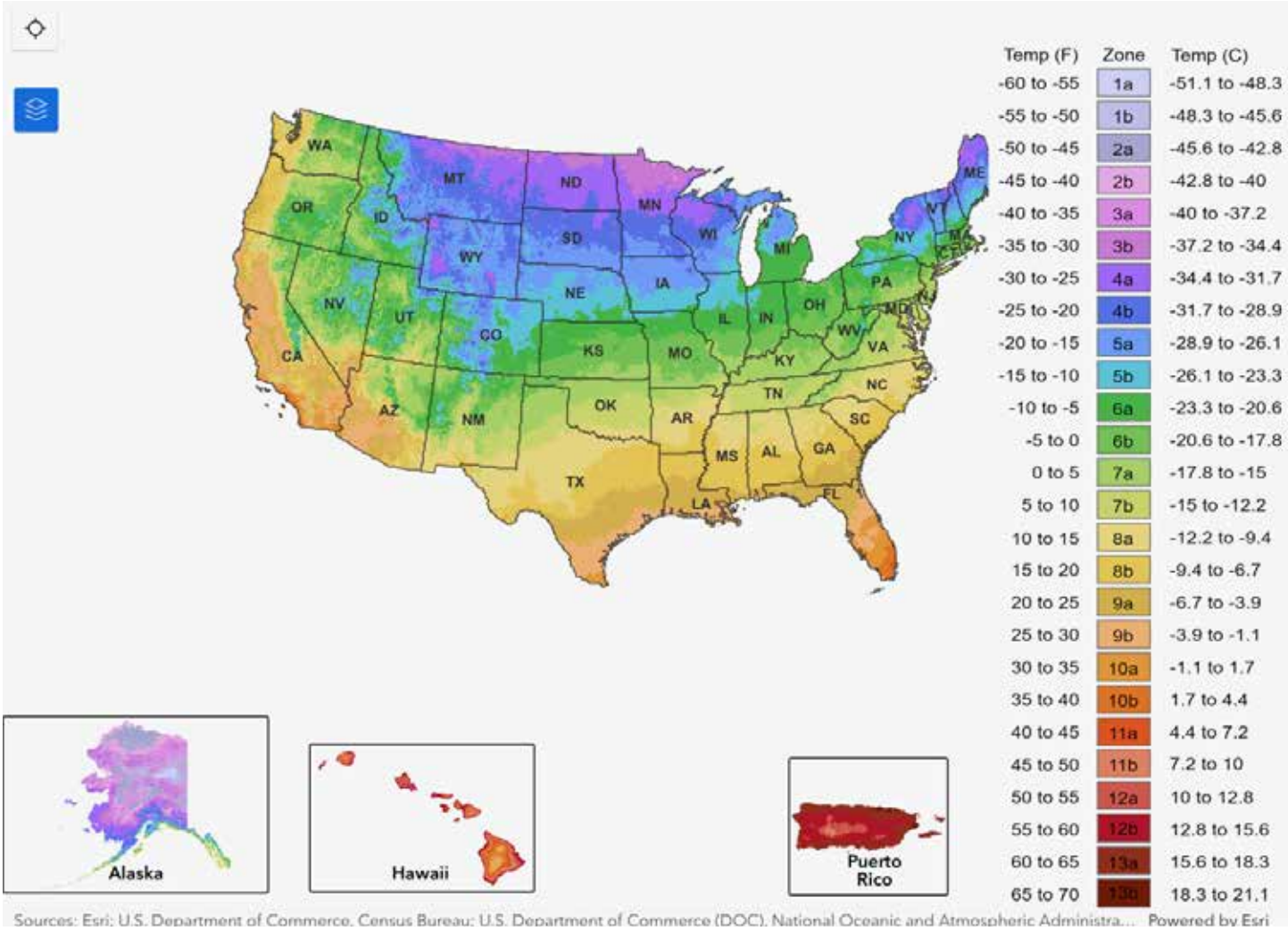
With climate change what we're seeing now is steadily increasing average temperatures along with increasingly drastic swings of temperature from high to low and vice versa. We are fortunate that researchers have studied plant temperature tolerances and given us some guidance for our plant choices.

Winter Lows

In 1960 the US Department of Agriculture developed a map of Winter Hardiness Zones based on a 30-year average of the lowest temperature reached each winter in each of over 2,000 locations. Then they mapped out the areas with similar low temperatures in 10-degree bands from Zone 1 in parts of Alaska, with an average low between minus 50° and 60° F, to Zone 13 in parts of Hawaii and Puerto Rico, with average winter lows between plus 60° and 70° F.

To go along with the zone map, the many thousands of plants we grow, including ornamental plants, were tested and rated for their winter hardiness–for how low a temperature they normally survive. This was quite a massive and impressive project.

In more recent updates to the map (the latest was in 2023), the zones were divided into two subzones, a and b, and the map was redrawn in 5-degree bands. The zones have also shifted slightly north due to warming winter temperatures. Western Loudoun County is now mostly in Zone 7a, with an average winter low of 0-5° F, and eastern Loudoun in 7b, with an average low of 5-10°F. You can enter your zip code and find out your zone on USDA's website at https://planthardiness.ars.usda.gov.



USDA Map of Winter Hardiness Zones. Image credit: U.S. Department of Agriculture

One of the results of warming temperatures shifting the zones northward is that plants that need a minimum period of winter cold and that used to grow well here, no longer do; we'll need to plant different varieties for the future. For example, many fruit trees–apples, pears, peaches, cherries, and more–have a "chill" requirement before they will break winter dormancy. "Low chill" peaches, for example, may need only 500 chill hours (temperatures between 32 and 45 degrees) while "high chill" trees can require over 1,000. (University of Arizona Extension has a good explainer about fruit tree chill requirements: https://extension.arizona.edu/sites/default/files/2024-10/FruitTreeChillingRequirements.pdf.) Some bulbs, like tulips, have chill requirements to bloom; and some seeds have chill requirements to germinate.

We must also remember that these zone temperatures are 30-year averages. In any given winter, even a generally mild winter, the coldest day could be colder than that average. For example, if the temperature here drops to -4° one night, that is below Loudoun's 0-10° average. So a plant that's rated as hardy only to Zone 7 may not survive. It's good to buy plants rated as hardy to Zone 6 for that reason.

Summer Highs

Researchers have found that for many plants 86°F (30°C) is an upper limit. Above that temperature, especially if it is sustained over a long period, they will stop growing, flowering, and fruiting and will ultimately decline.

In 1997 the American Horticulture Society published a Heat Zone Map derived, like USDA's winter hardiness map, from decades of weather records at thousands of locations. Each band on the map shows how many days a year, on

average, the high temperature in that area exceeded 86˚F, rather than just averaging a single extreme temperature each year like the USDA map. Purchase or special permission is required to publish the map, which is not in the public domain; but you can see a copy on the US Botanic Garden's website at https://www.usbg.gov/blog/heat-zones-plant-health-and-ahs-heat-zone-map.

At the time the AHS map was drawn, Zone 1, in parts of Alaska, averaged fewer than 1 day above 86˚. Zone 12, at the southern tip of Texas and Florida, averaged over 210 heat days a year. Loudoun County shows as mostly in Zone 6, with 45 to 60 heat days a year above 86˚.

Unfortunately, AHS did not rate plants for their heat tolerance but left that project up to growers, and few growers provide such ratings. The map also has not been updated since 1997. Our summers have gotten a lot hotter since then. So if you do find a source for plants with heat zone ratings, I would look for plants rated to at least heat zone 8 to be safe. Otherwise, just keep an eye on the weather forecast and know that your gardens will need extra attention when the temperature exceeds 86˚.

Protecting Plants from Extreme Temperatures

Prickly Pear Cactus (*Opuntia humifusa*).
Photo courtesy of Wikimedia Commons

With extreme heat, the damage comes from dehydration. Strong sun adds to that damage. So one gardening strategy is to choose plants that are heat- and drought-resistant, such as our native Prickly Pear Cactus (Opuntia humifusa) and other succulents like Sedums. To protect less resistant plants, keep them well watered (more on watering below) and provide even the sun-lovers with some shade on the hottest days.

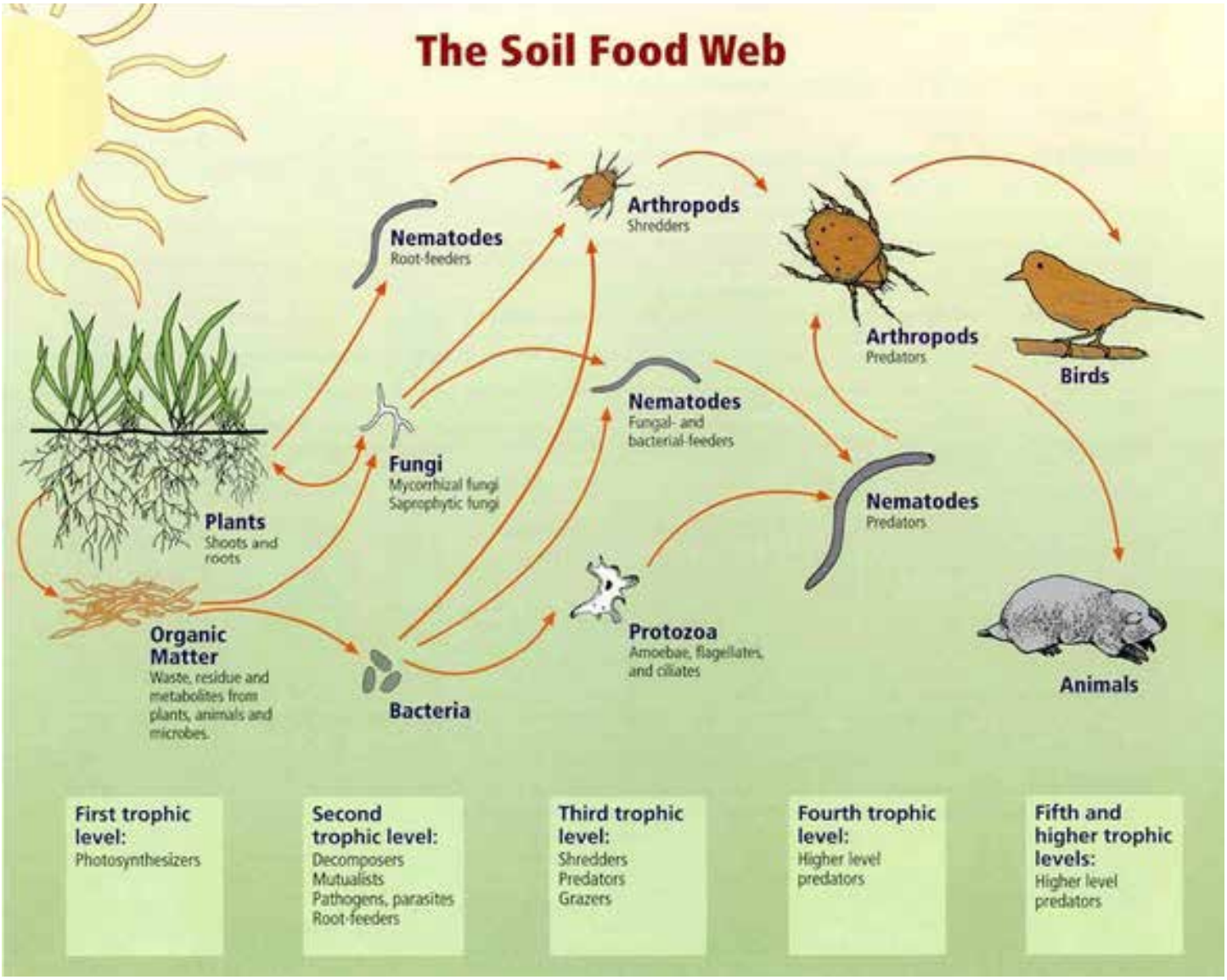
Plants that are rated for either full sun or part shade are safest planted where they will get afternoon shade in the summer–on the east side of taller plants or of a house or other permanent structure. You can also create temporary shade with commercial shade cloth (expensive but convenient) or pretty much any type of cloth fastened to poles above the plants (one gardener I know uses golf umbrellas). Keep the cloth well above the ground so the heat isn't sealed in; that will keep the air underneath cooler. I keep poles in my vegetable garden that I can throw cloth over on the super-hot days; Extension research has shown that even sun lovers like tomatoes and peppers benefit from shade protection then.

In winter, damage is done above ground when freezing bursts the plants' cell walls, or below ground when the roots freeze. Winter winds will also dehydrate plants. A thick mulch (at least 2") can insulate the roots; a heavy snow will also insulate them and then hydrate them as it melts. Wrapping/covering vulnerable plants with burlap, fabric, or plastic sheeting during the coldest and/or windiest periods will protect them from freezing and dehydrating. Florida citrus growers have found that spraying their trees with water before a freeze provides an ice layer that protects them.

Soil

One of the things we've learned since the disastrous Dust Bowl of the 1930's is that healthy soil is full of life, most of it too small for us to see, and it is fragile. There are plants and surface litter on top of the soil. Underneath, in the layer we call topsoil, are plant roots plus all kinds of living creatures that aerate the soil (earthworms are great at that), glue soil particles together into clumps for stability, break down organic matter into substances plants can use, and live or feed on plant roots and each other. A USDA graphic shows what we call the "soil food web" and its interrelationships above and below ground.

Unfortunately, many of our traditional gardening, farming, and construction practices are destructive of the soil food web. Tilling or plowing is one of the worst, along with harvesting that rips annual crops and their roots out of the soil and construction that totally scalps the ground of topsoil. To maintain the health of the soil food web and thereby the health of our plants, we should:



The Soil Food Web. Image credit: U.S. Department of Agriculture

- Maximize the presence in the soil of living roots, upon which soil organisms depend for their survival.
- Minimize soil disturbance (digging, tilling, plowing), which breaks up the connections among soil organisms or removes those organisms altogether.
- Keep the soil covered with living plants or mulch to protect it from dehydration and erosion.
- Maximize plant diversity, emphasizing native plants, for a landscape that better resists pests and diseases and better supports pollinators and other beneficial creatures.
- Minimize soil compaction, which drives air and water out of the soil, makes it impenetrable to plant roots, and causes water to run off instead of soaking in. So don't walk on your planting beds or drive anything over them; create maintenance paths instead.
- Leave organic matter on the soil (grass clippings, fallen leaves–shredded if too large) or add it (compost) to maintain soil fertility.

Two additional determinants of plant health are soil nutrients and soil pH.

There are 21 essential plant nutrients that we know of. Plants get the first three from air and water: Carbon (C), Hydrogen (H), and Oxygen (O). The next three are the so-called major nutrients that you see marked on bags of fertilizer with a set of three numbers like 10-10-10: Nitrogen (N), Phosphorus (P), and Potassium (K). Sometimes the makers will call such a fertilizer a "Complete" fertilizer. But there are 10 more elements all plants need, some of them only in tiny amounts, and another 5 that are required by a few plants. And if plants don't get them, they will suffer. Texas A&M Extension explains plant nutrients at https://agrilifeextension.tamu.edu/library/gardening/essential-nutrients-for-plants/.

Soil pH determines plants' ability to utilize the nutrients in the soil. The pH scale runs from 0 to 14. Zero (0) is the most acidic (think battery acid), and 14 is the most alkaline (think lye). Water, at pH 7, is neutral. The sweet spot for the great majority of the plants we grow is between 6 and 7, from slightly acidic to neutral. That is where the best overall availability of nutrients is for those plants; at a different pH level, chemical changes may convert the nutrients into a form that the plants cannot use. (Blueberries and potatoes are two acid lovers that will thrive at pH as low as 4.5.) The soil lab at the University of Connecticut offers a downloadable chart of plants and their pH requirements at https://soiltesting-cahnr.media.uconn.edu/wp-content/uploads/sites/3514/2023/05/Plant-pH-Preferences.pdf.

Bottom line: Soil pH and nutrients are important determinants of plant health, and a soil test will tell you if they're at the right level and provide change recommendations if they are not. The Loudoun County Extension Office or our Master Gardener plant clinics can provide an inexpensive mail-in pH test kit.

Water

The first rule about watering plants is this: When you water, water deeply and infrequently.

One person told me at a garden clinic that the person who installed his irrigation system told him to water every morning for 10 minutes. Unfortunately, what that does is wet only the surface of the soil, which encourages plants to keep all their roots at the surface because that's where the water is. You want your plants to root deeply; that will help them stand up to drought and extreme heat and cold.

So let's run over some basic rules of thumb:

First make sure your soil will hold the water you are going to put on it. If your soil is low in organic matter (below 3%; a soil test will tell you), work in plenty of humus (up to a maximum of 8%)–like compost or composted manure–which can hold 4 times its weight in water. And stay off the soil so you don't compact it and make it impermeable to water. Now you're ready to water.

Most plants want 1" of water a week, maybe 1.5" when the temperature is over 86. A rain gauge will tell you how much water nature is providing. When you do water, put down at least ½" at a time (if you use overhead watering, you can check the amount by setting a straight-sided can out in the garden). Water only once or twice a week, and only if there hasn't been enough rain. Too much water is as bad as too little. If you have automatic irrigation, the default setting should be OFF.

Water in the early morning, before it gets hot out. Otherwise you'll lose a lot of water to evaporation, and water droplets on the foliage will act like little magnifying glasses and burn it. That will also get your plants well hydrated to start the day. If you can't water in the morning, water in the late afternoon but early enough for the foliage to dry before nightfall (dark + wet = fungus disease).

If you can, put in a drip irrigation system with driplines or soaker hoses. That puts the water right where it needs to be, keeps it off the foliage, and minimizes the loss to evaporation. Then the timing of your watering is not as crucial.

With the torrential rains we're now experiencing, another water issue is runoff from roofs and driveways and other impermeable surfaces, which can carry off the topsoil along with the mulch and shallow-rooted plants on top of it. When the water doesn't run off, soil saturation and flooding become the issue. Soil that is too wet invites root rots. Water that stands for too long kills plants by suffocating the roots.

If runoff or flooding is an issue on your property, consider:

- Planting more trees. Tree canopies hold rainwater off the ground and drip it down gradually; tree roots hold the soil. Trees also provide shade and cool the air.
- Installing rain barrels to capture the runoff from roofs and store it for use in dry weather; elevate them on a platform and use gravity to feed hoses or driplines for watering.
- Installing a swale or a rain garden to hold and absorb excess water.
- Removing or reducing the impermeable surfaces–stone, asphalt, concrete, solid roofs, etc.–covering the ground.
- Planting a green roof.

Gardening for the Future

Looking ahead, we will need to consider using different plants on our properties and to take greater care with the plants we grow now. By using plants that are better adapted to our changing climate, protecting our plants from temperature extremes, improving and maintaining the quality of the soil, and keeping plants properly hydrated, we can continue to enjoy the beauty, productivity, and contentment that our gardens have always given us.

An Additional Way to Compost—Easy and Convenient!

Pamela McGraw, Loudoun County Extension Master Gardener

After several years of combating fruit flies in our kitchen for the sake of saving our vegetable scraps and fruit peelings for our outdoor compost, my husband had had enough! He wanted to rid ourselves of the special compost bin I had bought to hold the leftovers until he could conveniently take them outside to our rotating compost bin, which wasn't often enough to discourage the fruit fly 'festivals' that occurred frequently!

With all the information now available about the benefits of composting, it's likely that most folks understand how beneficial the application of compost can be to our yards, to our gardens, and to the environment—benefits I did not want to forsake. A patient gardener really needs to do little except provide a receptacle and wait for nature to convert leaves, dead plant (undiseased, of course) material, dried grass, etc. into rich granular compost. Of course, turning one's compost pile and an occasional hosing is helpful to speed up the process, but these are not essential. In two seasons, my compost pile, which receives only infrequent attention, is ready to spread. In contrast, my enclosed rotating composter (also outdoors) is my receptacle for food scraps and shredded paper because we have a friendly raccoon who would be most pleased to make quite a mess if the compost could be accessed. And, it is this composter that my husband prefers not to visit during the winter months and cold temps such as we have been experiencing this season. This resulted in our kitchen compost bin filling ever too quickly and sitting around ever too long.

Electric composter, side and top view.
Scraps awaiting processing and disposal, and Trash bin.

So, this dilemma led me to consider options. While a few have delved into worm composting, it did not seem a viable alternative for us. However, an electric composter proved to be the perfect solution! Apparently, this composter type is a more recent market offering. On reading information and reviews about it, I decided to take a chance. I chose a Quaken Electric composter at a mid-range price ($220 on sale). Since it was to remain in our kitchen for the sake of convenience, I also chose a reasonable size—roughly 13" x 13" x 10" with a 4-liter capacity, in white.

Using high-temperature drying, grinding, and cooling methods, this kitchen composter reduces waste by up to 90 percent within hours. It has low-speed, high torque blades that easily process most food materials while operating at a quiet noise level. I typically start it at night and by morning I have odor-free compost, ready for application on my plants. I empty the dried compost into a medium-sized trash bin (photo below), conveniently stored in my laundry room, and when warm weather arrives, to the garden it will go. The removal bucket liner is easily cleaned with a quick washing or by running the composter's "clean" cycle; no residue remains.

This electric composter accepts fruit and vegetable scraps, peelings of all sorts (bananas, oranges, avocados, carrots, etc.), as well as biodegradable materials such as tea and coffee filters, grounds, tea bags, napkins, etc. I have also found this composter especially handy for disposal of my plant trimmings, spent flowers, leaves, etc. It does a fine job of eliminating the pesky fruit flies while minimizing my carbon footprint—all while enriching my garden! Truth is, I'm unsure why I waited so long to try this wonderful, useful product.

Pollarding Trees

Wendy Hiller, Loudoun County Extension Master Gardener

Right plant; right place. It's one of the Extension Master Gardener mantras. It's a simple phrase to remind gardeners to choose a plant that is well-suited to the conditions at the intended planting site. Choosing "right plants" is the best way to set up your garden for success. It saves maintenance time and money, and it reduces frustration and disappointment when a "not right plant" fails to thrive.

One factor that identifies something as a "right plant" is its mature size. This is especially true for trees. When I saw extensively pruned street trees in Europe and elsewhere, I was truly confused as to why those trees had been planted along large stretches of sidewalks in the heart of picturesque cities. Surely the city arborists know there are better choices that would not require annual pruning, which is not only time and labor intensive, but also results in disfigured trees that no longer resemble their natural shape, a la the sadly too common "crepe murder" inflicted on crepe myrtles to control their size. Why not select smaller trees that would fit the spaces? It turns out it comes down to a tradition that dates back to the Middle Ages, if not earlier.

Left to right: Pollarded trees along the Rhine River; Pollarded tree; Row of pollarded trees. Photos by Wendy Hiller

The traditional pruning technique is called pollarding. While it is used to maintain trees at an artificially small size, historically pollarding was chiefly performed in Europe to manage trees as a sustainable agricultural crop to produce uniform-sized branches. Harvested branches were used for various necessities such as basket weaving, building and maintaining wattle walls and fences, "tree hay" fodder for livestock, and of course firewood, all without killing the tree. Whips harvested via pollarding were also planted to grow new trees. In the United States pollarding is used primarily for ornamental purposes – managing tree size in urban areas or creating formal landscapes.

Hazel wattle wall.
Photo by bundu fundi, UK Arborist

While I use the past tense to describe the origin of the tradition, pollarding and a similar technique called coppicing are still used today for many of the same reasons. Here's how pollarding and coppicing are done.

Pollarding is initiated on young suitable deciduous (not evergreen) trees that are no more than two or three years old. Initially, in the dormant season when the sap is drawn down into the roots of the tree, the main stem of the tree is cut at around six feet from the ground. A heading cut is used to stimulate the buds closest to the cut. Traditionally, this height was chosen so that tender new growth would be above the level of livestock that might browse the new shoots and destroy them. The height also provided sufficient clearance for people to walk under the trees, while keeping the trees from becoming too tall to easily prune.

When a pollarded tree breaks dormancy in the spring, the sap moves up from the roots and stimulates a flush of epicormic growth from the cadmium layer. In less technical terms, new shoots will form around the perimeter of the cut, emerging from the section of the trunk just under the bark. This type of growth will always be loosely attached to the tree; however, new shoots will be strong enough to remain safely attached while they are young. In subsequent years during the dormant season, two- to three-year-old branches are removed back to the point of the original cuts. Importantly, once a tree is pollarded, it must continue to be managed that way. If not removed according to schedule, the loosely attached branches will become large and heavy enough to break off and damage the tree.

Pollard heads. Photo by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida

After multiple years of cutting the tree back to the same positions, swollen knobs called pollard heads or knuckles will form on the tree. The presence of pollard heads distinguishes pollarded trees from those that have been topped. Topping is a crude way to reduce the height of a mature tree by cutting off the tops of large branches. Topping compromises trees' structural integrity and exposes large areas of bare wood to disease and insects. Please do not allow anyone to top your trees. For questions about tree maintenance, reach out to the Loudoun County Extension Master Gardener Help Desk for more information on proper care to maintain a tree's health, aesthetics, and safety. If you are considering planting a tree, the Help Desk volunteers are also available to provide advice on what varieties of trees should perform well in your landscape.

Coppicing is nearly identical to pollarding. The difference is the height at which the initial heading cut is made on the tree. When coppicing, the tree is cut close to the ground. The resulting growth can be used for the same purposes as the branches harvested from pollarded trees; however, branches low to the ground can also serve as windbreaks or a living fence before they are removed. Regardless of function, just as in pollarding, coppiced trees must continue to be managed via the same technique in order to protect the trees from damage. Coppicing is a uniquely European practice.

Coppicing. Photo by Future

So now we know about pollarding and coppicing. However, circling back to my initial question, I am still wondering why this technique continues to be employed for street trees in cities. Perhaps pollarding is still used for the same reason cobblestone streets are retained? Both are part of history and have earned their rightful place.

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Living Tree Time

Dawn Meyerriecks, Loudoun County Extension Master Gardener

In an age where technology drives, competes for, and undermines our time, where do you resort to for refreshment and contemplation? Perhaps there are some lessons from—and in—nature that can afford all of us those opportunities.

Did you know that professional horticulturalists talk about "tree time"? Short-lived species regularly live 100 years and the ancients 500, so tree time looks much different than human time. Imagine starting to reframe your accumulated wisdom into a whole new discipline at 95 or 195. Can we tap into tree time thinking and gain something in the process? The answer is a resounding "yes" and, at the risk of anthropomorphizing trees, let's do it! But first, some basics:

Tree Basics

Trees are *always* and *indefinitely* growing. Read that again. Trees are *always* and *indefinitely* growing. Humans and gravity (in that order) are their two biggest threats. Tree cells do not senesce, that is, they suffer NO pre-programed decline (unlike humans). Trees do suffer organismal senescence in their environments, like fungi, but their cells do not age to die.

All trees have a genetic blueprint that predisposes them to certain attributes. They are also shaped by their environments. The ancients have "good genes" and have been shaped by and embraced their environment.

Trees are best described by their development state and not their chronological age. Maturity in a white oak (~250 years) is much different from a red oak (~100 years) or a tulip poplar (~50 years).

Trees are driven by strong tropisms, which we can think of as growth principles. These are:

a. Geotropism. Tree growth acts against gravity. Trees want to grow vertically and not horizontally.
b. Apical Dominance. Trees prefer a strong leader shoot to which all other shoots/branches defer with respect to vertical height.
c. Phototropism. Trees will preferentially grow and expand toward the light.
d. Hydrotropism. Tree roots will preferentially grow toward/seek water.

Finally, trees are colonial organisms. That is, trees consist of a set of functionally autonomous, independently acting units. For example, it seems that a lower branch that is shaded out "makes the decision" (actually, is chemically driven) to grow larger leaves and/or put out vertical shoots. It's not clear yet what the "decision-making" balance is regarding eventually dropping off completely – whether that is a branch responding to its own environment or the main trunk cutting off supplies or a combination of both.

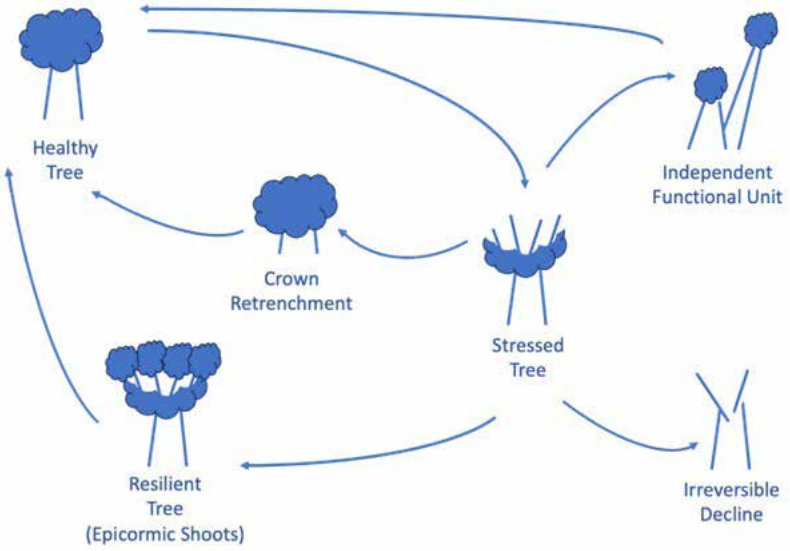
Ancient white oak.

One of our local ancient white oaks, pictured, demonstrates all these tropes.

For these "lottery winner" trees, did you know that ancient trees contribute significantly more to their environment that adolescent or mature trees? Studies indicate that these ancients provide 10-100X more habitat for fungi, insects, birds, and mammals than their less mature neighbors.

Tree Lifecycle

Not surprisingly, trees cycle repeatedly through an adolescence, mature, ancient pattern that is identifiable and that can be used, in certain circumstances, to estimate the age – and the local environment – associated with the tree over its lifecycle. Theoretically, that looks like:



Tree lifecycle.

We start with a healthy (mature or ancient) tree. Based on water and nutrient flow capacity throughout the tree, the tree is in equilibrium, steadily adding growth at appropriate areas. (Trees do reach a maximum capacity for pumping water up to their canopy based on genetics and their environment, so may actually be growing OUT and not up.) Let's assume something changes in the tree environmentally—say multiple years of drought limit the amount of water reaching the tree roots. Given tree and actual time, the tree can respond in different ways. The tree can lower its crown to reduce overall flow capacity demands. This is called "crown retrenchment". It can opportunistically send up a series of vertical branch shoots (often called "water spouts") to create multiple pathways to a newer crown based on root expansion into new sources of water. It can send up a nearly independent new set of root shoots, creating a genetically identical tree. Or, if actual time and tree time response are poorly matched (e.g. the tree can't change fast enough to cope with the new water conditions), it can go into an irreversible decline. These coping strategies are controlled by the genetic characteristics of the tree. For fast growers, like cherry, poplar, and locust, these strategies can be implemented significantly faster than for slow growers, like oak and hickory.

Reading Tree Stories

Now that we have the basics, we can "read" our ancient trees and their forests to understand the ongoing story of their—and our—landscape. Here are a few examples:

1. Open versus forest grown trees. Open grown trees (e.g. those that were adolescents in an open area) are marked by large branches all over the trunk of the tree: low and high and on all sides. Forest grown trees (e.g. those that had to compete for sunlight) are marked by branches higher up on the trunk and, perhaps, favoring one side or another based on where they could find sunlight. They may have decidedly slanted or canted trunks, as they want to grow straight but also must reach sunlight.

Open grown tree.

2. Human Modified trees. These are trees that have been pollarded or otherwise shaped by humans for fruit, shade, or size/shape management.
3. Environmentally Modified trees. Finally, these are trees shaped by environmental causes, including prevailing winds, drought, and lightning strikes. These also include trees marked by our local fauna, including deer and bears.

In our Northeastern countryside, we went through a period of heavy agriculture from the 1800s through the early 1900s. Large, open grown trees largely mark that period as they were stand-alone, so called "wolf" trees in pastures or those who grew up along fence lines. In the subsequent decline of agriculture, reforestation occurred around them. So an ancient red oak may show signs of being an open grown tree early on with subsequent "tree time" resilience strategies that incorporate retrenchment and resilience (e.g. epicormic shoots). There are likely a number of closed over, large, lower branch discard points as the tree coped with space and light competition. Also in our Northeastern countryside, old growth forests actually show all stages of tree maturity, provisioning much fewer (to none) low and large branches.

A plethora of fast growers indicate recent reforestation, with trees like black locust, black cherry, and tulip poplars. Old growth include oaks and hickories. (Old growth used to include American Chestnut, unfortunately significantly reduced now.)

Conclusion

Next time you are hiking or taking a neighborhood stroll, check out those gentle giants among us and see if you can glean the story of the land that they tell. Bathe in their beauty and their indomitable will to thrive, measured in hundreds and thousands of years. Reconnect to the enduring and magnificent aspects of life.

Diagram and all photos by Dawn Meyerriecks.

Human modified tree.

Environmentally modified tree.

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