Trumpet Vine

Knowledge for the Community From Loudoun County Extension Master Gardeners

Spring 2019

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LOUDOUN COUNTY EXTENSION MASTER GARDENER LECTURE SERIES

FREE AND OPEN TO THE PUBLIC
7 P.M.
RUST LIBRARY
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LEESBURG, VA 20176

April 4, *John Clayton: A Remarkable Virginia Botanist,* with environmental historian Hayden Mathews.

May 2, *Attracting Bluebirds to Your Garden*, with Karla Etten of the Virginia Bluebird Society.

For lectures beyond May please check our website next month.

For more information, visit our website at loudouncountymastergardeners.org.

Visit us on Facebook: Extension Master Gardeners of Loudoun County, Virginia.

Gardening in a Soggy Spring!

Last year's heavier than normal rainfall persists as we approach spring 2019. We are already two inches above normal for the year. What does this mean for our gardening plans as warmer weather approaches?

When just about any type of soil sucks up so much rain, it becomes too heavy to work and too thick to plant. You have to wait until it dries out, which may take a few days, a few weeks, or longer, depending on what Mother Nature still brings. Don't dig, don't plant, and don't even walk on it. Clay soil is made up of fine-textured soil particles with little air space between them. When it rains, water fills those spaces. Then when you walk on it, your weight packs down the soil and pushes out any remaining air. With few or no air pockets left, it becomes difficult for the water to drain, creating a less-than-hospitable home for new plants. Plus, when the soil does dry out, the compaction that occurred while it was wet may cause damage to the soil structure that can last for years.

So what to do? This is a great time to pull up small woody and perennial invasives. English ivy, periwinkle, baby Bradford pear, runaway Rose of Sharon, Japanese honeysuckle, and bush honeysuckle all come up easier in this mud. Also, check the base of plants to see if roots have been exposed by erosion, and add soil or shredded leaves where necessary.

If these activities require stepping into the garden, put down temporary stepping stones, boards, or other materials to distribute your weight and avoid compaction.

This weather may be our new normal, so this is a good time to observe places where water pools and areas that need better drainage or more water-tolerant plantings. Note plants, such as coneflowers, that prefer well-drained soil and that may need to be moved to higher ground when the soil can be worked.

Happy spring gardening!

Join the Loudoun County Extension Master Gardeners at the 29th Annual Leesburg Flower and Garden Festival April 27-28

Whether you are a long-term Loudoun County resident, a new transplant to Loudoun, or a day-tripper in search of a fun outing, we have a perennial treat for you on April 27 and 28! Each year, the Loudoun County Extension Master Gardeners showcase our tested and best-performing plants at the festival, selling a variety of tomatoes, peppers, and herbs; a select number of gardening tools; and succulents and houseplants in a wide range of whimsical containers that will seize your imagination.

This year, our 12 varieties of tomatoes range from prolific cherry tomatoes well-suited for container gardening to mouth-watering heirloom tomatoes that produce rich, tasty fruit. Our peppers, which range from mild to red hot, will appeal to a diversity of palates. Plus, if you are looking to start or replenish your herb garden, we will offer four varieties of basil, as well as rosemary, parsley, and thyme. (A complete list of the plants and descriptions is provided with this publication.)

Our whimsical plant containers for succulents and other houseplants are truly showstoppers. Let your imagination soar—they can range from watering cans and bone china cups and saucers to children's shoes, teapots, duck decoys, wicker chairs, and graceful pitchers—to name a few.

The Leesburg Flower and Garden Festival is the largest annual fundraiser for the nonprofit Loudoun County Extension Master Gardeners Association. This annual plant sale funds our Loudoun County outreach programs that encourage and promote environmentally sound horticulture practices through sustainable landscape management education and training. **We hope you'll join us for this very enjoyable event and support our plant sale.** You will reap the rewards all summer long!

2018 Flower and Garden Festival Extension Master Gardener booth open for business.
Photo: Barbara Arnold.

Connie Moore, Loudoun County Extension Master Gardener

Intensive Gardening Techniques for Your Small-Space Garden

Do you want to grow lots of vegetables, but you lack a big space? Never fear! You can choose from several intensive gardening methods to maximize crop yields in a small space. Intensive gardening methods are alternatives to traditional row planting that focus on minimizing wasted space and maximizing soil fertility, plant spacing, or planting methods. Popular techniques include square foot gardening, vertical gardening, and succession planting.

Square foot garden in Ida Lee Demonstration Garden
Photo by David Long

Square foot gardening (SFG) is an intensive gardening method that uses raised beds and a special soil mix to provide maximum vegetable yields in a small space. SFG was popularized in the 1980s by Mel Bartholemew, a retired engineer and part-time gardener.

SFG offers several advantages for the beginner gardener or for any gardener with limited space. A square foot garden can be located anywhere that gets adequate sun, preferably as close to the house or kitchen as possible! Construction is simple, and once built, an SFG is easy to plant and maintain. Weed growth is minimized, since plants are closely spaced and the loose soil makes any weeds that do appear easy to pull.

There are a few disadvantages, however. The initial cost is higher than conventional methods, because materials for the frame and soil mix must be purchased. It is not as useful for larger crops such as corn and vining crops, although bush varieties of many traditionally large crops are now available.

Getting Started

Five basic steps are necessary to get your square foot garden under way:

1. Decide on a location.
2. Build the bed frame.
3. Blend soil materials and fill the frame.
4. Lay out the square foot grid.
5. Decide on what you're planting and plant using recommended spacing.

Location

Multiple SFG Beds.
Photo by David Long.

When locating your square foot garden, choose a place that gets at least six hours, and preferably eight or more hours, of sunlight per day. Most vegetables benefit from a direct sun exposure, although some tender leafy vegetables can use some protection from the hot afternoon sun. You should generally avoid low areas where water tends to flow or puddle. Site your bed close to the house and a water source for convenience and stay away from large trees or shrubs. Soil quality is not an issue, since you will be building your new bed on top of the existing ground. If you are building multiple beds, make the aisles between the beds three feet wide to facilitate working.

Construction

Corner Detail, SFG.
Photo by David Long.

Your SFG bed should be no wider than four feet if both sides can be accessed and two feet wide if only one side is open. Once the soil is installed, you should not step on the soil because this will cause compaction and you will lose some of the benefits of your loose planting mix. A good size is 4 feet by 8 feet, which can be constructed from three lengths of 8-foot-long boards. Choose 2x8, 2x10, or 2x12 boards made from pine or fir lumber. These boards are generally available at most do-it-yourself stores. Cut one of the 8-foot pieces in half, giving two 4-foot and two 8-foot pieces. Join the 4-foot pieces to the 8-foot pieces at the corners, securing with 3 ½-inch deck screws. (Predrill the holes to prevent splitting the wood.)

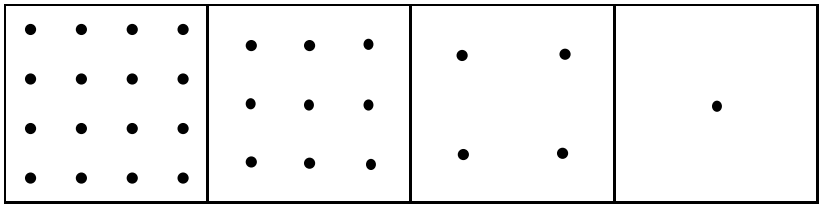
Once the bed location has been set, mow any grass present down to a minimum height (you don't need to remove the sod, but if there are any large or persistent weeds you may want to pull them). Lay down landscape fabric, weed block, or heavy newspaper on top of the existing sod to limit grass and weed penetration. Lay the frame on top of the weed block and trim the edges as desired.

Fill

Your soil mix is a critical part of the SFG system. A good blend will last years with only periodic top-offs of compost to replace any lost soil. A mixture of organic compost, peat moss, and vermiculite will provide a loose, fertile growing medium with good moisture-holding properties. Mel Bartholemew recommends a mixture of 1/3 compost, 1/3 peat, and 1/3 vermiculite, but the author has had success with a 50/25/25 blend ratio, which is a little less expensive. For one 4-foot by 8-foot bed, assuming an 8-inch soil depth, you will need one bale (4 cubic feet) of compressed peat moss, two or three bags (2 cubic foot size) of medium or coarse vermiculite, and about ten 40-pound bags of composted material. Use composted manure, composted leaf mold, homemade compost, or other similar materials. If you can, mix two or three different composts together to provide a broader mix of nutrients. Lay a tarp next to the empty bed, mix the ingredients together on the tarp to make a uniform blend, and then shovel the blend into the bed.

Plant

Make a grid of one-foot squares to lie on top of your bed. You can use string, wood lath, marking paint, etc. to lay out your guidelines. Plant your favorite vegetables from one to sixteen per square according to the guide shown here. When choosing tomatoes to plant in a square foot garden, choose bush or determinate varieties for their compact growth habit. Patio and Bush Beefsteak are two good



Small Plants	Medium Plants	Medium - Large	Large Plants
16 per 1 foot square	9 per 1 foot square	4 per 1 foot square	1 per 1 foot square
Radish, Scallions, Carrots	Spinach, Turnips, Beets, Bush Beans, Leeks	Leaf Lettuce, Garlic, Bulbing Onions,Swiss Chard	Kale, Bush Tomatoes, Peppers, Oregano, Rosemary

varieties to try. For vegetable varieties not listed, use the thinning suggestions on the seed label as a guide to spacing requirements.

Vertical Gardening

Vertical gardening is the use of trellises, nets, cages, or poles to support growing plants. Vertical methods are useful for vining or sprawling plants like cucumbers, peas, pole beans, squash, etc. Use vertical gardening in combination with SFG to grow vining crops in a small footprint. Locate your trellis on the north side so the vines don't shade the rest of the garden. Some vines such as peas and beans will naturally climb up the trellis netting, but others such as squash family plants need to be trained to climb.

Succession Planting

Many crops do not need a full year to mature in the garden. Planting successive crops in the spaces vacated by maturing ones keeps your garden productive throughout the year. In our area, plant cool season crops such as broccoli, lettuce, and peas early in the early spring. Then follow with warm season crops (tomatoes and peppers) in late spring as the early crops mature. A third planting in the fall may be possible with frost-tolerant crops such as spinach and kale, and over-wintering crops like garlic and onions.

Resources

For more information, see "Intensive Gardening Methods" Virginia Cooperative Extension Pub 426-336, and "All New Square Foot Garden", by Mel Bartholemew, Cool Springs Press.

David Long, Loudoun County Extension Master Gardener

Redbud—*Cercis canadensis*

I don't know about you, but I am counting down the hours until spring! One of the first signs of spring is our native redbuds blooming. If you have ever driven south on Route 15 or along pretty much any mountain road in Virginia, you have had the pleasure of seeing the vibrant pink-purple of their flowers letting you know that spring is just around the corner.

Early flowers are an important source of pollen and nectar. Photo credit: Terry W. Johnson Georgia Department of Natural Resources.

These prolific flowers, sprouting directly from the tree branches, arrive earlier than other spring flowers. The redbud is so indispensable to bees that some experts rate it as one of our top ten most important native flowering trees. Redbuds also provide nectar for butterflies and hummingbirds.

Redbud seeds are eaten by numerous wildlife, including quail, cardinals, wild turkeys, white-tailed deer, and even squirrels.

Native to the eastern seaboard, the redbud is found from Canada to Florida and across Texas. Blooming in March, redbud flowers can last until May. After flowering, the tree's leaves pop out in bright green, some turning dark green, while other varieties such as Forest Pansy have purple foliage.

The redbud is a small to mid-size tree that generally reaches 15 to 30 feet in height with about the same spread. Redbuds can be single or multi-trunked. As the tree ages, it tends to take on a vase-like shape. Seedlings that sprout around the base of the tree can be moved easily and planted elsewhere. Redbuds do establish a deep taproot early on, which makes transplanting them not recommended.

Cultural requirements:

- Full sun to moderate shade depending on how far south the tree grows.
- Light rich moist soil but will adapt to a variety of soils.
- Does require some irrigation during summer droughts; the variety Forest Pansy is less drought tolerant than others.

A member of the pea family, redbud seedpods resemble peapods and are edible. The spring flowers, which taste like fresh green peas, can be fried and eaten.

Some interesting redbud facts:

- Native Americans boiled the bark to make tea to treat whooping cough.
- Dysentery was treated using an astringent from the bark.
- The roots and inner bark were used for fevers, congestion, and vomiting.

With plenty of varieties and a small footprint in the yard, adding a redbud to increase our native plants is an easy decision.

Becky Phillips, Loudoun County Extension Master Gardener

The Spring Vegetable Garden

Red cabbage.
Photo credit: Denise Palmer.

It has been a tough few months with all the rain and snow having turned the vegetable garden soil into quite a soggy place. With spring upon us and in our eagerness to begin the season, it is tempting to begin working the soil while it is still too wet. Remember to let the soil dry out before adding organic amendments or fertilizer to the soil. Amending your soil with compost or other composted organic matter will ensure your soil has good drainage over the season, although too much rain is just that…too much rain! Working with soil that is too wet will only serve to turn your garden soil into a compacted mess, and it may take years to undo the damage. Remember also not to walk on soil in the vegetable garden, especially soil that is too wet. While you wait for the soil to dry out, getting the newly sprouted weeds under control will be a worthwhile endeavor.

Vegetables like sun and a well-sited vegetable bed will be in a location that receives eight hours of sunlight if you intend to grow summer vegetables and at least six hours of sun for spring vegetables. Vegetables that do not get a proper amount of sun may have lots of green foliage but few fruits, which may be acceptable for lettuce but not so good for tomatoes.

When choosing seeds, look for compact, dwarf, or bush types if you are a small-space gardener or a container gardener. Seek out varieties that are disease resistant if you have had problems in the past by searching online through various seed company websites. Many of the seed companies and their websites also contain growing libraries that offer more specific information on growing conditions and pest and disease guidance. If you are buying seed packets from racks in a store, these packets will contain information on germination, when to start indoors (if a transplant), sowing instructions, spacing, and other helpful information.

Eight-week-old cabbage seedlings.
Photo credit: Normalee Martin.

Some vegetables need to be sown indoors six to eight weeks before transplanting into the garden. You will need to give these plants a week to "harden off" or acclimate to outdoor temperatures and sun before transplanting. That means leaving them outside, protected from wind, for up to four to six hours a day, but bringing them in overnight especially if temperatures will fall below 50 degrees F.

As soon as the ground can be worked, peas, lettuce, spinach, and other cool weather crops can be planted in the garden. Here is a list of spring vegetables that you can grow in your garden:

- **Arugula** – Also called rocket, arugula is a cool weather salad green with a spicy flavor. It has become very popular in the last few years and is an easy grower. Seeds sprout quickly, even in cold soil. Direct seed as soon as soil can be worked, either by broadcasting or in rows. Cover with row cover to prevent flea beetles from reaching the plants.
- **Broccoli** – Seed can be sown directly in the ground four weeks before the last frost date, or you can set out transplants two weeks before. Ideal temperatures for broccoli are between 65 and 80 degrees F. Feed plants three weeks after transplanting, using a low-nitrogen fertilizer.

- **Cabbage** – Start seeds indoors six to eight weeks before last frost date and transplant into the ground two weeks before. Although seeds can be sown directly into the soil, transplants are more reliable. Cabbages are heavy feeders and require rich soil and consistent moisture.
- **Carrots** – Sow seeds two weeks before last frost date. Carrots need loose soil to form a good root. Beds need to be kept weeded to avoid competition for nutrients. When seedlings are about 2 inches tall, thin to two to four inches apart. Keep their shoulders covered to avoid green, and do not use a lot of nitrogen, because that can cause forked roots.
- **Collards** – Transplants can be planted four to six weeks before last frost date. Plant in well-drained, rich soil.
- **Kale** – Plant in early spring in fertile soil, but cover with row cover or frost blankets during severe cold.
- **Kohlrabi** – Becoming more popular every year. Similar to a turnip but is related to cabbage. Set plants out 4 weeks before last frost date. Cover in freezing temperatures. Cool temps enhance their flavor.
- **Lettuces** – Sow anytime in spring, after the soil is workable. Sensitive to cold, they should be covered during cold snaps. Ideal daytime temperature is between 60 and 70 degrees F. They can grow in partial shade and like high nitrogen fertilizer such as fish emulsion.
- **Onions** – Can be grown from seeds, sets, or transplants. Any of these should be planted in early spring as soon as soil is workable.

Spring peas.
Photo credit: Denise Palmer.

- **Peas** – March 17, St Patrick's Day, is traditional pea planting day, and planting in the snow is not unheard of. They will germinate in temperatures as low as 40 degrees F, and seedlings can survive short periods of temperatures down to 25 degrees F. Using a legume inoculant, either a slurry or granular, is recommended but not necessary.
- **Potatoes** – A good indication of when to plant potatoes is when the grass starts to green up, which is March-April in the Piedmont area. Dried **potato** pieces with two to three eyes each should be planted in loose fertile soil. As the plants grow, mound soil up around stem to allow more tuber growing area.
- **Radishes** – The fastest plant to harvest in the veggie garden. Plant four weeks before last frost date, and they are ready in 25 to 30 days.
- **Spinach** – Seeds can be planted over frozen ground to germinate as the soil thaws. Transplants can be set out four weeks before last frost day. Prefers fertile soil. When days start getting longer and warmer, spinach will go to seed (bolt) and turn bitter.
- **Swiss chard** – This plant seems to be replacing kale in popularity. Sow seeds before the last frost and thin to six inches apart when seedlings are three inches tall. Water regularly.
- **Turnips** – Plant two weeks before last frost date. The edible

Swiss chard.
Photo credit: Normalee Martin.

greens will be tender if the soil is fertile.

This list contains most of the standard spring crops, but there are other specialty and old-time types such as mesclun, mustard greens, sorrel, and rhubarb, among others. Many seed companies specialize in heritage, heirloom, or varieties that have been resurrected from near extinction. Look online for these at specialty seed retailers' sites.

If you are new to vegetable gardening, it is best to decide what you and your family like and how much space you have before planting your garden. Learn when the proper times are to plant here by seeking out experienced vegetable gardeners, referring to the publication link below, or making plans to attend an Extension Master Gardener class to learn the basics. These classes can be found on our website.

There are no mistakes in gardening, just experiments. Keep a journal and track what worked or did not work from year to year. All vegetable gardeners have successes and failures. By keeping track, the successes become more frequent. Happy planting!

Vegetable Planting Guide and Recommended Planting Dates

https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/426/426-331/426-331_pdf.pdf.

Planning the Vegetable Garden

https://pubs.ext.vt.edu/426/426-312/426-312.html.

Normalee Martin and Denise Palmer, Loudoun County Extension Master Gardeners

Native Plant Sale – Save the Date!

Native Plant Sale sponsored by Loudoun Wildlife Conservancy

When: Saturday, April 6, 9:00am – 3:00pm

Where: Morven Park,17195 Southern Planter Lane, Leesburg (new location: the field on the right before the main parking lot)

Three native plant nurseries will have a huge selection of spring blooming flowers, shrubs, trees, vines and ferns for sale. Along with native plants, we'll have:

- Native bee houses, Bluebird nest boxes and mounting pole kits
- Loudoun Stream Monitoring program
- Unique yard art from Sunny Lane Forge
- Loudoun County Master Gardeners
- Bird feeding supplies by Wild Birds Unlimited

For more information, visit: https://loudounwildlife.org/event/spring-native-plant-sale-2/

Eastern Bluebirds

The Algonquin once said of Eastern Bluebirds and their beautiful plumage:

"They carry the Earth on their breasts and the sky on their backs."

Photo credit: John Eppler.

The Eastern Bluebird, among three bluebirds of the thrush subfamily, is among the most colorful birds in North America. There is a close relationship between the three bluebird species: Mountain Bluebird, Eastern Bluebird, and Western Bluebird. Eastern Bluebirds are also known as the American bluebird, Wilson's bluebird, or Common bluebird. Eastern Bluebirds live east of the Great Plains, and Western Bluebirds are found to the west of the Great Plains. Eastern Bluebirds range primarily from Canada to Mexico and Honduras.

The male Eastern Bluebird has a rusty orange-red throat, sides, and chest; a white stomach and under tails; and a bright all-blue back. The Eastern Bluebird female can be identified by its blue wings; gray crown and back; brown throat, chest, and sides; and white eye ring. Members of the species measure 6.3 to 8.3 inches long, with wing spans of 9.8 to 12.6 inches, and they weigh .95 to 1.20oz. They have a distinctive song that many hear as "chur-lee, chur-lee." The bluebird can live up to six years.

Eastern Bluebirds are beloved because of their beautiful plumage, winsome songs, consumption of insect pests, faithful family ways, and propensity for nesting near human habitations. The bluebird is the official state bird of both Missouri and New York.

During the summer months, the Eastern Bluebird can be found in open woods, especially where pines are growing. They are common along roadsides and in farmyards and abandoned orchards. They require semi-open and largely treeless areas with short grass and gardens for feeding, surrounded by woodlands. They generally need at least two acres of old field, hayfield, meadow, or lawn, with some of it mowed. Old unsprayed apple orchards provide a fine habitat. Eastern Bluebirds are often found in family groups or small flocks. These songbirds are very social creatures.

Photo credit: John Eppler

Bluebirds are secondary cavity nesters that use the abandoned nests of woodpeckers, natural cavities in trees, and fence posts. The female constructs the nest and will lay between three and six eggs, usually four or five, and will incubate the eggs for a period of 14 days. She will have one to three broods per season depending on the range of location. The mid limit range, which would include Virginia, would be two broods per season.

In the early 20th century, the bluebird population plunged for several reasons. In the late 1800s, two aggressive non-native species were introduced to the United States. The house sparrow and the European starling, both cavity dwellers, began to displace bluebirds. Development caused loss of habitat and the bluebirds' insect diet was contaminated by DDT. Bluebirds also suffered from the harmful effects of pesticides used to control fire ants. Fire ants will also attack bluebird nests. Finally, a series of severe winters took their toll on the bluebird population.

As early as 1950, people began projects to put up bluebird boxes and while these projects proved locally successful, bluebird populations continued to decline and may have reached their lowest point in 1963. In 1973, DDT was banned. The North American Bluebird Society was formed in 1978 to encourage individuals and groups to put up nest boxes for bluebirds. Nest box projects continued to spread throughout the range of the Eastern Bluebird. In 1999, the bluebird was removed from the New York state Endangered, Threatened, and Species of Special Concern list. Populations are now growing by two to six percent every year.

The North American Bluebird Society website provides a wealth of information on blue birds and nest boxes and a number of factsheets that will help you establish a trail, monitor your boxes, and provide a safe and welcoming environment for bluebirds.

Raccoons, cats, squirrels, and snakes prey upon the eggs, nestlings, fledglings, and adult bluebirds inside nest boxes. House wrens will pierce the eggs of bluebirds without consuming them; house sparrows will kill both adult and nestling bluebirds. Predator guards in the form of metal cones or PVC pipe baffles below the box will make it difficult, if not impossible, for climbing predators to reach the young.

In the spring and summer, 80 percent of a bluebird's diet is flying or terrestrial insects, such as grasshoppers, crickets, katydids, and beetles--and even slugs and mollusks. Bluebirds are thrushes like robins and waxwings that depend on the fruit of native plants like elderberry, raspberry, sumac, holly, dogwood, pokeweed, and hackberry. Live mealworms are also a favorite food.

So plant native perennials and shrubs to provide both insects and fruit, put up a nest box, and get ready to welcome some bluebirds into your yard.

Heather Swanson, Loudoun County Extension Master Gardener

Photo credit: John Eppler

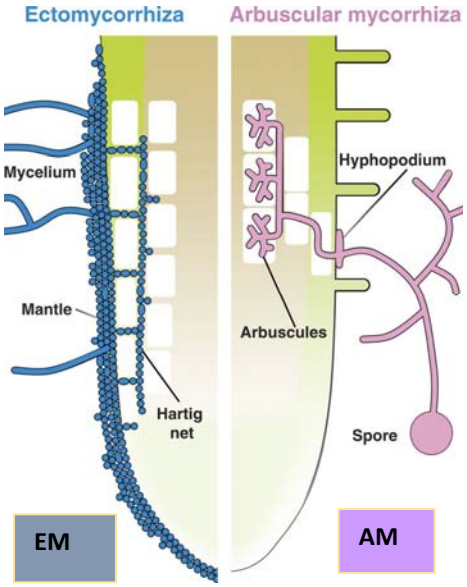
Mycorrhiza–Naturally at Work in Healthy Soil

About 20 years ago, an arborist suggested that I have the soil around a failing 75-year-old red oak injected with mycorrhizal fungi. Without much explanation, he said that this procedure might help the tree survive. It didn't; the tree is long dead. At the time, I didn't know what "mycorrhiza" was. But now, knowledge of mycorrhiza has become more widespread, and when you do a web search, you are faced with dozens of products to buy to enrich your soil and help your plants. Is this something you should do? Does it work?

"Mycorrhiza" refers to an association between fungus, *myco*, and the roots of a plant, *rhiza,* a primitive relationship that started millions of years ago. Mycorrhiza literally means fungus root. This relationship is almost always mutually beneficial. Mycorrhizal fungi act as agents of nutrient exchange by linking the plant with the soil and with other plants. The fungi receive carbohydrates from the host plant root, which they use for energy, and the fungi pass water and nutrients such as phosphorus and zinc from the soil into the plant roots. Mycorrhizal associations may also decrease attack from root pathogens such as *Verticillium* and pests, including nematodes, and increase the tolerance of the plant to adverse conditions such as drought. About 95 percent of all plants, woody and herbaceous, will form an association with a type of fungus. Some plant species, such as crucifers (*e.g.,* broccoli) do not form these symbiotic relationships with fungi.

Fungi usually grow from spores into thread-like structures called hyphae. A single hypha is so thin that it takes thousands of strands to form a bundle that is visible to the eye. A teaspoon of good garden soil may contain several yards of fungal hyphae. Fungal hyphae can grow 40 micrometers a minute and can penetrate hard surfaces. Thus, fungal hyphae can locate new food sources and transport them relatively long distances. When hyphae fuse they form a mycelium.

Mycelium in the soil.
Photo Credit: Nigel Cattlin / Alamy.



The two main types of mycorrhiza.
Illustration courtesy Nature Magazine.

When plant roots, which are huge in comparison to hyphae, absorb all the nutrients around them, they can rely on fungal hyphae for a source of water and nutrients. Mycorrhiza can increase the effective surface area of a tree's roots by 700 to 1,000 times. Thus mycorrhiza increases drought resistance, increases nutrient uptake, increases disease and pest resistance by reducing stress, and produces an overall healthier plant.

While modern research has lead to the recognition of seven types of mycorrhizal fungi, there are two main types of mycorrhizal fungi. Ectomycorrhizal fungi (EM fungi), which associate mainly with hardwoods and conifers, grow close to the roots and form webs or nets around them. The second type is endomycorrhizal fungi (AM fungi), which actually penetrate and grow inside the roots of herbaceous plants, shrubs, and softwood trees. Common mycorrhizal networks

can interconnect the roots of multiple plants and play a role in plant communication and allelopathy.

Healthy organic soils contain vast quantities of mycorrhiza. Roots of plants under *mild* nutritional stress release chemical cues, such as organic acids, that stimulate mycorrhizal growth. So mycorrhizal associations occur naturally when plants need them and the fungal hyphae are present. Most plants are colonized by a variety of mycorrhizal fungi, and most fungi have multiple hosts.

Many horticultural practices can damage fungal hyphae. Tilling and even simple hoeing can rip apart the delicate net, which can then take months or even years to reestablish. When tilling is a yearly event, the fungus will never get a foothold. Too much synthetic fertilizer can also damage the fungus, as can pesticides and, of course, fungicides. Sterilizing and solarizing your soil will also destroy mycorrhiza. Compacted soil and flooding can also harm mycorrhizal networks. Remember, roots of plants under *mild* nutritional stress stimulate mycorrhizal growth. The corollary is true: overwatering and overfertilizing will suppress the growth of mycorrhiza.

Mycorrhizas flourish in soils with high organic matter, so adding compost is one of the best ways to encourage the establishment and growth of fungi. Rather than digging in organic matter, which will destroy the existing fungal net, lay the compost on top of the soil and let it naturally decay into the soil.

Mycorrhizal inoculants are available from many companies, but adding these to your soil is usually not necessary unless the soil has been severely damaged and completely lacks fungi. In addition, many strains of fungi are plant specific, and what you buy may not be the right one. Often, mycorrhizal inoculants will contain a mix of several different fungi in the hope that one will match your plant.

Instead of buying dubious products, aim for healthy soil. Regularly add compost, leaf mold, and wood chips, practice no-till or low-till gardening, and let the fungi flourish naturally.

To circle back to my tree experience, out of four trees that I know were treated with EM fungi, three are dead and one is growing well. The three that died were already in serious decline and treatment was likely a bad recommendation. Is the fourth tree still alive due to the fungal injection? There's no way of knowing.

Carol Ivory, Loudoun County Extension Master Gardener

Those Amazing Spring Ephemerals

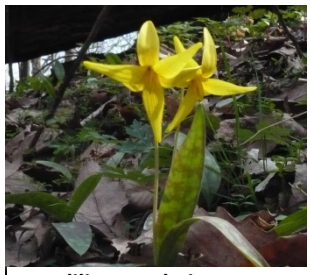
Most of us are familiar with Virginia bluebells and spring beauties. Because of our location in the Piedmont, Northern Virginia has a very large number of spring ephemerals growing in deep, moist, nutrient-rich soils.

Ephemerals are plants that must complete most of their life cycle in one short season before changing growing conditions cause them to die off or go dormant. In Loudoun County, this season is March through May. By June, even the lush foliage of Virginia bluebells has melted away without a trace. The window of opportunity for spring ephemerals is the period between snow melt, the time the soil starts to warm, and the time the tree foliage emerges. Tree leaves dramatically reduce the amount of sunlight reaching the forest floor and also initiate the absorption of water from the soil by the trees. In March, 50 percent of the sunlight is available to spring wildflowers, and by May, only 10 percent of the sunlight reaches them. Many spring wildflowers are shade intolerant and go dormant after the tree canopy comes out. So they have only this short period of time to reproduce and replenish their energy supplies.

Spring Beauties close their flowers on cloudy, rainy, and windy days to protect their pollen. They can self-pollinate if weather conditions prevent cross pollination.

Spring ephemerals look delicate and fragile, but they are really very tough little plants with many strategies to survive in harsh conditions. They endure late snows and freezing temperatures, wind, rain, and very few pollinators. They emerge from the soil ready to bloom. Bumblebees are the first pollinators to come out at 42°F; other native bees and flies come out when the temperatures are in the 50s. Most spring ephemerals have flowers that are very short lived so their chance of cross-pollination is not great. Spring beauties can self-pollinate, but other plants like the mayapple and the trout lily can reproduce vegetatively. The mayapple produces clonal colonies through rhizomes. This is critical because a typical mayapple plant produces a flower only once every seven years. Then if that fruit forms a successful seed, once the seed germinates it will not form a rhizome until it is four to six years old and it won't produce a flower until it is 12 years old. So, when you see a mayapple flower, consider how many years it has taken to produce one flower, and what a gift it is.

Mayapples produce a flower only when they have the energy to produce two leaves. Mayapple fruit are a favorite of box turtles.



Trout lilies get their name from their mottled leaves that resemble trout.

Trout lilies can produce large colonies that may be 100 years old. Because only 10 percent of pollinated flowers develop seeds, they have two ways of reproducing vegetatively—through small bulbs budding off the main bulb or through a "dropper," a stalk that grows out of the parent bulb. The stalk dies once the offshoot plant establishes itself. Some trout lily colonies seem to never produce flowers; others are relatively prolific bloomers.

Bluebell flowers. Photo by Huguette Roe.

Many spring ephemerals also have winning strategies to disperse their seeds. Thirty per cent of Virginia wildflowers have their seeds dispersed by ants. Among these are hepatica, bloodroot, twinleaf, Dutchman's breeches, squirrel corn, wild ginger, trilliums, trout lilies, violets, spring beauties, and blue bells. Ants are attracted to the eliasomes, fatty structures that are attached to the seeds of these plants. Ants carry the seeds back to their underground nests and chew off the eliasomes. This acts like scarification and promotes seed germination. Ants then discard the seeds in their compost pile. What better place to germinate and grow?

One of the best places in Loudoun County to see a wide variety of wildflowers is Balls Bluff Regional Park in Leesburg. Visit now and through April and May to see the full array of spring flowers. Here's a sampling of what you will see.

Harbinger of Spring.

Harbinger of Spring emerges in February or March. After skunk cabbage, this is the earliest blooming native flower. This flower is tiny and you have to know where to search for it among the leaves. While it is plentiful at Ball's Bluff, it is rare in Virginia in general. Another common name is pepper and salt referring to the contrast of the maroon or black stamens and the white petals. The anthers of the stamens are initially dark red, but they soon turn black.

Dutchman's Breeches and **Squirrel Corn** are often confused. Both of the genus *dicentra* (along with bleeding heart), their leaves are fern-like, and they both have oddly shaped white flowers. Squirrel corn requires slightly higher temperatures than Dutchman's breeches, so it blooms later. This is believed to be a strategy to share pollinators rather than compete for them. The name squirrel corn refers to little yellow bulblets at the base of the plant. The name Dutchman's breeches refers to the fact that the flowers look like pantaloons hanging on a line.

Dutchman's breeches.

Squirrel Corn.

Twin leaves and seed capsule beginning to form.

Flower with pollinator.

Twinleaf offers stunning white flowers growing on bare stalks about 8 inches tall. Emerging after the flowers, the leaves are long-stemmed, blue-green basal leaves (to 6 inches long) that are deeply divided into two lobes giving the appearance of being two separate leaves. The botanic name is *Jeffersonia diphylla,* after Thomas Jefferson who grew them in 1807 in one of Montecello's oval beds.

Visit Balls Bluff now and a couple more times throughout April and early May to see these fleeting beauties.

Carol Ivory, Loudoun County Extension Master Gardener

All photos, unless otherwise attributed, were taken by Carol Ivory at Balls Bluff Regional Park, Leesburg, in 2011.

Fall-Blooming Bulbs

Fall may seem a long way away, but now is the time to start planning for fall flowers! Many fall-blooming bulbs will produce beauty in your garden year after year. The bulbs can be ordered in the spring and will arrive in time for fall planting. Here are two low-maintenance bulbous perennials to consider for your garden.

Colchicum

Known as autumn crocus (or meadow saffron), this plant is not actually in the crocus family. It is a member of the lily family (*Liliaceae*). The plant produces colorful blooms of 6 to 12 inches in autumn, without any foliage. Similar to many other bulbous flowers, the blooms last about two to three weeks. The plant will disappear over the winter. In the spring, it produces long (up to 14 inches) leaves that will persist into summer. The leaves will disappear in late summer, but in autumn, the colorful blooms will return.

The autumn crocus should be planted in late summer or early fall. The plant grows from a corm, which should be planted about 2 to 4 inches deep. The plants perform well with some protection, such as amongst a low ground cover or in turf. They can also be planted amongst spring or early summer blooming perennials and will fill in the space for the autumn season. The leaves should be left on the plant—as with many other bulbous perennials--and not removed until completely dried. They are considered a low-maintenance plant. They will perform in full sun to part shade in somewhat moist but well-drained soil. The corms are cold hardy in our region.

Although this plant has been used historically for medicinal purposes, it is toxic and not to be eaten!

Colchicum in bloom.
Photo courtesy Susan Mahr.
Wisconsin Master Gardeners.

Colchicum with spring foliage.
Photo courtesy Missouri Botanical Gardens.

Fall-Blooming Crocus

There are many species of crocus that produce flowers in the fall. Like colchicum, they are often referred to as autumn crocus. However, these are true members of the crocus genus, part of the iris (*Iridaceae*) family.

Crocus *cartwrightianus* 'Albus.'
Photo credit: Meneerke Bloem.

These perennials grow from corms. Like the spring-blooming crocus, the flowers are generally a short 3 to 6 inches. The leaves are thin and grass-like. They generally prefer well-drained soil in part shade to full sun. The corms should be planted 3 to 4 inches deep and 4 to 6 inches apart. They look best in massed plantings. They will also look great in a rock or herb garden. The corms should be planted in the fall, before the first frost.

Some cultivars that are hardy in our zone include: *cartwrightianus* 'Albus,' *kotschyanus, laevigatus* 'Fantenayi,' *ligusticus, medius, ochroleucus, pulchellus* 'Zephyr,' *sativus, and speciosus.*

References:

Jauron, Richard *"Fall-Blooming Bulbs"*
Aug. 29, 2012. Iowa State University Extension and Outreach, Horticulture and Home Pest News.

Mahr, Susan. *"Autumn Crocus, Colchicum spp."*
Sept. 12, 2011. University of Wisconsin-Madison Master Gardener Program.

Marcee Judd, Loudoun County Extension Master Gardener

For many years Loudoun County Master Gardeners have purchased bulbs and other perennials from Brent and Becky's, a 100-year-old, family-owned business in Gloucester, Virginia. Now we have entered into a fundraising partnership with Brent and Becky's. LCMGA will receive 25 percent of all sales placed to support our organization. If you want to get some great bulbs and plants as well as help the Master Gardeners, please go to http://www.bloominbucks.com/. Read the directions, search on the list for "Loudoun County Master Gardeners," and start buying bulbs, native milkweed, and other great plants for your garden. Fall-blooming bulbs can be ordered beginning in March.

Blandy Farm and State Arboretum

Have you ever visited Blandy Farm on Mother's Day weekend for its Garden Fair? If not, do yourself a favor this year and go visit. Take in all the wonderful vendors and stroll the grounds. Some days you can almost have the place to yourself and enjoy the various specimens of trees and shrubs. Some of these were planted almost 100 years ago.

The Quarters: A historic landmark.

I was familiar with Blandy when I started researching for this article, I have been a vendor at the Garden Fair several times and have visited several other times. But in reading up on it, I was fascinated by its history. I went to Virginia Tech as a horticulture student, and we took a field trip to Blandy. I don't think a single one of us picked up on the fact that we were on UVA ground! We might not have gotten off the bus! I still have pictures from that trip, in 1979, of the beautiful trees, the old buildings, and some really cool rock formations.

A timeline below lists some interesting facts about Blandy. After the timeline, I have included the highlights of the plants and the reason we gardeners love to visit.

Timeline

- Blandy Farm was established in 1926 when Graham Blandy, a New York stockbroker and railroad tycoon, left 700 acres to the University of Virginia. In 1927, Dr. Orland E. White became the first director. He was asked to establish a working field lab for advanced students.
- The students, under Dr. White's guidance, created the Arboretum in which to collect and study genetic diversity in woody plants and shrubs. Dr. White retired in 1955, leaving behind a collection of some 5,000 specimens at the Arboretum. More than 1,000 of those specimens are still standing today.
- After Dr. White's retirement, Dr. Ralph Singleton took over. Also known as "the Father of Hybrid Sweet Corn Breeding," Dr. Singleton took the fieldwork in a new direction. Hoping to create crops with disease resistance and greater yields, he started experimenting with nuclear radiation. During this time, in 1961, the American Boxwood Society was established at Blandy.
- Between the years of 1965 and 1972, the University of Virginia lost interest in the research programs, and the Arboretum was neglected and became overgrown.
- In 1972, Tom Evert was named director and curator. He brought with him a vision of Blandy becoming a community resource, emphasizing horticulture and community outreach.
- So began the Blandy that we all know and love today. Mr. Evert added seasonal programming and garden shows and allowed use of the grounds for weddings. He also added and encouraged school field trips.
- From 1973 to 1987, Lord Fairfax Community College also took advantage of the programming, bringing in students to study farming.

- 1977 marked the creation of the first ornamental garden at Blandy--the Herb and Boxwood Memorial Garden.
- From 1983 to 1997, Ed Connor was director, focusing on the ecology of plant-eating insects and trees and shrubs.
- In 1984, Friends of the State Arboretum (FOSA) was established along with the shop being opened and the first Garden Fair and ArborFest being held.
- In 1999, the woodland section of the Nancy Lawick Crosby Native Plant Trail was opened.
- 2001 brought the meadow and wetland parts of the trail, along with the Hewlett Lewis Overlook Pavilion.
- In 2004, the Peetwood Pavilion was built as were classrooms for K-12 class programming.
- In 2009, the Wilkins Lane Loop Drive was opened, allowing visitors access to the farther reaches of the property.
- Glass doors were installed in the Peetwood Pavilion in 2012, allowing longer use of the classrooms.

Meadow: 34-acre meadow that features Virginia native warm season grasses.

There are so many reasons to visit Blandy! Listed below are some of the gardens and programs.

Gardens

- The eight herbaceous gardens are:
  - Herb Garden.
  - Pollinators Garden.
  - Zoo Garden--where all the plants are named after animals!
  - Walter Flory Memorial Iris Garden.
  - Kiosk Annual Display Garden--where a small-space garden is planted with veggies, herbs, and annuals for pollinators.
  - Virginia Native Garden.
  - Dwarf Conifer Collection at the Margaret Byrd Simpson Amphitheater.
  - Courtyard Gardens at the Quarters Building, which shows how to use a micro-climate to grow plants slightly outside our zone.
- Several trails exist and have their own brochure for those who enjoy walking, and there's even a trail for horses!
  - Native Plant Trail.
  - Conifer Trail.
  - Ginkgo Grove.
  - Boxwood Garden.
  - Audio Trail, which lets you listen to an audio lesson on the plants you are viewing.

Nancy Lawick Crosby Native Plant Trail.

- Bridle Trail--for those who want to be on their horses exploring the grounds.
- Wilkins Lane Loop Drive--for those who aren't up to walking, this drive takes you around the outermost spots of the grounds.

Hewlett Lewis Overlook Pavilion at Rattlesnake Spring Pond.

Blandy also has a wide range of programs, both educational and fun, for all ages.

In keeping with its history of education and research, Blandy offers educational classes and activities for pre-school, elementary, and secondary students. A research community also comes to Blandy for environmental studies because Blandy supports a wide range of habitats to be discovered.

Blandy offers:

- Spring Programs.
- Summer Camp.
- Book Club.
- Photo Club.
- Sketch group Overlook Pavilion at Rattlesnake Spring Pond.

And if that isn't enough, you can also get a plot of land on which to grow your own produce in the Community Gardens! All Blandy asks is that you donate a portion of your produce.

All in all, Blandy offers an abundance of opportunities, and it's just a short drive from Loudoun County! I do hope you get a chance to visit one day soon and take advantage of Blandy's public resources and classes.

Visit the Blandy website for much more information. http://blandy.virginia.edu/.

Becky Phillips, Loudoun County Extension Master Gardener

Ginkgo Grove.

Verticillium Wilt in Red Maples and Other Host Trees

Verticillium wilt is a soil-borne fungal disease. It is known for its wide host range. Most deciduous trees and shrubs are susceptible, but conifers do not appear to be. Among the susceptible trees and shrubs seen in our region, the most common hosts in landscape settings include: maple (*Acer*), elm (*Ulmus*), smoketree (*Cotinus*), ash (*Fraxinus*), tulip tree (*Liriodendron*), *Viburnum*, redbud (*Cercis*), *Catalpa*, *Magnolia*, Kentucky coffee tree (*Gymnocladus dioicus*), and the invasive Russian olive (*Elaeagnus angustifolia*). Recently, in our area, *Verticillium* has killed red maples. While *Verticillium* can manifest at any time during the growing season, symptoms most commonly appear in the summer as the weather warms, especially around June and July. It is caused by two species, *Verticillium dahliae* and *V. albo-atrum*; the former is responsible for most infections.

Chronic infection of Verticillium Wilt evidenced by many seeds, smaller leaves, die-out in canopy of tree, also excess bark growth that can sometimes be evidence of Verticillium Wilt. Photo by D. Hayes

As a soil-borne disease, the fungus, which is dormant when free in the soil, invades host or susceptible trees directly through the root system or through root, root-collar, or tree buttress wounds and remains primarily in the current year's growth. Trees grown on land formerly used for susceptible vegetable (e.g., potato, tomato), fruit (e.g., grape, raspberry), or field (e.g., mint, alfalfa) crops are at high risk for infection. Lab tests can estimate the population of *Verticillium* in the soil.

Once inside the tree, the fungus colonizes the xylem elements within the tree's vascular system via spores, produces toxins that kill cells, and obstructs the tree's ability to transport nutrients and water, thereby restricting flow to branches and leaves. The tree responds to infection by plugging some water-conducting vessels with gums and other materials to isolate infected cells to limit fungal movement in the tree. This further reduces water flow from the roots upwards.

Verticillium also grows through ray cells to penetrate deep into the secondary xylem. Hot weather increases the tree's water demands, and infected branches wilt and die—sometimes in a matter of days because symptoms can appear rapidly after infection. Early symptoms of *Verticillium* include heavy seed production, leaves that are smaller than normal, and browning of the margins of leaves. It may begin with a wilting of leaves on one or several twigs, but eventually the entire branch or crown will wilt as the disease spreads. Although it is possible for the entire tree to be affected at once, usually only a few branches are affected at a time. Acute foliar symptoms can range from chlorosis and necrosis (fading, yellowing, browning, wilting, drying, marginal or interveinal browning) and premature shedding on a single branch or one side of the tree's canopy. Other common symptoms are vascular staining and branch dieback.

Due to disruption of water and mineral transport to the affected branches and leaves, the symptoms appear similar to those caused by root disease, abiotic root damage (e.g., severing, crushing, or compaction), drought stress, and stem or branch cankering. In addition, chronic

symptoms resemble a tree in decline, namely, stunted growth, marginal leaf scorch, undersized and sparse foliage, heavy seed production, and branch dieback. Vascular staining—i.e., streaking within the vascular tissue (sapwood discoloration), which often accompanies external dieback symptoms (yellowing foliage)—that results from the disease is the best diagnostic symptom that can be used to determine whether additional testing to confirm the pathogen is necessary. However, keep in mind that staining is not always present on infected trees and shrubs. And as the pathogen is able to move through ray cells, staining may be present deep in the xylem tissue and not in the outer vascular tissue just under the bark (where vascular staining caused by Dutch elm disease is often seen).

Evidence of *Verticillium* wilt in the vascular tissue of the xylem. Black streaks show that the xylem is plugged with the fungus.
Photo Diane Hayes

Vascular staining in the wood under the bark of wilting branches is often discolored with olive-green streaks, but the color may range from yellow to brown, even black, depending on the host—in maple trees, the discoloration tends to be greenish, but colors range from gray-green to brown or black; in elms, brown; and in black locust and other trees, brown to black. The smallest branches may not exhibit discoloration.

The streaking may be scattered throughout a branch, if the tree has been infected for a long period of time, or it may be confined to new sapwood, indicating a new infection. Peeling back the bark of wilting branches may reveal streaked sapwood if the discoloration has spread up into the smaller branches. Since discoloration may also be caused by other factors, it is advisable to bring suspect branch samples from wilting trees to our Garden Clinics or Extension Office for accurate diagnosis. Samples should be six to twelve inches long and about thumb-size in diameter.

One of the most interesting features of *Verticillium* is its ability to produce thick-walled viable fungal cells, called microsclerotia. These are very small, black-colored resting structures that resemble a small seed. Once *Verticillium* has caused disease, microsclerotia are produced within a variety of dead plant parts, including roots, stems, and leaves. They allow the pathogen to overwinter in dead plant tissues and, when produced in the soil, allow the fungus to persist for many years at the site. When infected leaves and stems fall to the ground, the fungus can also grow into the soil to overwinter. Contact between neighboring healthy roots and dead diseased roots can allow *Verticillium* to spread locally. Overland spread can occur when infected leaves are dispersed away from an infected tree by wind. In addition, *Verticillium* can infect several resistant weedy plants and create new microsclerotia without ever causing any above-ground symptoms. Therefore, once the fungus is established at a site, it can remain there indefinitely.

Verticillium is widespread in forest and landscape settings, yet disease incidence remains relatively low, which indicates that many plants are able to resist the pathogen when attacked. The impact of the disease depends on the inherent susceptibility of the tree or shrub, environmental stress (especially drought and root damage), and the virulence of the pathogen. Maintaining high tree vigor is essential, since the tree's natural defense response may be able to compartmentalize the infection. For this reason, the final section of this article will list the measures one can take to ensure tree vigor.

Although large trees may survive for years with minor symptoms, it is not unusual for an infected tree to be killed within two to three years. Some cultural practices can help to prolong the life of infected trees in the landscape. When a tree exhibits mild symptoms, to maintain vigor, prune out wilted and dead branches, water during drought, fertilize with ammonium sulfate, as recommended by Virginia Tech, as the sulfur part of the fertilizer can be used as an anti-fungicide against the disease (call or email our Help Desk for details), and mulch correctly, as explained below, both to retain water and control weeds that compete with the tree for nutrients.

This red maple tree has *Verticillium* wilt. Xylem level of the vascular system of the tree is plugged, which shows in the evidence of the trunk swelling because of excess water within the tree. Photo by Diane Hayes.

Pruning reduces inoculum and improves the appearance of infected trees and shrubs by removing dead shoots and branches. It is important to disinfect pruning tools between cuts with a ten percent household bleach solution or rubbing alcohol to discourage further spread of the disease. Keep in mind, however, that pruning does not eliminate *Verticillium* from the plant since infections first establish from the roots. Because this disease lingers in the soil for many years (and can do so indefinitely), and because the fungus is soilborne and remains within an afflicted tree's roots, fungicides very often have little to no effect. An infested soil area can be fumigated by a licensed pesticide applicator to reduce the amount of *Verticillium* in the soil, but it will not be totally eliminated. Research has shown that different populations of the fungus vary greatly in their sensitivity to benzimidazole fungicide when injected into trees. While some populations of *Verticillium* are killed, others found in nature could tolerate concentrations of the fungicide higher than a tree treated with benzimidazole would be exposed to. Thus, whether benzimidazole tree injection will protect a tree cannot be predicted.

Never use wood chips taken from a *Verticillium*-infected tree as mulch or as a potting medium, even after composting because of the possible survival of the fungus in the chips.

All in all, very little can be done for diseased trees other than pruning out infected branches and keeping them as healthy as possible by irrigating regularly during extended dry periods and mulching the soil under the tree correctly—not heaped like a volcano, but like a doughnut (i.e., wide, not deep), three inches away from the trunk, at least three feet in diameter, and no more than three to four inches deep—to reduce tree stress. These measures do not have direct impacts on the pathogen itself, but they serve to enhance the tree's ability to resist infections. Some trees may recover.

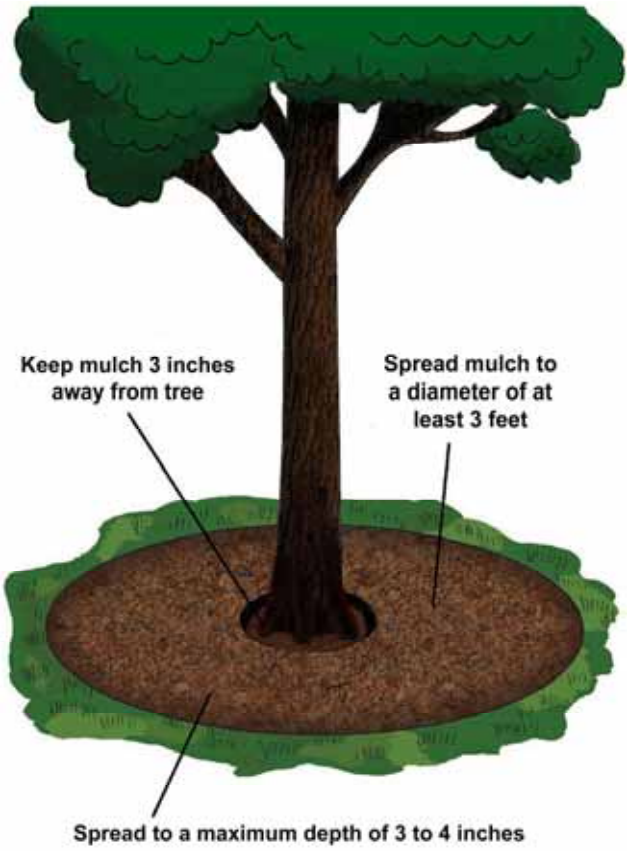
Do not replant susceptible species where a specimen has been killed by *Verticillium*. Use of resistant trees and shrubs (those that tend, generally, to be non-hosts of this disease) as replacement for those badly infected with *Verticillium* is often the only viable strategy in landscape settings. A selected list of resistant trees and shrubs include: apple and crabapple (*Malus*), beech (*Fagus*), birch (*Betula*), boxwood (*Buxus*), dogwood (*Cornus*), hackberry (*Celtis*), hawthorn (*Crataegus*), hickory (*Carya*), holly (*Ilex*), honeylocust (*Gleditsia triacanthos*), katsura (*Cercidiphyllum*), linden (*Tilia*), mountain-ash (*Sorbus*), white and burr oak (*Quercus*), pear (*Pyrus*), aspen/poplar (*Populus*), sycamore/planetree (*Platanus*), sweetgum (*Liquidambar*) and walnut (*Juglans*). Other trees with good resistance are arborvitae (*Thuja*), firethorn *(Pyracantha),*

ginkgo *(Ginkgo)*, hornbean *(Carpirus)*, juniper (*Juniperus*), Mulberry *(Morus),* pawpaw (*Asimina triloba*), and willow (*Salix*). All conifers--including yews (*Taxus*) and larches (*Larix*) are also resistant to *Verticillium*. Resistance does not imply immunity; therefore some of the plants listed here could be susceptible to infection.

Trees provide great benefits in terms of wildlife habitat, riparian buffers, native woodland restoration, windbreaks, watershed protection, erosion control, conservation, and timber production. But they are susceptible to and can die by diseases. These diseases can affect the establishment, growth, and quality of the trees. Planting a mixture of tree species will help create a diverse community that could better withstand outbreaks of disease and help minimize the risks associated with growing single-species plantings. Healthy, vigorously growing trees are generally more capable of surviving diseases. Proper site, species selection, planting, maintenance, and protection have significant impacts on tree establishment, growth, vigor, production, and esthetic, economic, and ecological value. New outbreaks of disease will arise and subside over time. The Loudoun County Master Gardener Tree Stewards can help educate you on Tree Best Management Practices. Please contact us directly at TS@loudouncountymastergardeners.org or through our Loudoun County Extension Master Gardener Help Desk at: loudounmg@gmail.com.

Loudoun County Extension Master Gardener Tree Stewards

Proper Tree Mulching



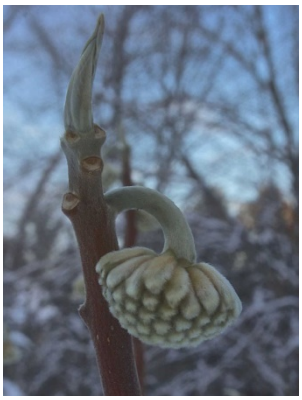
Edgeworthia chrysantha

Spring is the time when our senses come alive after a long winter's nap! But why wait for March when there is a shrub that starts blooming in January, emitting an enchanting spice-like fragrance? *Edgeworthia chrysantha*, commonly called paperbush, provides a fascinating addition to the winter garden and can remind us on the dreariest and coldest of winter days that spring is on its way.

Young shrub. Photo courtesy of U of Arkansas Extension.

My introduction to paperbush came on a cold February evening in a floral design class at Northern Virginia Community College. A classmate brought in branch cuttings of paperbush, and the room was instantly filled with a light, lovely spice fragrance. At the end of the leafless cinnamon-colored branches were tassel-like blooms composed of multiple orangey-yellow tubes that gave the appearance of being woven from silk. The blooms were so unique that my mind began spinning as to how to highlight them in the floral design for that evening's class. Even more so--as many gardeners can appreciate—I began thinking of where I could grow a paperbush in my back yard! This was a "must have" focal plant to increase winter interest in my garden.

Edgeworthia chrysantha is a deciduous shrub, native to China, Nepal, and Japan. It acquired the name of paperbush from its use in making Japanese bank notes. It is now used in calligraphy paper. Found along stream banks in China, the shrub grows best in a humus-rich, moist, well-drained soil. In this country, it grows in USDA zones 7 through 9 and thrives in partial shade. A review of horticultural articles indicates a wide range of how large the shrub can be at maturity, ranging anywhere from four to seven feet in height with a similar spread, to some as tall as eight feet tall and ten feet wide. It has no known pests or diseases.



Flower bud. Photo Nate Simms.

Paperbush is a slow-growing multi-stemmed shrub with a nice rounded shape that rarely requires pruning. It does produce suckers, which should be pruned in late winter. Flowers bloom on the previous year's wood, so care should be taken to make cuttings while in bloom or shortly thereafter. The lanceolate leaves (approximately five to seven inches long) have a blue-green cast in the spring, turning greener in the summer and yellow in the fall. In September and October, the leaves drop to reveal the silver, fuzzy flower buds. Depending on the variety, the flowers range in color from pale yellow or cream to orangey-yellow.

Flower. Photo by Tanaka Juuyoh.

This is a versatile shrub that can be used in a number of settings in the garden. Paperbush lends interest to woodland gardens or can be added to a border or planted in masses. It makes a unique container plant, which when placed close to the front door or on a patio, allows visitors to view the unique blooms close up, as well as take in the intoxicating scent. My garden plan for this spring includes the addition of a paperbush as the end of my front walk. Now all I have to do is wait for next February!

Jan P. Lane, Loudoun County Extension Master Gardener

The Garden of Good and Ego, Part Two

My husband and I love animals. It doesn't matter if they are wild or domesticated. Everyone is welcome. When we moved to our ten-acre farm that includes ten thousand square feet of gardens, we knew we would have to come up with a plan that would enable us to live in harmony with the fox, the rabbits, the turkeys, a herd of deer, and an abundance of wild backyard birds of all sizes.

While we respect nature's rhythmic balance between wildlife prey and their predators, our goal is to offer a safe refuge to every animal that chooses to share our farm. This is not to say that we are unaware of the danger of a fox killing one of our indoor cats, or of our cats terrifying a rabbit or killing a bird. For the cats' safety, when they venture out well after sunrise to observe the slightest change in their territory around our house, one of us stays with them.

With wildlife, when we experience the joy and privilege of catching a glimpse of a newborn fawn whose coat is still damp from its birth, or a rabbit returning to its hiding place, we do so at a distance. We don't feed wildlife, nor do we allow animals to destroy the gardens close to our house. These are our No-No gardens.

Whether human to human, or animal to human, healthy relationships require compromises that benefit all participants. I saw how much time and energy I had wasted protecting our back gardens from grazing deer and rabbits, and I had deprived them of the opportunity to utilize the mature shrubs and trees for safety, rest, birth, sleep, and nourishment with few environmental or aesthetic consequences. By allowing grazing in some areas and consistently adding or subtracting a cornucopia of physical deterrents around and in the No-No gardens, I made life easier and more harmonious for us all.

When animals are constantly exposed to new restrictions that make them uncomfortable, they will take the path of least resistance and move on to places where there are none. This is why I add and subtract disincentives several times a year in our No-No gardens:

All photos by Jeanne Eck.

- One year I strung new CDs with clear fishing line and hung them from bushes and trees. I also scattered them on the ground in the No-No gardens. When there is a breeze, they sway in the wind. When there is sunlight, they reflect moving rainbows of light that startle the wildlife.
- Last year, I ordered two nearly life-size black metal cats from a catalog. I move them around when necessary. Right now, they guard the entrance to two special perennial gardens. Because they look so realistic and their marbled eyes reflect any light both day and night, the deer are so wary of them that they stay away.

- The smell of garlic cloves scattered in each garden and at the base of flowering shrubs is loathed by rabbits, squirrels, and deer. The cloves do create new plants, but the foliage

smells like garlic and can also be used in place of scallions for cooking. Sometimes I harvest the garlic bulbs they create, divide them, and toss them back into the garden.

- This year we're planning to grow French marigolds from seed in every garden. Their odor has the same impact as garlic, and as a bonus, their bitter fragrance deters many destructive insects.
- Each spring, we place solar-powered ultrasonic animal deterrent stakes in the ground. (It has to be warm outside or they will freeze and not work again.) They vibrate and emit a low-frequency alarm that startles deer and rabbits.
- Last, but not least, I make batches of stinky solution that repels rabbits and deer and keeps them from grazing so effectively that it can be applied to the perimeter of a garden rather than to each individual plant. If it rains, you will need to reapply.

To make two gallons of stinky solution, in a blender combine:

3 raw eggs

1 whole garlic bulb (Take off the white paper around the whole bulb, separate the cloves, but don't bother to peel them.)

¼ cup of cheap hot sauce

Puree everything in a blender until the garlic is chopped fine.

Divide the mixture into two gallon containers; then add warm water to fill. The solution will foam a bit so you won't be able to fill the containers completely. Cap the containers and put them outside to ripen in the sun for about three days. Before using, add enough additional water to fill each container to the top. Shake, remove the top, and swing the container forward to release the contents over a wide area. It will smell for a day or so unless you have inadvertently created the mother of all deer repellents as I did.

Since stinky solution is great to use year round, I brewed enough for every No-No garden and placed the containers near a baseboard heater to ferment. Because we had so much rain, which would have immediately washed the stinky solution away, the containers sat for several months. When I finally took my stash outside to apply to our sleeping gardens, the scent was so strong that the deer didn't come near the house for several weeks. However, three black vultures arrived immediately and posted themselves on top of a decorative urn and in trees adjacent to our best gardens. The next day, when they still could not locate the carcass they sought, they left.

I now keep stinky solution away from indoor heat!

Jeanne Eck, Loudoun County Extension Master Gardener

Plant Oddities: Dodder (Cuscuta)

If you routinely travel between Lovettsville and Purcellville, you might have noticed a bright orange plant growing on the roadside last summer. That was dodder, a parasitic plant that is related to morning glories. The color can be yellow, orange, or red, so it contains no chlorophyll. It gets nourishment through specialized roots (haustoria) that penetrate the host plant and transfer water and carbohydrates to the dodder. Dodder goes by many other names including angel hair, beggarweed, hairweed, fireweed, and strangleweed. It is commonly found in full sun.

Photo by Betty Hedges

More than 170 known species of dodder grow in temperate and tropical regions. It is killed by frost, but it produces thousands of seeds that can sprout in the spring. It is a serious pest in tropical regions where it can kill trees and shrubs and reduce crop yields. In our climate, it is a parasite of soybeans, alfalfa, clover, and potatoes, but it does not grow on monocots such as small grains and maize (corn). It also spreads plant viruses such as the cucumber mosaic virus and tobacco etch virus. If eaten by cattle and horses, it can cause symptoms of colic.

Since dodder is a vine, it can grow very quickly because it does not need to have a support structure. A single dodder plant has been known to grow more than 2,000 feet of stems in a season! It has inconspicuous leaves and tiny yellow or white flowers growing in clusters. The flowers are pollinated by wasps. Dodder seeds—each about the size of a sesame seed--can live for five years or more under the right conditions. Once the seed germinates, it searches for a host plant using chemosensory clues. If it cannot find a host within ten days, it will die. Once it attaches to the host, the stem connected to the ground dies. The dodder twines around the host plant and firmly attaches by way of suckers.

The stems of some species of dodder are used in traditional medicine to make a bitter tea to treat problems of the urinary tract, spleen, and liver. In Chinese medicine, the seeds are believed to have healing qualities. The medicinal value of dodder is still being investigated, but it is believed to have antioxidant properties (destroys free radicals).

Dodder can be controlled by spraying with glyphosate or hand-pulling. However, the haustoria are firmly attached to the host plant with suckers and may resprout even when the main vine is removed.

Betty Hedges, Loudoun County Extension Master Gardener

Recommended additional reading:

https://vtnews.vt.edu/articles/2018/01/cals-parasiteplantwarefare.html.

http://www.indefenseofplants.com/blog/2015/9/30/a-dose-of-dodder.

http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/pests-and-problems/weeds/dodder.aspx.

Why Do We Keep Bugging You About Spotted Lanternfly?

The *Trumpet Vine* has previously published two articles about the spotted lanternfly (SLF):

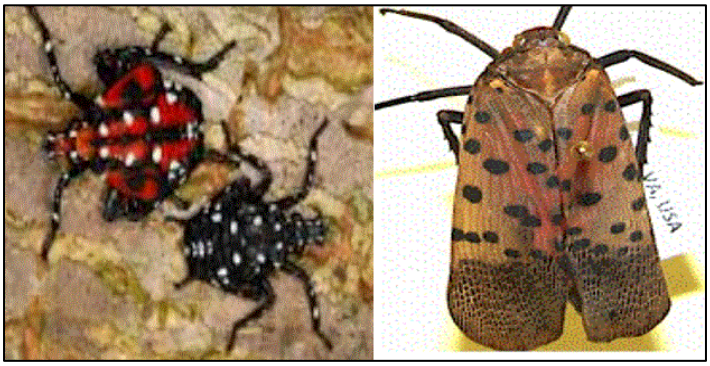
- Summer 2018: *A New Danger to Crops in Virginia: The Spotted Lanternfly*
  [Discussed Risks, Preferred Plants, Life Cycle, Signs of Infestation]

- Fall 2018: *Spotted Lanternfly Control*
  [Discussed Virginia Sighting, Egg Mass Scraping, Tree of Heaven]

We keep bugging you because as gardeners and naturalists we believe you are out and about in your own gardens, yards, parks, garden centers, community, and hiking trails.

We are asking you to keep an eye out for nymphs and adults in areas around tree-of-heaven starting in May and lasting through December.

Reports of possible sightings this spring or summer are critical to help control further SLF spread in Virginia.



If you see SLF, report it to:
VCE Loudoun County Office
750 Miller Dr. SE, Suite F-3
Leesburg, VA 20177-7000
M-F: 9–5
VCE: 703-777-0373 or
Help Desk: 703-771-5150
Email: loudounmg@vt.edu

Expect to:
Take a close-up picture of insect, tree, and/or plant.
Collect the insect(s) in plastic zip-lock bag with rubbing alcohol.
Identify your contact information and location detail for follow-up.

VCE is required to confirm if it is SLF and report it to the Virginia Tech Entomology Lab and the Virginia Department of Agriculture and Consumer Services (VDACS).

So why do we think SLFs will love landing in Loudoun County?
Loudoun County has a large population of tree of heaven (*Ailanthus altissima*), black walnut (*Juglans nigra*), maples (*Acer Spp.*), and cherry (*Prunus Spp*.) plus all our woody shrubs and plants. Plus, don't forget other SLF favorites: grape vines, hops, stone fruit, and apple trees…oh my.

If you need help to identify tree of heaven or other trees, it's easy (and free): Download the **VA Tech Tree ID** mobile app to your smart phone.

There has been speculation that this is the worst insect (if you exclude the gypsy moth) to hit the Mid-Atlantic in 150 years. VDACS has estimated the potential risk to Virginia is $10 billion. USDA has announced $10 million for research in 2019. As the following picture illustrates, it has already been identified in 7 states and 22 counties, and it has only been in the United States less than five years.

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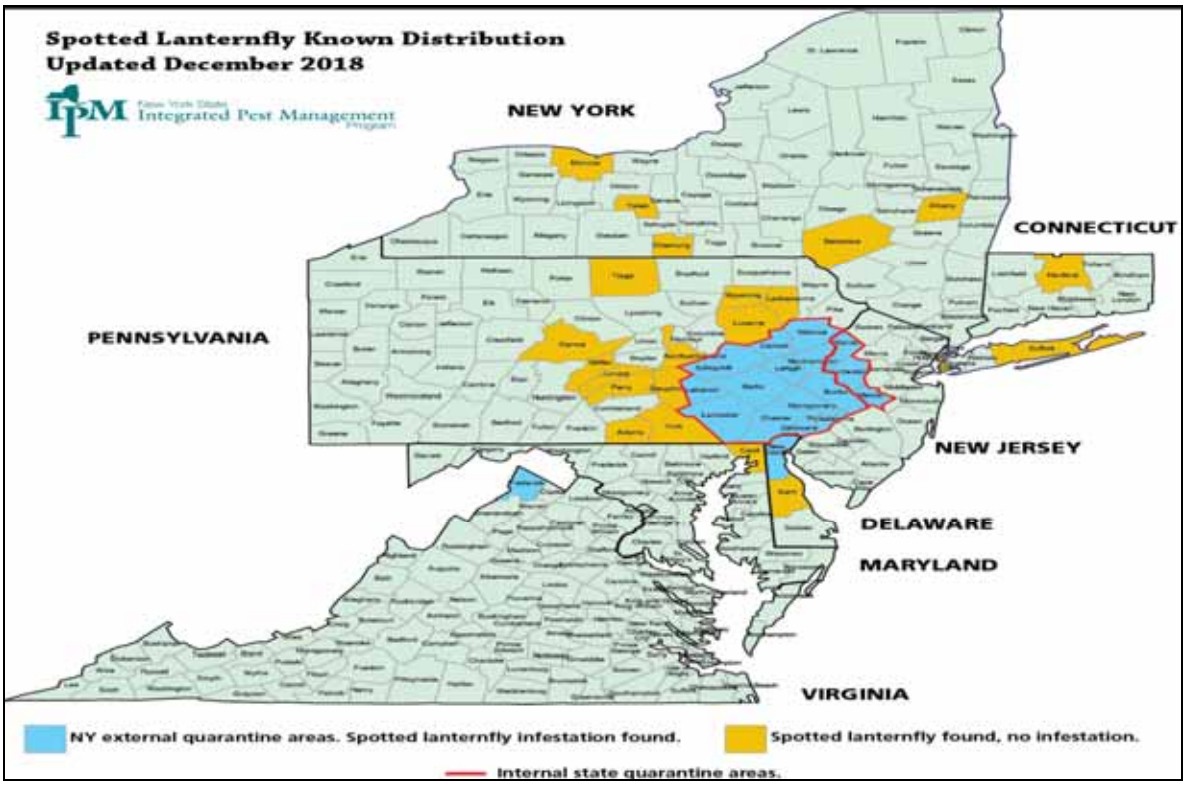

If you are planning to travel this summer to any of these quarantine areas, it is a good practice to not park under trees and to inspect your vehicle for SLF hitchhikers before you leave. Questions? The Extension Master Gardener Help Desk contact information is listed below in the footer.

Beth Sastre, Loudoun County Extension Horticulturist

Becky Hutchings, Loudoun County Extension Master Gardener

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Time for Spring Cleaning

The date range for the last frost in our area according to the National Oceanic and Atmospheric Administration (NOAA) and the *Farmers' Almanac* is around May 1, so it is not too early to start thinking about your plans to clean up your flower garden for the spring. One consideration for homeowners is to wait until the temperature is consistently 50°F. Many beneficial insects that have been hiding during the winter in your garden debris may still be asleep. If you disturb the insects too early, they may not survive. If you want to provide your garden with natural pest control, encourage pollination, feed birds, be patient, and wait until it is warmer so the insects have a better chance of survival.

A few suggestions may help homeowners with their spring cleaning while helping our pollinators and beneficial insects as well.

1. When you see new growth at the base of a perennial, prune the plant down to ground level. Then tie together four to six hollow stems and lean the bundle up against a fence or tree. That way any insects hibernating inside the stems will still be able to emerge once it is warmer. Other insects may use the hollow stems as nesting areas throughout the spring and summer.
2. For perennials that retain their leaves all winter like Heuchera and bearded iris, trim back just the tattered foliage. Leave a pile near your flower bed until the weather warms up and the insects have emerged.
3. Remove winter mulch and leaves from around the stems, crown, and base of the plant. New plant growth will be able to emerge while you are waiting for the insects to wake up from their winter sleep. However, avoid working in the garden while the soil is wet to prevent soil compaction, which can prevent plants and insects from emerging.
4. Avoid tilling the flower bed. Tilling disturbs the soil structure, insects, and perennials that have self-seeded.
5. Test your soil before adding fertilizer. Your soil may need only a layer of compost or manure instead of chemicals that could harm hibernating insects.
6. While the soil is moist, do some proactive weeding. Wait on mulching until the temperature is consistently warm and the new insects have emerged. You don't want to smother insects or seedlings.

Taking these simple steps will encourage new spring growth in your garden while preserving natural wildlife that plants and birds need. With a little bit of patience and consideration, spring cleaning can be refreshing and not destructive for plants and insects.

Beth Checkovich, Loudoun County Extension Master Gardener