May 2021-Vol.7, No.5

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May Tasks in the Ornamental Garden

By Susan Martin | May 2021-Vol.7, No.5

“I thought that spring must last forevermore;
for I was young and loved,
and it was May.”
—Vera Brittain

Fringe tree (Chionanthus virginicus) Photo: Melissa McMasters, Wikimedia Commons (CC BY 2.0)

The merry month of May, sometimes called the merry, merry month of May, is a wonderful time for gardeners. We have all that pent-up enthusiasm for digging in the dirt once again. Even weeding seems less of a chore. What should we do between Mother's Day and Memorial Day to nurture the promise of May?

- Have fun with color! Plant warm-season annuals such as marigolds, zinnias, gomphrena, angelonia, and coleus.
- Look for drought-resistant plants that will ease watering duties once the hot, humid mid-summer arrives. Candidates include: catmint (*Nepeta*), purple coneflower (*Echinacea purpurea*), lambs ear (*Stachys byzantina)*, yarrow (*Achillea millefolium*), goldenrod (*Solidago*), black-eyed Susan (*Rudbeckia)*, sneezeweed (*Helenium*), and hyssop (*Agastache*).
- **Try a new native plant** for either sun or shade. Use **locally-native** plants that attract the most caterpillars to your landscape. The Native Plant Finder (By Zipcode) is a terrific online source for identifying these "keystone" native plants. For more information on this idea, see "A Year in New-Home Landscaping and What I've Learned," *The Garden Shed* (March 2021).
- Sow seeds directly outoors. Candidates include: zinnia, cleome, cosmos, marigolds, morning glory, and sunflowers. When the plants reach 4-6" in height, pinch them back to promote bushier growth and increased flowering.
- Plant summer bulbs such as caladium, dahlia, canna lily, and elephant ears.
- **If your area has a deer problem, use containers on a porch or deck** for plants that you enjoy but don't want to share with your white-tailed friends! Select a combination of different hostas, for example, or plant miniature roses.
- **Pull weeds when they are small and the soil is moist.** Know if weeds are annual or

perennial. Pulling annual and biennial weeds can be effective if they are pulled BEFORE the plants go to seed. If weeds are too stubborn to pull without disturbing the soil, cut the tops off and apply an herbicide with a small brush to the cut stem. In established flower beds, weeds will be weakened by repeated cutting and lack of sunlight in crowded conditions under a taller plant canopy. **Visit this publication** for help with weed identification.

- Apply a 2-3" layer of **mulch** over the **perennial bed** in mid- to late spring, or when the ground warms and the soil has dried out from winter moisture. Mulch will help retain moisture and suppress weeds. Increase the density of garden plantings to reduce bare spots where weeds can take hold.
- Be aware of rain levels; **provide adequate water** for new bushes, trees, perennials, seedlings, and plants that have been divided or moved.
- **Harden off seedlings** for about 1-2 weeks before planting outside. Place seedlings in a protected spot outdoors (partly shaded, out of the wind) for a few hours each day, bringing them in at night. Gradually expose them to more sunshine and wind. Keep the soil moist at all times during this period.
- Snap off spent daffodil heads but do not remove the foliage; let the foliage brown as it stores food for next year's flower production.
- *Plan ahead by pinching back* — **pinch back chrysanthemums and asters** to promote bushy growth; pinch back by about 1/3 in May, and once more before mid summer. July 4th is often used as an easy "cut-off" guideline for when to stop pinching back.
- **Move houseplants outside** into a shaded area once the danger of frost has passed and nighttime temperatures have stabilized to at least 50 degrees F. Gradually introduce the plants to more sun so that the bright sunlight doesn't burn the foliage. Don't forget to water!
- **Start a habit of insect and disease patrol.** Check leaves for insect damage, slug holes, Japanese beetle skeletonization, and signs of fungus.
- If you need help with identifying plant diseases or insect damage, and need advice about what to do, call the **Piedmont Master Gardeners Help Desk at 434-872-4583 to speak with a Master Gardener volunteer or send an email to** albemarlevcehelpdesk@gmail.com. Office hours are Monday through Friday, 9:00 AM – 12:00 PM. The VCE Office is still currently closed to the public with hopes of reopening in mid-May. You can email photos of samples or drop them off outside our office for a Master Gardener to review. Visit our **Help Desk** page for more information.

FERTILIZING SHRUBS AND TREES

Many trees and landscape plants require little or no fertilizer once they are established and mature. When over-applied, fertilizers may aggravate insect and disease problems and force excessive growth which must be mowed or pruned. Excess fertilizers can run off yards into waterways or seep into aquifers, polluting drinking water.

The decision to fertilize should be based upon the health of the plant, the desired rate of growth, and a soil analysis. A soil analysis will tell you the soil pH and the amounts of nutrients in the soil that are available for plant growth. Soil pH affects the availability of nutrients in the soil. When fertilization is indicated by a soil test, you can then select a fertilizer that provides the nutrients that are lacking in the soil. Use slow-release fertilizers. Buy fertilizers that contain 50% or more of the nitrogen in slow-release forms. See "A Fertilization Primer: Plant Needs, Fertilizer Choices and Application Tips," in the April 2021 issue of *The Garden Shed*.

SPRING PRUNING CONTINUES

Wait to prune until AFTER all flowers have faded. Examples of bushes to prune in May include: azalea (deciduous and evergreen), daphne (*Daphne audora)*, fothergilla, forsythia, spring-blooming hydrangea, lilac, pieris (*Pieris japonica*), spring-blooming spirea, serviceberry (*Amelanchier* spp.), viburnum (deciduous and evergreen), pussy willow (*Salix discolor*), and spring-blooming witchhazel *(Hamamelis vernalis). Hamamelis virginiana* is a late-fall bloomer pruned in early spring.

If you're wondering about the right time to prune a particular shrub, consult the **Shrub Pruning Calendar** published by the Va. Cooperative Extension, Coop.Ext. Pub.No. 430-462. For detailed instructions on **how to prune shrubs**, review Va.Coop.Ext. Pub. No. 430-459, and be sure to read A Pruning Primer/Garden Shed 2020.

MAY IS THE MONTH TO REMOVE INVASIVE SEEDLINGS

This information is provided by Blue Ridge PRISM (Partnership for Regional Invasive Species Management), 4/24/20.

The current weather pattern of intermittent rainfall (and, therefore, moist soil) has created ground conditions that are ideal for hand-pulling invasive plants. The key to hand pulling is being sure that you remove all or most of the roots, such that there is so little of the root system left in the ground that it cannot support regrowth.

Suitable targets are **small, young sprouts** of the following plants: English ivy (*Hedera helix*), climbing euonymous (*Euonymous fortunei*), Japanese honeysuckle (*Lonicera japonica*), Oriental bittersweet (*Celastrus orbiculatus).* Shrubs: Japanese barberry (*Berberis thunbergia),* multiflora rose *(Rosa multifora),* autumn olive *(Eleagnus umbellata),* Chinese privet *(Ligustrum sinense),* wineberry *(Rubus phoenicolasius).* Trees: Bradford Pear/Callery pear *(Pyrus calleryana).* Herbs: garlic mustard *(Alliaria petiolata).*

For **photographs of each of these invasives and a description of how to pull weeds effectively**, see this **LINK** from Blue Ridge PRISM.

THE TICKS ARE ACTIVE

In Virginia, the **lone star tick** (*Amblyomma americanum*) and the **American dog tick** (*Dermacentor variabilis*) are most active in May/June. Lone star ticks are found mostly in woodlands with dense undergrowth and around animal resting areas. The larvae do not carry disease, but the nymphal and adult stages can transmit pathogens causing monocytic ehrlichiosis, Rocky Mountain spotted fever and 'Stari' borreliosis. The lone star tick may also cause Alpha-gal syndrome, a type of food allergy to red meat and other products made from mammals. Female lone star ticks are easily recognized by a single white dot in the center of a brown body, with the males having spots or streaks of white around the outer edge of the body.

American dog ticks carry the rocky mountain spotted fever agent, and they can transmit it in the first few hours of attachment. Fortunately, the percentage of ticks carrying the agent is low, 1/1000 or 1/500. They can also transmit the disease tularemia. Adult males and females are active April to early August, and are mostly found questing in tall grass and low lying brush and twigs. Studies in Virginia found that when acorn crops are highest, mice and deer populations explode; soon after, the number of ticks and incidence of Lyme infection also soar.

When gardening, wear long pants and socks and make sure your pant bottoms are tucked into boots or socks or somehow fastened around your ankles. Wear long sleeves and tuck shirts into pants. Wear light-colored clothing, and check yourself carefully. See this **LINK** for a seasonal table of ticks in Virginia and tick-borne illnesses, as well as prevention tips. Also refer to *The Garden Shed* article, "Managing the Tick Problem."

SOURCES

Past May issues of *The Garden Shed:* 2020, 2019, 2018, 2017, 2016.

"Monthly Garden Tips – May," Piedmont Master Gardeners, https://pmgarchives.com/gardening-questions/monthly-gardening-tips/#May

"Gardening by Month – May," Missouri Botanical Garden, https://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/gardening-by-month/may.aspx

"Common Turf Weeds," Virginia Cooperative Extension, https://www.pwcgov.org/government/dept/vce/Documents/Common%20Weeds.pdf

Native Plant Finder (By Zip Code, ranked by the number of butterfly and moth species that use them as host plants for their caterpillars), https://www.nwf.org/nativePlantFinder/plants

"A Year of New-Home Landscaping and What I've Learned," *The Garden Shed* (March, 2021), https://pmgarchives.com/article/a-year-of-new-home-landscaping-and-what-ive-learned/

"Be Wise When You Fertilize," Clemson Cooperative Extension, https://www.clemson.edu/extension/carolinayards/yard-actions/be-wise-fertilize.html

"A Fertilization Primer: Plant Needs, Fertilizer Choices and Application Tips," *The Garden Shed* (April, 2021), https://pmgarchives.com/article/a-fertilization-primer-plant-needs-fertilizer-choices-and-application-tips/

"Alert: Act Now – Pull Out Invasive Seedlings," Blue Ridge PRISM (Partnership for Regional Invasive Species Management, 4/24/20 https://mailchi.mp/blueridgeprism/pullthoseseedlings?e=[UNIQID]

"Ticks and Tick-borne Diseases of Virginia," Virginia Department of Health, https://www.vdh.virginia.gov/content/uploads/sites/12/2019/08/Tick-borne-Disease-in-Virginia-Flyer-8.5-x-11-format-for-website-.pdf

"Managing the Tick Problem," *The Garden Shed,* (March, 2019), https://pmgarchives.com/article/managing-the-tick-problem/

Feature Photo: Flame azalea (*Rhododendron calendulaceum*), Jane Bald, Wikimedia Commons (CC by 2.0)

The Edible Garden in May

By Ralph Morini | May 2021-Vol.7, No.5

May is here and we are starting to think about planting summer vegetables. Eager planters enter the lottery of predicting the last frost. Here in hardiness zone 7a, ***average*** last frost date is April 15-25. “Average” is the operative word. Take last year for example. After a warm winter and spring we had a couple of surprise frosts in the second week of May, requiring us to scurry around and cover early tomato transplants. Keeping an eye on the long-term forecast is definitely advisable, given the weather variability in our region.

In fact, soil temperature is equally critical for reliable seed germination and transplant health. Cool-weather crops like spinach, lettuce, greens, peas, onions, and root crops need soil temperatures in the 35-40 degree range. Actually, 80 degrees is the optimum temperature for germination but these crops don't grow well in the heat, so we compromise. Starting seeds indoors and transplanting all except root vegetables (which don't transplant well) is the most efficient practice.

"Soil thermometer" by John and Anni is licensed under CC BY-NC-SA 2.0

Warm-weather crops including tomatoes, corn, and beans need at least 55-degree soil. Peppers, cucumbers, melons, and sweet potatoes want at least 60 degrees and eggplants need at least 70 degrees. Planting too early risks seed rotting prior to germination as well.

You can test soil with a soil thermometer, available at most garden shops. Poke the thermometer about 2 ½ inches into the soil. Since soil temperature will vary throughout the day and night, a good average is found between 10 and 11 am. Again, it's good to check the upcoming weather to be sure there isn't a cold snap on the horizon.

Eager planters may already be harvesting radishes, peas, and a variety of greens. Good for you! Planting cool-weather vegetables now requires looking at days to maturity. There's no sense starting crops now that won't tolerate the warmer weather of summer. We are at or near the end of planting time for beets, carrots, broccoli, cabbage, onions, and many greens intolerant of heat.

For a detailed **list of recommended planting times** for vegetables in Hardiness Zones 6 and 7, check out Extension Publication 426-331, Vegetable Planting Guide and Recommended Planting Dates.

Photo: "First Asparagus Spear!" by mrwalker is licensed under CC BY-NC-SA 2.0

If you have a mature asparagus patch, you are likely harvesting fresh spears now. If want to start to grow asparagus, it's too late to plant this year. To be sure you get it right next year, check out the good advice in Growing Asparagus in Home Gardens from the University of Minnesota Extension and make a note for next year. Keep in mind that the Virginia Piedmont is about 2-3 weeks ahead of Minnesota for planting and harvesting, but the rest of the advice is right on.

Other tips for May vegetable gardening in our area:

Tomato transplants are ready to be placed in the garden when they have 5-7 leaves. When transplanting tomatoes, place two-thirds of the plant below the soil surface. Pull leaves off the bottom two-thirds of the plants and either dig the planting hole deep enough to stand the plant up or lay the underground stem section on its side. Tomatoes will add roots underground and build a stronger root system if planted this way. When **choosing your tomato varieties** consider determinate types that ripen within a narrow time period if you are a canner and want a single harvest. Indeterminate varieties will provide a steady supply of ripening fruits until frost, if well cared for.

Tomato transplants. Photo R Morini

Eggplants like 80 to 90 degree temperatures and plenty of water. It's best to water them thoroughly twice a week during dry periods.

Speaking of moisture, **beans, peas, and other legumes** that fix soil nitrogen produce fewer, smaller root nodules when water stressed. It is important to keep them well-watered.

Extend your harvest season by planting sweet corn and beans every two weeks through the end of June. An alternative with corn is to plant early-, mid-, and late-maturing varieties at the same time.

Missing corn kernels on your corn ears? This may be the result of **poor pollination**. Sweet corn is wind-pollinated. Pollen from the corn flower has to reach every strand of silk on each growing ear to develop fully-kernelled mature corn ears. **Block planting in short rows** (3-4 rows or more) will pollinate more successfully than 1 or 2 long rows. For more information on growing sweet corn, take a look at Virginia Cooperative Extension Publication 426-405.

Keep your potatoes covered. The skins of potatoes exposed to sunlight will turn green. This green color comes from the pigment chlorophyll which is produced as a response to sunlight. "Green Potatoes" will often develop a bitter taste and may even become toxic. This can be prevented by covering the exposed potatoes by hilling-up dirt over them or covering them with straw mulch. For additional information on growing potatoes, see Virginia Cooperative Extension Publication 426-413.

To control weeds in the garden, **destroy them before they develop seeds**. Refrain from cultivating and hoeing deeply; this can cause damage to the shallow roots of your vegetables. Also, avoid using mulch or compost contaminated with seeds. For additional information on controlling weeds in the home garden, see Virginia Cooperative Extension Publication 426-364.

Fertilization is an important element in maximizing garden output. There are problems with over- and under-fertilizing, different impacts from synthetic and natural fertilizers, and soil health issues to consider. If you would benefit from more insight into fertilizer use, check out the article "A Fertilization Primer" in the April 2021 Garden Shed.

When **watermelons, muskmelons, squash, and cucumbers** are planted in a hill, **place a stick** upright in the middle of the hill and leave it there. Later in the summer when the hill becomes hidden by the vines, you will know where to water. You'll not only save time looking for the main root, but you'll save water as well.

When transplanting seedlings in **peat pots**, gently tear off the top inch of the pot; the upper edges of the pot should be covered with soil to avoid wicking water away from the soil surface. Wicking may reduce the amount of moisture available to the roots of the plant.

Where should I water? Photo: R Morini

If you are growing Cole crops, including cabbage, broccoli, cauliflower, kale, collards, or other greens, May will likely bring a variety of cabbage worms that can decimate your crop. Options for control include hand-picking, using an organic pesticide like Bt (*Bacillus thuringiensis*), or row covers. I have also had luck hanging decoys of cabbage moths above that area of the garden. The decoys appear to discourage territorial moths from laying their eggs in that location. For more information check out Garden Shed articles "OMG What's Eating the Broccoli" and "Row Covers: a Gardening Season Extender with Benefits". If you choose to try the non-chemical row cover technique, act quickly to get them in place before the cabbage moths arrive.

To preserve leftover seeds, store them in a sealed container and refrigerate them. Place a desiccant, such as a few layers of paper towels with 2 tablespoons of powdered milk folded up, inside the container to absorb moisture.

Compost Batch. Photo: R Morini

This is also a great time to **start a fresh batch of compost**. The warm temperatures will speed up decomposition if you keep the pile moist and aerated. Grass clippings and kitchen scraps become available as we begin mowing lawns and eating seasonal fruits and vegetables. If you've saved some leaves from last fall, you have what you need to create a good compost batch that will be ready for use this fall. Refer to Garden Shed article "Backyard Composting with Practical Tips from the Pros" for more details on composting.

If you are a fruit grower and want to add native plantings at the same time, give pawpaws a try. There is good advice for growing and eating pawpaws in the Garden Shed articles "Pawpaws: Resilient and Delectable Natives" and "Yummy Recipes With Pawpaws." Go native!

An ironic benefit of COVID restrictions has been a surge in edible gardening interest, for reasons ranging from food insecurity to relaxation. Let's hope those who started gardening in the past year have good luck and stay safe. Thanks for checking in and we will see you next month!

Resources:

"Vegetable Planting Guide and Recommended Planting Dates." Va. Coop. Ext. Publication No. 426-331, http://pubs.ext.vt.edu/426/426-331/426-331.html

"Sweet Corn," Va. Coop. Ext. Publication No. 426-405, http://pubs.ext.vt.edu/426/426-405/426-405.html

VA Cooperative Extension: May Tips: Vegetables
https://albemarle.ext.vt.edu/content/dam/albemarle_ext_vt_edu/files/hort-tip-sheets/5-14-veg.pdf

Soil Temperatures by Vegetable, K-State Extension:
https://enewsletters.k-state.edu/postrockdistrictfcs/2021/02/23/soil-temperatures-and-vegetables/

Upcoming Events

By Susan Martin | May 2021-Vol.7, No.5

The Nature of Oaks with Doug Tallamy

June 3 @ 7:00 pm – 8:30 pm

$15

7 p.m. online via Zoom. Admission $15. Register by June 1 to reserve your spot. With books like *Bringing Nature Home* and *Nature's Best Hope,* Doug Tallamy has reshaped how we think about our lawns and gardens and has inspired a movement to sustain nature's ecological riches in our backyards. In his latest book, *The Nature of Oaks,* he pays homage to native trees that "shine brighter than other plants in their contributions to biodiversity." Tallamy has been a professor in the Department of Entomology and Wildlife Ecology at the University of Delaware for some 40 years. In addition to his widely acclaimed books, he has produced more than 100 research publications. Join us June 3 to learn how adding oaks and other native plants to your home landscape is one of the best ways to help heal our planet.

See this LINK to register.

PIEDMONT MASTER GARDENERS
VIRTUAL VIA ZOOM AND FREE
GARDEN BASICS WORKSHOP: "TOMATOES AND TOMATO DISEASES"
Saturday, May 15
2:00 – 3:30 PM

Learn about growing tomatoes, their common diseases, and treatment.

Click HERE to fill out the registration form by 5:00 PM, Monday May 10, to attend this Garden Basics workshop. An invitation for this Zoom presentation will be sent to your email address on the morning of May 15th.

Although these workshops are free, registration is required. See this **LINK** for more information and to register.

HEARTFLAME GARDEN
OPEN TO VISITORS
650 Sandy Bottom Rd.
Near Elkton, Virginia 22827 (Adjacent to Shenandoah National Park)
Phone: (540) 298–8684
email: inanna@heartflamegarden.com

This three-season, breathtakingly beautiful garden stretches over 2 acres, and is open to the public free of charge. The garden owners, Inanna and Gabriel Garretson, ask that you call before visiting unless you plan on attending one of the **OPEN** days where everyone is invited without appointment. **Open days for May are three Sundays – May 2, May 9, and May 16 – from 10:am- 4:00 PM.** Please see this **LINK** for a list of the open days for the rest of the season, and look at recent photos of what's in bloom. This garden is amazing!

JEFFERSON CHAPTER, VIRGINIA NATIVE PLANT SOCIETY AND THE
IVY CREEK FOUNDATION
SELF-GUIDED WALKING TOUR AT IVY CREEK, ON SITE OR VIRTUAL
Ivy Creek Natural Area
1780 Earlysville Rd, Charlottesville, VA 22903
May 14 – May 29

A plant list is provided which has numbered the plants to correspond with the orange flags you find along the route of the walk. For an on-site walk, print this list and bring along a field guide to tell you about each plant as you find it. The plant list is also available at the Ivy Creek Kiosk. You may also choose to download a free Izi travel app through Play Store or iTunes onto your phone. (It is helpful to download the walk before you arrive so that you are not reliant on cellphone service.) **Please see this LINK for more information and for a plant list.** If you prefer to do a virtual walk from home, follow the tour on your home computer use this LINK for Izi travel: https://izi.travel/en/bc1e-may-2021-vnps-plant-walk-at-ivy-creek-natural-area/en.

We would love your feedback after you experience this walk—in whichever version you choose. Please feel free to contact catherine@ivycreekfoundation.org.

VIRGINIA NATIVE PLANT SOCIETY
STATE AND CHAPTER EVENTS

See this LINK for a listing of both virtual and in-person May events hosted by different state and chapters of the VNPS.

BLUE RIDGE PRISM (PARTNERSHIP FOR INVASIVE REGIONAL SPECIES MANAGEMENT)
INVASIVE PLANT WORKSHOPS: IDENTIFICATION AND CONTROL
WORKSHOPS VIA ZOOM

These seasonally-focused workshops will enable you to learn how to confidently identify and manage invasive plants. The **Zoom workshops contain the same content as in-person workshops except that the outdoor elements will be conducted when it is safe to do so.** See this LINK for general information on PRISM, research updates, invasive plant factsheets, and more.

Summer Invasive Species Workshops

Wednesday, May 26th (1:00 – 4:00 PM) REGISTER
Saturday, June 12th (1:00 – 4:00 PM) REGISTER
Thursday, June 24th (9:00 AM -12:00 PM) REGISTER

Free Quarterly Events
July 21 – **Invasive Warm Season Grasses** – REGISTER
October 21 – to be announced

GROW NATIVE SERIES – VIRTUAL
THE PLANT VIRGINIA NATIVES PARTNERSHIP*
LAST OF SIX LECTURES, "RIGHT NATIVE IN THE RIGHT PLACE," WITH JOHN MAGEE
Also Sponsored and Hosted by Lewis Ginter Botanical Garden and Blue Ridge PRISM
Tuesday, May 4
6:30 – 8:00 PM

Finding plants that will thrive under certain environmental conditions such as street side spaces, dry shade, rain gardens, small spaces, wet shade or near house/foundation plantings can be challenging. Learn how native plants are up to the task.

Although this series has started, registrations are still being accepted. See this LINK for more information and to register. Fee is $10. Look for information on another series to be offered this fall to help you continue your efforts and prepare for the winter.

*The Plant Virginia Natives Landscaping with Natives webinar series is coordinated and funded, in part, by the Virginia Coastal Zone Management Program through grants from the NOAA Office for Coastal Management to the Virginia Department of Environmental Quality.

LEWIS GINTER BOTANICAL GARDEN
1800 Lakeside Avenue
Richmond, Virginia 23228

See this **LINK** for visiting information with COVID guidelines; see the "What's in Bloom" monthly calendar.

CHARLOTTESVILLE AREA TREE STEWARDS
FREE Classes via ZOOM

"Tree Basics Class: Identify and Control Non-Native Invasive Plants"
Sunday, May 23
2:00-4:00 PM
REGISTER

"Tree Identification by Season: Summer"
Tuesday, June 15
7:00-8:30 PM
See this **LINK** for information on when class registration begins.

These virtual classes are free**,** but if you would like to attend, we ask that you register. After you register, you will receive an email with a Zoom link a few days before the class.

THE NATURE FOUNDATION AT WINTERGREEN
41ST ANNUAL SPRING WILDFLOWER SYMPOSIUM

“Wellness From the Forest”
Saturday, May 15 – Sunday May 16

This year’s event will be a hybrid model of both in person walks and virtual lectures. Topics covered by our leading experts share one commonality: the natural world has proven to be the key to our well-being. Presentations cover the wellness of the forest, acoustic archeology, and forest food for the soul and mind. There are lots of options! The majority of our programs will be virtual, but we will offer a few in person, socially distanced and masked walks led by Symposium instructors on Saturday, May 15.

Your registration allows you a playlist of programs for 30 days, so you don’t need to attend a particular weekend.

For more information, and to register, see this **LINK,** or call (434) 325-7451.

NATIVE PLANTS FOR SALE AT THE NATURE FOUNDATION AT WINTERGREEN GREENHOUSE
725 Beech Grove Road, Roseland, VA 22967

The Greenhouse is closed Sunday and Monday; hours vary from Tuesday-Saturday. See this LINK for more information and to see a **listing of native plants available for purchase.** Plants can also be ordered online and picked up at an arranged time by emailing info@twnf.org

May Guided Hikes

For information on **guided hikes,** difficulty ratings, and to register, please see this LINK to the May-June calendar

CUBA CENTER VIRTUAL LECTURE SERIES

Twilight Garden Series: “Getting Started With Native Plants”
Instructor: Nancy Bell
6:00 – 7:30 PM

Register for one class, or for all three in the series:

May 12: Trees
May 19: Shrubs
May 26: Perennials

“Nature’s Best Hope”
Instructor: Doug Tallamy
Thursday, May 13
6:00 – 7:30 PM

See this LINK for more information on these lectures and others, and to register.

Mt. Cuba Center is a non-profit botanical garden located in Hockessin, Delaware near Wilmington. Its woodland gardens produce some of the most spectacular displays of wildflowers in the mid-Atlantic region. The botanical garden is now open to the public, see this **LINK** for info. **See this LINK for information on Mt. Cuba’s world-famous trial garden and study results.**

ECOLOGICAL LANDSCAPE ALLIANCE
WEDNESDAY WALKS IN THE GARDEN

FREE WEBINAR SERIES
12:00 – 1:00 PM EDT

ELA is pleased to announce a second season of **FREE** online garden presentations covering a wide range of gardening topics to offer plant tips, gardening guidance, humor, and inspiration. REGISTRATION IS REQUIRED.

See the highlighted session title links for more information and to register.

Beauty and Biodiversity at Cornell's Mundy Wildflower Garden
Wednesday, May 5
The Journey of Edible Landscapes
Wednesday, May 12
Native Plants for Bird Friendly Communities
Wednesday, June 9
Fundamentals of Garden Layers
Wednesday, June 16

MONARCH JOINT VENTURE
The 2021 Monarch Conservation Webinar Series
4th Tuesday of the Month *
2:00 PM EST

The Monarch Joint Venture is partnering with the U.S. Fish and Wildlife Service National Conservation Training Center to put on another year full of informative and inspiring webinars on all things monarch. Webinars will be held live on the 4th Tuesday of the month at 2 PM ET. Each webinar will be recorded and for later viewing as well. Check on the session title to register.

Future Webinar Titles:

- **May 25th** – Monarch Butterfly Reproduction: From Physiology to Behavior
- **June 22nd** – Reinstalling Native Habitat on Private Property in the West
- **July 27th** – Aligning Mosquito Control with Pollinator Protection
- **August 24th** – Conserving Grasslands for Birds and Monarchs
- **September 28th** – Protecting and Restoring California's Overwintering Groves
- **October 26th** – Recovery of the Monarch Butterfly: Federal and State Legislation that can Provide Hope for this Iconic Animal
- **November 16th** – The Monarch Butterfly Fund – Supporting Monarch Conservation in Mexico
- **December 21st** – Eco-literacy and Conservation: The Convergence of Research, Policy and Education

* The November and December dates have been moved to avoid conflicting with major holidays. Please note this list is subject to change. Their EVENTS PAGE will have the most up to date information on the webinar series, as well as a calendar of additional monarch-related events, and information on recordings of past webinars.

VIRGINIA COOPERATIVE EXTENSION (VCE) VIDEO LIBRARY

VCE offers a variety of **YouTube videos** on topics geared to both beginner and more advanced gardeners. Examples of topics include:

Vegetable Grafting for Home Gardens
Plant Disease Clinic: IDs and Diagnoses
Weed Identification: IDs and Diagnoses
Basic Entomology and Insect ID Lab
Soil Testing Lab: IDs and Diagnoses

For these and many more videos that address specific topics or those of more general interest, see this **LINK**.

Deer, Deer, Deer!

By Cathy Caldwell | May 2021-Vol.7, No.5

Deer populations have increased in recent decades, impacting human health, forests, agriculture, and, of course, our gardens. Unless you're new to the area or new to gardening, you've probably been dealing with the "deer munch" for a while.

How to Protect Gardens and Landscapes from Deer Damage

Let me be candid. The title of this section is quite the misnomer. I wish I were announcing a breakthrough in deer repellents or deterrents; I'm sorry, but I have no such news. There are still no sure-fire protective measures against deer damage to your landscape, especially if you live in a suburban or rural area — with the exception of fencing. Due to the expense and appearance of fencing, most of us would prefer an effective repellent or deterrent. As you've probably already discovered, a repellent or device that works initially may become a failure over time as the newness fades and deer adapt.

Whether or not a particular plant will be eaten depends on the deer's previous experience, nutritional needs, plant palatability, seasonal factors, weather conditions, and the availability of alternative foods. Deer are creatures of habit, with good memories and the ability to learn from each other. Also, deer behavior varies

by region; in other words, the deer in our region may behave differently from those elsewhere. This fact probably explains why a repellent spray or device might work well in one area, but not in another. Weather is a major factor; deer browsing increases in extreme weather such as drought or extreme cold. In summer, there may be more of their favorite forbs available, so you may see less damage than in winter; in summer, repellants, scare devices, or temporary fencing may provide satisfactory protection. In winter, deer become more desperate for food, so the munch on your landscape shrubs and trees generally increases. This is especially true for shrubs — and especially for the evergreen shrubs.

Once deer become accustomed to feeding in an area, they will likely continue. It is easier to prevent them from developing the habit in the first place. Well, this advice comes too late for me and my plants, but it's worth knowing. If you are fortunate enough to be seeing deer damage for the first time, take immediate action to discourage and prevent deer browse.

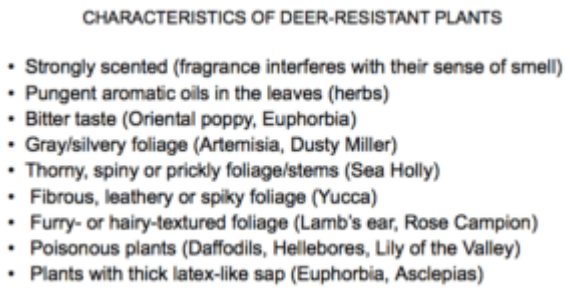
The experts say it's best to **try several different strategies** to find out what works best in your yard, and that most strategies are more effective when you **employ several together**.

Was it a deer or a rodent?

Before you adopt a deer strategy, try to make sure it's truly a deer that's doing the damage. Last summer my zinnias were chewed badly, something that had never happened before. Of course, my initial suspect was deer. But it's not always easy to identify the culprit, especially now that deer seem to be eating plants they've never touched before. Looking closely at the damage can help. Deer do not have upper incisors, so they grasp and tear leaves and branches, leaving a rough and torn appearance. If you're seeing a neat cut at a 45° angle, the perpetrator is more likely a rabbit or other rodent, especially if it's low to the ground. Rabbit tooth marks are about the width of the tip of a spoon, while other rodent tooth marks appear to have been made by the tine of a fork. Look for droppings, too, form and texture can be a helpful clue.

Deer resistant plants?

Can you modify your landscape to reduce deer browsing? Yes, but only to a limited extent. Try placing your most vulnerable plants near your house and walkways; deer may even leave a rhododendron alone if it's right next to a well-used door. Another strategy is to surround deer favorites with more resistant plants, especially herbs whose odors seem to repel deer, such as mint, sage, nepeta, and the like.



As we've learned to our sorrow, there's no such thing as a deer-resistant plant, but there are plants that are far less likely to be heavily damaged by deer. Most gardeners know that fuzzy and prickly plants are not favored by deer, nor are the smells of most herbs. And you're probably familiar with those lists of deer-resistant plants. Perhaps you've "talked back" to such a list after spotting a "deer-resistant" plant that has been devoured by deer in your garden! At the risk of setting off a round of howling, here's a recently-updated list of plants that deer are less likely to munch:

yarrow	foxglove	snowflakes
Russian sage	bluestar	fritillaria
blue mist shrub	hellebores	camassia
lavender	monkshood	scilla
nepeta	brunnera	glory-of-the-snow
culinary sage	coral bells	forsythia
salvias	yellow corydalis	birch
beebalm	black snakeroot	boxwood
lungwort	ferns	some spruce
lamb's ears	ornamental alliums	some viburnums
irises	ornamental grasses	
peonies	narcissus	
bleeding hearts	snowdrops	

—Cornell Coop.Ext. Tompkins County/Gardening with Deer Q & A, 202 (I'm adding my own howl right here and now: my camassias have been chewed heavily by some critter or other, maybe deer, maybe rabbits. In any event, this wonderful bulb needs protection. For more about camassia, see Camassias/The Garden Shed.

Bottlebrush buckeye. Photo: John Ruter, U. of GA, bugwood.org

While this list includes some native species, did you notice that the plants listed are mostly non-natives? That is because **deer prefer native plants,** probably because they co-evolved together. For those of us who are trying to include more natives in our gardens, this presents a major conundrum. Some experts say that our local experiences are probably the best guide in identifying deer-resistant plants. With that in mind, I've pulled together a list of natives that have avoided the browse in my yard.

Natives that deer avoid in MY gardens:

- swamp milkweed (*Asclepias incarnata)*
- blue mistflower (*Conoclinium coelestinum*)
- bottlebrush buckeye (*Aesculus parviflora)*
- wild bergamot (*Monarda fistulosa*)
- ragwort (*Packera aurea*)
- blue star (*Amsonia hubrichtii*)
- Annise hyssop (*Agastache sp.)*
- native holly (*Ilex opaca)*
- mayapple (*Podophyllum pedantatum*)
- beebalm (*Monarda didyma*)
- many grasses, sedges, and ferns

Blue mistflower (Conoclinium coelestinum). Photo: Chris Evans, Univ. of Illinois, Bugwood.org, CC BY-NC 3.0

My experience may not be of much use in future gardening seasons because if deer are hungry enough — and the deer around here appear to be starving — they will start eating plants they never touched in the past. After years of ignoring it, deer suddenly started eating my goldenrod, so I now understand how a list becomes obsolete. But let me know which native plants are deer-resistant in your yard, and we can develop a highly focused local list.

In my research, I have located several **lists of native plants that deer avoid in our region:**

- Deer Resistant Native Plants for the Northern Neck/ Va. Native Plant Society, Northern Neck Chapter
- Deer Resistant Native Plants/Univ.Md.Extension
- "Selective Planting Recommendations for Deer Management," Pest Management Guide 2020/Va.Coop.Ext. (Section 8-6)
- "Deer Resistant Plants Recommended for Central and Southeastern NC Landscapes," North Carolina Coop.Ext. (2015)

Viburnum dentatum. Photo: Vern Wilkins, Indiana University, Bugwood.org, CC BY-NC 3.0.

There's one other list worth mentioning here, and that is the often-cited list of deer-resistant plants created in 2003 by **Rutgers University**: Landscape Plants Rated by Deer Resistance, which helpfully **categorizes plants by their likelihood of damage, from Rarely Damaged to Frequently Severely Damaged**. It is also **searchable by type of plant and category of damage.** Looking for a shrub that deer don't like? I'd start with a shrub search on the Rutgers list. One downside of this list is its inclusion of a number of invasives. A Pennsylvania township took the Rutgers list and pared it down to mostly native, noninvasive plants and choosing only from the categories of Rarely and Seldom Severely Damaged. Since Pennsylvania is as overrun by deer as central Virginia and has a similar climate, this list may be of use to us local gardeners: Deer Resistant Plants/ Tinicum Township Guide for Stewardship of Natural Resources, p. 19. After studying all these lists, I've compiled a list of the more common native plants that are rarely damaged in our region.

NATIVE Plants Rarely Damaged by Deer, compiled from regional lists:

Sassafrass tree in autumn. Photo courtesy of Dow Gardens, budwood.org

Trees

- *Amelanchier canadensis* (Serviceberry, shadbush)
- *Betula lenta*, *nigra* (Sweet or black birch, river birch)
- *Carpinus caroliniana* (American hornbeam)
- *Ilex opaca* (American holly)
- *Sassafras albidum* (Common sassafras)
- *Fagus grandifolia* (American beech)
- *Juniperus virginiana* (Eastern red cedar)
- *Diospyros virginiana* (Common Persimmon, American Persimmon)
- *Magnolia virginiana* (Sweetbay, Sweetbay Magnolia, Swamp Magnolia)
- *Nyssa sylvatica (*Black Gum, Sour Gum)
- *Platanus occidentalis* (Sycamore)

Small Trees and Shrubs

Pawpaw (Asimina triloba) Photo: John Ruter, Univ.GA, budwood.org

- *Asimina triloba* (Pawpaw)
- *Viburnum dentatum (*Arrowwood viburnum*)*
- *Rhus aromatica* (Sumac)
- *Clethra alnifolia* (Sweet pepperbush or Summersweet)
- *Myrica pennsylvanica* (Bayberry)
- *Leucothoe fontanesia* or *axillaris* (Drooping leucothoe or Coast leucothoe)
- *Aralia spinosa (*Devil's walkingstick)

Pink Muhly grass (Muhlenbergia capillaris). Photo: Missouri Botanical Garden PlantFinder

- *Coreopsis* (tall coreopsis and lanceleaf coreopsis)

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Keep in mind that many popular natives like dogwood and redbud are fairly deer resistant even though they don't qualify as "Rarely Damaged." When considering a native plant, it is best to cross-reference between the lists cited above.

To these lists, I would add a few other plants — nonnatives — that have mostly avoided the deer munch in my central Virginia garden: Deutzia (*Deutzia gracilis*), cranberry cotoneaster *(Cotoneaster apiculatus),* Winter Jasmine (*Jasminum nudiflorum*), doublefile viburnum (*Viburnum plicatum* var. *tomentosum)* and rose campion (*Lychnis coronaria).*

Plant arrangements and landscape design could help reduce deer damage. There's a new book that

employs a design approach: *Deer-Resistant Design: Fence-Free Gardens that Thrive Despite the Deer* by Karen Chapman (2019). I have not yet gotten my hands on it, but it sounds well worth a read. Meanwhile, there's no denying that fencing is the only highly effective option available at the moment.

Physical Barriers and Exclusion

Fencing

Fencing is probably the only truly reliable way to exclude deer from gardens and landscapes, especially in areas of high deer density like ours. Most vegetable gardeners would agree that fencing is essential if you want to eat any of the vegetables or fruits you grow. Some herbs and onions — oh, and rhubarb, too — can manage without fencing, but that's about it.

Vegetable Garden fence enhanced with Virginia Sweetspire shrubs, now grown into a thick hedge 4 feet tall x 5 feet wide. Photo: Pat Chadwick.

An effective deer fence must be tall enough that deer won't jump over it — 8′ is the standard. A shorter fence can work if it's supplemented — the most common addition being electrical wire, but be sure that's not prohibited by a local ordinance or HOA rules. Another possible addition is pictured above, a fence plus a shrub border, created by Pat Chadwick, a regular contributor to *The Garden Shed*. As Pat explains, "The shrubs that I planted on the outer exterior of the garden serve two purposes: (1) They prevent deer from

being able to see into the garden. Normally, deer will not leap into an area if they can't see how large the area is or how to get out of it; (2) They act as a double barrier. To leap over the wire fence, a deer would have to clear the 5-foot wide hedge first, and I don't think a deer would be crazy enough to try to leap over that AND the fence."

A Maryland gardener developed an intriguing addition to a shorter fence that he's found to be highly effective: **wire threaded through the fence at angles,** creating confusing optical issues for deer. You can see how it's done on this video: Low Cost Deer Fence Alternative/YouTube/U.Md.Ext. Some gardeners have had success with the so-called 3D fence, which confuses deer with simple additional lines outside the fence. To see how, watch here: 3D Deer Fence/YouTube. Remember that rabbits and other small mammals can burrow under fencing, so it's important to bury your fence 6 to 12 inches below ground.

For an excellent **comparison of several types of fences**, including some DIY varieties, **watch this University of Maryland video** — Fencing for Your Garden, — which **compares materials, costs, and time required for each of the following kinds of fences**:

This DIY fence is one of the types featured on the video by U.Md.Extension, Fencing Your Garden.

— small, handmade, bird-netting 5′ fence, easy and inexpensive, using available materials

–vinyl-coated welded wire fence, designed to exclude rabbits and groundhogs

— polypropylene deer netting fence for a community garden

— solar-powered electric fence

— high-tensile wire fence, well-suited to slopes

Some of these fences are build-it-yourself projects, but due to the skill involved, building a high-tensile woven wire fence is usually best left to an experienced contractor. High-Tensile Woven Wire Fences/Rutgers.edu. For detailed instructions on how to build a plastic mesh fence, see How to Build a Plastic Mesh Deer Exclusion Fence/ Purdue Univ.Ext . You'll find plans and specifications in several of the articles listed at the end of this article under SOURCES.

Micro-Enclosures are defined as small, fenced areas that create a psychological deterrent to deer, which apparently avoid entering small spaces that restrict quick entry and exit. The University of Minnesota has supported research on micro-enclosures built by a Minnesota farmer/forest owner, who built six different enclosures out of cattle panels, which are typically sold at farm supply stores. Over the course of two growing seasons, deer entered only one enclosure; apparently that enclosure was a bit too large because after its size was reduced, deer stayed away.

The report on this micro-enclosure research contains photos and detailed instructions for building a micro-enclosure, Protecting Plants from Deer/Univ.Minn.Ext. I was intrigued by the fact that the University of Minnesota has created Regional Sustainable Development Partnerships which are supporting research on "practical tips for keeping deer away from plants," because "landowners, gardeners and foresters need practical solutions for protecting plants from deer." Yes, indeed! You'll also find a research-supported recipe for homemade deer repellent at this site.

Wire cages, tree shelters, bud caps, netting and other structures : Wire cages are usually effective in protecting a single plant; the cage should be at least 1.5 feet in diameter and three to four feet in height. Tree guards or shelters or tubes can protect seedlings and saplings until a tree is large enough to withstand some browsing. Bud caps were news to me; they are simply squares of newspaper or cardstock stapled around the terminal buds of trees, usually conifers, during winter.

Fishing wire cage protecting a young swamp magnolia. Photo: Susan Martin.

You might be surprised to hear that there is **portable electric fencing** on the market; it apparently works well for small areas and can be easily dismantled and moved to another location. A 25′ X 50′ area can be set up in only one hour without tools. Read all about it at Portable Electric Fencing/Rutgers.edu.

Damage to trees caused by antler-rubbing. Photo: Cathy Caldwell

Wire cages and other enclosures are also effective in preventing damage to trees from **antler-rubbing by male deer in the fall**. Get this protection in place by August and leave it there until the end of December. To be effective, the cage should be at least 1.5 feet in diameter and 3 to 4 feet in height. I've used fallen limbs — the pricklier the better — to create my own DIY protection against antler rubbing. The good news: it worked, at least this year. I decided to try this approach to prevent summer browsing on my oakleaf hydrangea; A spiky native plum (*Prunus americana*) collapsed nearby, so I've hauled large branches into position all around the oakleaf hydrangea. I'll report on this experiment next fall.

Fishing Line and Paracords

Not up for building a fence or even a micro-enclosure? Some gardeners have reported that by stringing multiple parallel strands of cords or fishing line, they've discouraged deer from entering their yards or garden area, though others have not had similar success. Some friends tried this technique using thin ropes called "paracord" around the perimeter of the landscaped area of their yard; the deer stopped entering their yard for an entire year; they concluded that the lines caused the deer to shift their normal travel patterns. Reader, I tried it myself! I ordered paracord online and threaded parallel lines around the part of my landscape that's full of cherry laurels and other favorites for winter browsing. The result: for the first time in years, the cherry laurels were not chewed down to their nibs. Since my timing was off (i.e., late), the laurels had already been browsed to some extent, but overall, the damage was much less than in the past. Will this method work again next year? It's a good question; deer tend to adapt to changes. They've been known to adjust to human hair, soap, loud noises, and other tactics.

Paracord strung around the perimeter of my friends' yard. Photo: Helen Hunter

Horizontal barriers. I thought I'd heard it all on the subject of deer exclusion, but then I read about horizontal barriers in a 2013 article by Michigan State University Extension. **A horizontal barrier operates on the same principle as cattle guards.** The cattle will not step on something that could ensnare their feet, and deer are like-minded. **To make your own horizontal barrier:**

–Place concrete blocks on the ground.

–Unroll and slide chicken wire or woven fencing flat on top of the blocks.

–Set these barriers in a square or rectangle around those shrubs that deer love to eat. Be sure this "horizontal fence" is far enough from the shrub or sapling that a deer cannot lean over and nibble a branch.

According to Michigan State Extension, the deer will not step onto or into the "horizontal fence." If the wire is chicken wire and they step on it, it will sink. If it is woven wire farm fencing, they cannot place their feet into the holes to walk in. You can achieve the same effect with concrete blocks and old farm gates. Deer versus your Landscape/Mich.St.Ext..

Deer Repellents

Most gardeners are familiar with the basics about deer repellents: they work on either bad smells or bad tastes, they have to be reapplied OFTEN and AFTER EVERY RAIN, and changing the formula regularly improves effectiveness. Some experts say that the most effective repellents contain ingredients that are BOTH bad tasting and bad smelling, and that repellents are **more effective in reducing winter browse** than summer browse.

Most repellents on the market are intended for ornamental plants, but a repellent made of ammonium soaps of higher fatty acids is registered for use on edible crops — but only prior to the development of edible parts. Cornell Coop.Ext./Monroe County.

If you want to make your own repellent, check out the recipe for a tested odor-based non-winter repellent at Protecting Plants from Deer/Univ.Minn.Ext.. This DIY repellent should be reapplied every two weeks and

after heavy rain. And as all the experts agree, if deer are very hungry and deer pressure is heavy, deer will likely "override their aversion" and munch anyway.

Some research shows that predator urine, from bobcats and coyotes, is the most effective repellent in deterring white-tailed deer. Non-lethal Deer Deterrents/City of Ann Arbor Deer Management.

Scare Devices

Another type of deterrent is a scare device, such as lights, whistles, loud noisemakers, scarecrows, and the like. Some gardeners have reported success with motion-activated water spray devices and lights. I read one article from an Extension office which indicated that wind chimes can be effective. The bottom line is that deer tend to adapt to these deterrents, but if you've had success with one, please share it in the Comments Section below. Before setting up a scare device, consider your neighbors, local ordinances, and HOA rules.

Some gardeners swear by dogs as the best possible deer deterrent. A dog that stays outside at night can be very effective. A related option that has "shown great promise in recent experiments" is the use of a dog contained by a buried electrical ("invisible") fence. Cornell Coop.Ext..

Community Solutions

When deer start eating everything and our repellents no longer work, we may be wondering if there's a macro-solution to the deer problem. Allowing or increasing hunting is one option that a number of communities have tried; some of the most successful have been managed programs overseen by a municipality, often employing professional archers and sharpshooters and allowing hunting at night. To learn more about these community hunting strategies, see Arlington Regional Master Naturalists/"White-tailed Deer and Forest Health in Northern Virginia" 2020 (Arlington's archery program has culled about 1,000 deer per year since 2014). Hoping for a non-lethal option? Well, at least one community has one: Cincinnati's Clifton Neighborhood Deer Fertility Control Pilot Program — well worth reading about. Wildlife experts say that fertility programs have not been shown to be effective, or at least not as effective as hunting.

Personal Experimentation

The author's onion experiment. Photo: Cathy Caldwell.

Have you experimented with your own deer deterrents? If so, we'd love to hear from you. Last fall I tried "planting" onions (the chef's rejects) near my asters, a known deer favorite, and at least in the short term, it's working. I've also been known to scoop up the leavings after chopping onions for dinner, rush out the door, and then scatter them in my garden!

Impact of Deer on Human Health and Forest Health

Tickborne Diseases: Deer clearly play a major role in the spread of Lyme disease, which is a growing and geographically-expanding health problem, as are other tickborne diseases. According to one recent research report, "There is broad consensus that the white-tailed deer is a main driver for the remarkable increase in *I. scapularis* ticks in the northern parts of the eastern United States over the

past 40 years." Stemming the Rising Tide of Human-Biting Ticks and Tickborne Diseases, United States/ncbi.nim.nih.gov. We gardeners are painfully aware of this problem; I'm sure I'm not alone in spraying insect repellent on my ankles and pulling socks up over my pants every single time I head out the door to my garden. But there are other potential health problems looming.

Chronic Wasting Disease: You've heard the scary talk on the news about "the next pandemic," right? Well, some scientists are issuing strong warnings that the next disease that could jump from animals to humans might be chronic wasting disease (CWD), a fatal disease of deer similar to mad cow. There's no denying that CWD is rampant among deer in several regions of North America. To learn more about this threat, read "Experts Call for Action on Chronic Wasting Disease," Center for Infectious Disease Research & Policy, Univ.Minn.

CWD was first detected in Virginia in 2009, and has been identified in Fauquier, Frederick, Clarke, Culpeper, Loudoun, Madison, Rappahannock, Shenandoah, and Warren counties. CWD is caused by abnormal infectious proteins called prions, which can pass between deer through saliva, feces, urine, and through water or soil contaminated with prions; if these prions could be in the soil where we work, gardeners can't help being concerned. The Department of Wildlife Resources is responsible for tracking the spread of CWD among deer and elk, and the disease seems to be spreading rapidly into our region, with the **first ever cases detected in 2020 in Rappahannock, Warren, and Madison counties**.

Forest Health: It's not just our gardens that deer are decimating. They've caused major damage on farms and orchards, but the newest concern is forest health, especially as deer populations have ballooned and exceeded the "biological carrying capacity" of the land in large parts of North America. Research indicates that deer can adversely affect forest ecosystems (Ramirez, Jansen, & Poorter, 2018). Because native plants are apparently tastier to deer, a deer herd can reduce the number of native understory shrubs and forbs, and thereby enhance the success of invasive plants (Rodewald & Arcese, 2016). Some scientists have concluded that deer browsing on saplings and seedlings hinders forest regeneration, while others consider climate change to be the primary culprit. But the jury is still out on these issues, and most scientists agree that much research remains to be done.

Due to the multi-pronged impact of our large deer populations on gardens, farms, forests, and health, we gardeners have more than one reason to take an active role in advocating for effective public management of deer herds, along with heightened vigilance and controls against CWD. For that reason, it's worth noting that the Department of Wildlife Resources is in the process of amending regulations related to deer hunting and the spread of CWD, and that the public comment period is open now and until May 10. DWR/virginia.gov/Proposed Hunting Regulations ("CWD monitoring data suggests a recent amplified spread of the disease to new areas of northwest Virginia," so an expanded season for doe-hunting is proposed, among other tools).

SOURCES:

Featured Photo: Urban deer by Michael B., CC BY-NC-ND 2.0, Flickr.com

"Deer: A Garden Pest," vtechworks.lib.vt.edu/HORT-62 (2013)

"Selective Planting Recommendations for Deer Management," Pest Management Guide 2020/Va.Coop.Ext. (Section 8-6)

"Deer Resistant Plants Recommended for Central and Southeastern NC Landscapes," North Carolina Coop.Ext. (2015)

"Gardening With Deer," Penn.State Ext./psu.edu (updated 2017)

"Reducing Deer Damage to Ornamental and Garden Plants," Cornell Coop.Ext./rev. 2018)(comprehensive discussion of fencing and list of resistant plants)

"Managing White-Tailed Deer in Suburban Environments: A Technical Guide," DWR.virginia.gov (Cornell Cooperative Extension, the Wildlife Society– Wildlife Damage Management Working Group, and the Northeast Wildlife Damage Research and Outreach Cooperative, 2000) (Detailed and extensive coverage of most issues)

City of Ann Arbor/Non-lethal Deer Deterrents ("Field trials of various scare devices indicated that deer can become habituated to them after a week of exposure to them. Trials of various scare devices have produced variable results.")

"Managing Deer Damage in Maryland," Univ.Md.Ext. (Extensive coverage of deer issues and detailed fence plans)

"Garden Wars: Dealing with Deer," Rutgers Master Gardners

"Deer Management Strategies," Digital Repository of Univ.Md

"Forest damage by deer depends on cross-scale interactions between climate, deer density and landscape structure," Journal of Applied Ecology (Apr. 2020)

"White-Tailed Deer," Penn State Ext. psu.edu

"History, Biology, and Management of White-tailed Deer in Virginia," Va.Dept.Wildlife Resources/virginia.gov

Will Culling White-Tailed Deer Prevent Lyme Disease? NCBI/NIH.gov (Some research has tied the rise in Lyme disease to the increased deer population we've experienced, but as one scientist concluded, "Robust evidence linking deer control to reduced human Lyme disease risk is lacking.")

Stemming the Rising Tide of Human-Biting Ticks and Tickborne Diseases, United States/ncbi.nim.nih.gov. ("fierce debate continues about the specific thresholds required to be reached for either deer reduction . . .or topical treatment of deer with acaricides . . . to suppress *I. scapularis* tick populations to the point where we also see an effect on human tick bites and tickborne diseases.")

https://extension.umd.edu/resource/deer-damage

Does white-tailed deer density affect tree stocking in forests of the Eastern United States?. Ecol Process 8, 30 (2019)

Red oak seedlings as indicators of deer browse pressure: Gauging the outcome of different white-tailed deer management approaches. Ecol Evol. 2019; 9: 13085– 13103.

Gardening With Natives in Wet Areas

By Susan Martin | May 2021-Vol.7, No.5

PLANTING IN WET CONDITIONS

This article will address the challenges of planting in wet areas. We will begin by considering what constitutes a “wet” area, and how to define varying degrees of wetness. We will also focus on the factors that cause wetness, and whether a goal of decreasing moisture is a desirable, or even a viable, option. We will then consider **native plants** that are adaptable to wet areas. In addition to moisture needs, plant selection must also include an evaluation of other requirements and specific gardening objectives. These objectives might include attracting birds, contributing to the natural ecosystem for native insects, decreasing lawn areas, erosion control, bloom times, color of bloom, and many other factors. This article also illustrates how to use native plant databases to identify plants that meet specific criteria.

LACK OF OXYGEN

The basic components of soil are minerals, organic matter, water, and air. The typical soil consists of approximately 45% mineral, 5% organic matter, 20-30% water, and 20-30% air. Plants cannot tolerate extremely wet sites because soil that is water-logged has no room for oxygen. Where oxygen is lacking, water and nutrient uptake stops, plant processes and growth cease, and plants begin to decline or die.

SOIL DRAINAGE

Soil moisture should be viewed in two main ways: 1) **drainage down through the soil** and 2) **runoff water across the site. Soil texture and structure will determine how fast the soil will drain. Texture is determined by the percentage of sand, silt, and clay.** Sand particles are relatively large; clay particles are very tiny in comparison to sand; and silt particles are medium-sized. This means that sand drains the fastest and clay drains the slowest.

Soil structure is the arrangement of soil particles into aggregates. When you pick up a handful of soil, and it breaks apart into little pieces, you are looking at soil aggregates. Aggregate structures provide both large and small pores. Large soil pores allow water to quickly infiltrate the soil. Smaller soil pores can store available water in times of limited rainfall. To help you recognize your own soil properties, conduct a simple drainage test:

> **Dig a hole approximately one foot deep and fill it with water.** Time the rate (on an hourly basis) of water drainage out of the hole by measuring how far the water line moves in inches. If the water drains away at about **one inch per hour,** you have a desirable, well-drained soil. If drainage is much faster, your soil is probably high in sand; if drainage is much slower, your soil is probably high in clay.

NATURALLY HIGH WATER TABLE

Perhaps your property is wet because it has a **high-water table**. Some sites, such as my local area, have **natural springs and a high groundwater level**. **On August 23, 2011, a 5.8 magnitude earthquake occurred at a depth of about 3.7 miles beneath the town of Mineral, Virginia,** located approximately 27 miles east of Charlottesville. The event is among the largest earthquakes recorded in the eastern United States and was known for damaging the Washington monument. It is of particular interest to this article because **groundwater levels in our local area were affected.** The most common groundwater-level response to an earthquake is a water-level oscillation. Changes can be large enough to make a well flow at land surface, or to cause a well to go dry. Typically, however, the water-level changes are several feet or less. Recovery to the pre-earthquake water level can be nearly instantaneous, or it may take as long as days, months, or never recover. Some properties in my neighborhood went drastically from dry to wet and negatively affected the plants that were thriving.

Tulip Poplar Flower (Liriodendron tulipifera) Photo: HLWolfe, Wikimedia Commons (CC BY-SA 4.0)

American Mountain Mint (Pycnanthemum virginianum) Missouri Botanical Garden

Before the earthquake, neighbors had beautiful fields of lavender of many different types. They extracted the oil from lavender, and dried the leaves. Lavender needs lots of **sun** and **fast-draining soil**. It will not survive long in shady, damp, or extremely cold conditions. After the earthquake, the neighbor's property became too wet to grow lavender, and they had to let the fields go. They planted moisture-loving plants such as mountain mint (*Pycnanthemum virginianum*) and other wildflowers. A tulip poplar seedling (*Liriodendron tulipifera)* started on its own and has grown to a good size. In other wet areas, they planted sweet bay magnolia (*Magnolia virginiana*), arctic fire red twig dogwood (*Cornus sericea* 'Farrow' Arctic Fire), swamp milkweed (*Asclepias incarnata*), red maple (*Acer rubrum*), weeping willow *(Salix babylonica*), river birch (*Betula nigra*), swamp white oak (*Quercus bicolor*), and nuttall red oak (*Quercus texana*).

MAN-MADE SITUATIONS

Man-made situations also can be the cause of wet sites. Water runoff from pavement, roofs, and other impervious structures can flood a site quickly. When slopes are cleared of natural vegetation that would normally absorb excess water, water runoff can become erosive. New construction, often accompanied by hard-surface driveways, disturbs soil and vegetation and can cause drainage issues. Water may be unable to drain through soil that has been compacted by heavy machinery, or even by heavy foot traffic. When possible, use permeable materials for driveways and paths.

> You can **test your water table** to help you better understand your property: To test for a high-water table, dig several 2' deep holes at the planting site and check them after 2-3 hours. If water has collected in the holes, the water table is high.

CAN A WET SPOT BE "FIXED"?

Soil amendments are only effective in relieving soil moisture problems if the entire root zone of the mature planting can be changed. Therefore, **adding organic matter or sand to tree planting holes is ineffective and often destructive.** The roots will be discouraged from extending beyond the amended area. Shrub beds may be amended with additions of large amounts of organic matter such as compost and composted sludge. **Sand is ineffective** in improving drainage unless more than 50 percent of the total soil volume is sand. Consequently, sand is usually a poor soil amendment. Trees on marginally well-drained sites may be planted with as much as one-third of the root ball above the existing soil line, and then mulched.

NOT ALL WET SITES ARE THE SAME

When you begin researching plants that tolerate wet sites, you will soon realize there are other factors that must be considered.

- Is your site sunny or shady?
- What kind of soil do you have?
- Is the excess water from natural or man-made causes, or both?
- Is erosion an issue?
- Is your site seasonally wet, and if so, are you willing to add supplemental watering in times of drought?
- Are you planting a wildflower type of garden or something more formal?
- Do you want plants that spread, or plants that grow in clumps?
- Do you have limited space?
- Do you have a significant deer problem?
- What is your definition of native? Is it North America? Is it more localized to state, county, or even zip code?

SELECT PLANTS THAT WILL THRIVE

It is easier, and more productive, to **work with the conditions on your site than trying to adjust the site to fit the plant needs**. Native plantings follow the simple rule of "right plant, right place." There are native plants that will thrive in moist or wet conditions.

The amount of soil moisture a plant requires can be defined as:

- Dry – water does not remain after a rain; areas may be in full sun or in a windy location, on a steep slope, or have sandy soil.
- Moist – the soil is damp and may be occasionally saturated.
- Wet – the soil is saturated for much of the growing season, except in droughts. Some sites are wet for extended periods during spring and fall when rainfall is abundant. Although these sites may appear well-drained, they too are often not suitable for many trees and shrubs.

EVALUATING OTHER CRITERIA

Plant Virginia Natives recommends the following list of native shrubs for landscaping in a wet and shady area:

red chokeberry – Aronia arbutifolia
buttonbush – Cephalanthus occidentalis
sweet pepper bush – Clethra alnifolia
black huckleberry – Gaylussacia baccata
winterberry – Ilex verticillata
mountain laurel – Kalmia latifolia
ninebark – Physocarpus opulifolius
pink azalea, pinxterflower – Rhododendron periclymenoides
swamp azalea – Rhododendron viscosum

Sweet Pepperbush (Clethra alnifolia) Missouri Botanical Garden

When considering shrubs, many gardeners need to consider deer-resistant plants. Of the shrubs listed above, **red chokeberry, buttonbush, winterberry, black huckleberry, and pink azalea (pinxterflower) are all susceptible to deer browsing**. In fact, deer have been eating the buds on our pinxterflower azalea this spring. On the other hand, sweet pepper bush **(*Clethra alnifolia*) has not been browsed by deer. This shrub will tend to sucker**, however, and so you will want to find a spot where spreading is a positive characteristic. If you prefer a tidier plant, you'll need to spend some time pruning off suckers. Swamp azalea is listed as deer resistant, and although I haven't grown this plant, I would guess that deer like to nibble off the buds since they seem to enjoy azaleas in general. Mountain laurel and ninebark are supposedly not eaten by deer; our ninebark has not been touched in two seasons and I don't have first-hand experience with mountain laurel. So, for a gardener who is searching for deer resistant and moisture-loving shrubs for sun-to-partial shade, three of the shrubs listed above seem to fit the bill. Don't forget to also consider if a suckering plant is suitable to your site.

NATIVE PLANT RECOMMENDATIONS FROM IOWA STATE UNIVERSITY EXTENSION

The Iowa State Extension has compiled the list, "Native Perennials for Moist to Wet Soils in Partial to Full Sun." When searching online for recommended plants, you need to be aware of how "local" the native plants might be. You need to decide if you want plants native to North America, to a particular region or state, or to your zip code. I was surprised to find that all of these "midwestern" perennials recommended by the Iowa State Extension, with the exception of prairie blazing star, are also considered native to the local Charlottesville zip code 22901, or to Albemarle County. I found this information by using the Piedmont Native Plants Database and the Plant Finder by Zip Code database.

Southern Blue Flag Iris (Iris virginica) Photo: Andrea Westmoreland, Wikimedia Commons (CC BY-SA 2.0)

Swamp Milkweed (Asclepias incarnata) Photo: vastateparkstaff, Wikimedia Commons (CC BY 2.0)

- swamp milkweed (*Asclepias incarnata*)
- white turtlehead (*Chelone glabra*)
- Joe Pye weed (*Eutrochium maculatum*)
- rose mallow (*Hibiscus laevis)*
- Southern blue flag (*Iris virginica shrevei*)
- prairie blazing star (*Liatris pycnostachya*)
- cardinal flower (*Lobelia cardinalis*)
- obedient plant (*Physostegia virginiana*)

White turtlehead, Joe Pye weed, rose mallow, and cardinal flower are native to zip code 22901. Swamp milkweed *(Asclepias incarnata)*, Southern blue flag (*Iris virginica)*, and obedient plant *(Physostegia virginiana)* are native to Albemarle County.

USING THE PIEDMONT NATIVE PLANT DATABASE

An online search will reveal many plant lists based on certain criteria, but now let's use the Piedmont Native Plants Database to see how to make your own list using plants that are recommended for wet/shady areas in Albemarle County. **I selected the following as my search criteria: shrubs, Albemarle County, moderate-to-wet moisture, partial shade to full shade, and deer resistant.** Five shrubs are listed: buttonbush (*Cephalanthus occidentalis*), wintergreen (*Gaultheria procumbens*), fragrant sumac (*Rhus aromatica*), red elderberry (*Sambucus racemosa*), and southern arrowwood viburnum (*Viburnum dentanum*).

> *Note:* I grow *Viburnum dentanum* and I know that deer eat it at least when the leaves are young. I have also read complaints on blogs about deer browsing on buttonbush.

If we expand the search, keeping deer resistance selected, to include all of Virginia, a sixth shrub, Yaupon holly (*Ilex vomitoria)* is added to the list. If we delete the requirement of deer resistance, but keep the statewide screen, 29 shrubs make the wet/shade list. As you can see, this database can be refined on any number of factors, including some we did not use, such as height, bloom color, bloom month, autumn foliage color, soil preference, and others.

Examples from the Piedmont Native Plant Database of **native shrubs that like moderate/high moisture plus sun** include:

Swamp Rose (Rosa palustris) Photo: Malcolm Manners, Wikimedia Commons (CC BY-SA 2.0)

Spicebush (Lindera benzoin) Photo: Nonenmac, Wikimedia Commons (CC BY-SA 4.0)

- sweetshrub (*Calycanthus floridus*)
- buttonbush (*Cephalanthus occidentalis*)
- silky dogwood (*Cornus amomum*)
- American filbert (*Corylus americana*)
- deciduous holly (*Ilex decidua*)
- spicebush (*Lindera benzoin*)
- scentless mock orange (*Philadelphus inodorous*)
- swamp rose, (*Rosa palustris*)
- red chokeberry (*Photina pyrifolia*)
- winterberry (*Ilex verticillata*)
- red elderberry (Sambuca *racemosa*)

Another deer-resistant shrub that is native to the southeast U.S. and thrives in wet/sun conditions is Virginia sweetspire (*Itea virginica*). 'Henry's Garnet' is the cultivar most often found at nurseries, and I have used the dwarf version, the 'Little Henry' cultivar, very successfully. See the August 2017 issue of *The Garden Shed* for information on this shrub.

Examples of **trees that like moderate/high moisture plus sun** include:

American (wild) Plum (Prunus americana) Photo: Matt Lavin, Wikimedia Commons (CC BY-SA 2.0)

- red maple (*Acer rubrum*)
- downy serviceberry (*Amelanchier arborea*)
- paw paw (*Asimina triloba*)
- river birch (*Betula nigra*)
- black gum (*Nyssa sylvatica*)
- American hornbeam (*Carpinus caroliniana*)
- redbud (*Cercis canadensis*)
- American wild plum, *Prunus americana*
- umbrella magnolia *(Umbrella tripetala*)
- sweetbay magnolia (*Magnolia virginiana*)

Note: Many of these shrubs and trees tolerate a wide range of sunlight from full sun to part shade. They are often found on multiple lists, i.e., wet/shade and wet/sun. After finding a plant of interest from a list or from the Piedmont Native Plants database, I check the requirements (such as light and moisture), and characteristics (such as spreading tendencies and height) on another source. Useful sources include the Missouri Botanical Garden Plant Finder, or the Lady Bird Johnson Native Plants Database. I also use The DCR-Department of Conservation and Recreation for Virginia using the **Piedmont region as the locale. This database has easy-to-use search tools using a combination of factors such as full sun and high moisture.**

SOME GENERAL SOLUTIONS FOR WET SITES

In addition to moisture-loving plants, here are some steps that can help with excess water:

- Plant cleared slopes with ground covers.
- Use mulches to slow water and help it soak into the soil.
- Use permeable surfaces whenever possible.
- Divert runoff using perforated drainpipes laid on or under the soil.
- Dig shallow trenches or build retaining walls to channel away problem water.

- Plant tree balls high (several inches of root ball left above ground and covered with mulch), or construct berms.

RAIN GARDENS

What is the difference between a garden in a medium-wet to wet-site that uses plants that are tolerant of wet conditions, and a rain garden that uses similar wet-tolerant plants? A rain garden is a planted shallow depression that temporarily holds runoff from impervious areas (such as roads, driveways, and pathways) until the water evaporates, is absorbed by the plants, or infiltrates into the ground. The more area covered in impervious surfaces, the greater the volume of water runoff and the pollutants it carries. (See this article from VCE for instructions on how to calculate the minimum effective size of a rain garden.)

Rain Garden in Leominster, MA Photo Credit: MA Watershed Coalition

Rain gardens can be located anywhere along the natural drainage pathway of water through your yard, and at least 10’ away from the house foundation. You may feel that a location where water already ponds in your yard may be appropriate, but it is NOT. In this location, the soil does not allow adequate infiltration. Conduct the following drainage test to see if a potential site is feasible:

- Dig a hole that is about 1’ in diameter and 2’ deep (or as deep as your rain garden excavation will be).
- Allow the water to naturally soak into the soil and wait until the water drains completely.
- Within twelve hours, refill the hole with water and record the time it takes for water to drain. This should take no longer than 36 hours.

A rain garden’s finished depth should be 6-8” lower than the surrounding soil surface. The depression may need to be dug 12” deep if compost is being added to the garden soil, or if plants with large root balls are being planted, or if mulch is applied. The kind of soil in your rain garden is very important. The soil needs to be porous enough to soak up water within 48 hours to prevent plants from drowning, and to keep mosquitoes

from breeding. Remember that clay soil is not ideal as it inhibits drainage. You may need to add compost to lighten the soil if you have heavy clay soil.

The effectiveness of a rain garden depends on the construction of several layers:

- Ponding area or depression that will provide the storage needed for the amount of runoff
- A berm that is at least six inches of soil or rocks that works like a dam to pond the runoff.
- Soil layer where the plant roots will collect moisture and nutrients
- Plants that will use the runoff for moisture and nutrient requirements
- Grass buffer strip around the garden to slow the velocity of the runoff
- A mulch layer to provide a medium for the biological activities to occur and to keep the soil moist

Sources of information on rain gardens:

"Stormwater Management for Homeowners Fact Sheet 5: Rain Gardens," Virginia Cooperative Extension, https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-13/SPES-13.pdf

"Native Plants for Wildlife Habitat and Conservation Landscaping, Chesapeake Bay Watershed," US Fish and Wildlife Service, https://www.fws.gov/Chesapeakebay/pdf/NativePlantsforWildlifeHabitatandConservationLandscaping.pdf

"Rain Gardens – The Basics," PennState Extension, https://extension.psu.edu/rain-gardens-the-basics

"Rain Gardens for Rainscapes – Technical Design Manual, Montgomery County, Maryland, https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/rainscapes/fact-sheets/rain-gardens.pdf

"Rain Gardens: A Way to Improve Water Quality," UMass Extension Landscape, Nursery and Urban Forestry Program, https://ag.umass.edu/landscape/fact-sheets/rain-gardens-way-to-improve-water-quality

SUMMARY

When excessive moisture makes oxygen less available, water and nutrient uptake stop, plant processes and growth cease, and plants begin to decline or die. **Wet areas in the landscape can be caused by natural conditions**, such as underground springs, earthquakes, or runoff from elevations. **There may also be man-made causes** that impede drainage. A simple "hole test" can show if the soil is draining normally. Another related hole test shows whether the groundwater level is high. Once you understand your landscape's moisture levels, and patterns of excessive water, you can start a search for **native plants that thrive in moist-to-wet conditions.** Other requirements should also be considered, such as light conditions, soil type, space limitations, deer resistance, and planting objectives. This article demonstrates how to use **native plant databases** to screen for plants native to Albemarle County, or to zip code, based on a combination of specific criteria. **Rain gardens** are both functional and attractive landscape additions that reduce storm water runoff and flooding in our yards, and help prevent erosion. Most importantly, rain gardens help preserve nearby streams and ponds by reducing the amount of polluted runoff, and by filtering pollutants.

SOURCES

"Introduction to Soils," PennState Extension, https://extension.psu.edu/introduction-to-soils-soil-quality

"Landscaping in Wet Shade," Plant Virginia Natives, https://www.plantvirginianatives.org/wet-shade

Piedmont Native Plant Database, http://webapps.albemarle.org/NativePlants/default.aspx

USDA NRCS, Plants Database, https://plants.sc.egov.usda.gov/java/

Plant Finder Database, Missouri Botanical Garden, https://www.missouribotanicalgarden.org/plantfinder/plantfindersearch.aspx

Lady Bird Johnson Native Plant Database, https://www.wildflower.org/plants/

Native Plant Finder by Zip Code, https://www.nwf.org/NativePlantFinder/Search

"Plants for Wet and Dry Sites," Virginia Cooperative Extension, https://waynesboronurseries.com/plants-wet-dry-sites/

"Native Perennials for Moist to Wet Soils in Partial to Full Sun," Horticulture and Home Pest News, Iowa State University Extension and Outreach, Richard Jauron, Dept. of Horticulture, https://hortnews.extension.iastate.edu/2018/02/native-perennials-moist-wet-soils-partial-full-sun

"Plant of the Week: Swamp Rose (*Rosa palustris*)," USDA, US Forest Service, https://www.fs.fed.us/wildflowers/plant-of-the-week/rosa_palustris.shtml

"Virginia Sweetspire," *The Garden Shed,* September, 2017, https://pmgarchives.com/article/virginia-sweetspire/

"Organic Matter – The Gardener's Silver Bullet," *The Garden Shed,* October, 2017, https://pmgarchives.com/article/organic-matter-the-gardeners-silver-bullet/

"Groundwater-Level Response to Virginia Earthquake, August 23, 2011," USGS (U.S. Geological Survey, Dept. of the Interior), https://www.usgs.gov/mission-areas/water-resources/science/groundwater-level-response-virginia-earthquake-august-23-2011?qt-science_center_objects=0#qt-science_center_objects

Feature Photo: Sweetshrub (*Calycanthus floridus)*, Krzysztof Ziarnek, Wikimedia Commons (CC BY-SA 4.0)

Eating the Flowers

By Cathy Caldwell | May 2021-Vol.7, No.5

Broccoli, cauliflower, and artichokes may be the most frequent and nutritious flowers we eat, but there's pleasure in many others. From early spring through fall, our gardens unfold a wide array of blossoms to delight tastebuds as well as eyes and noses.

Though nasturtiums, roses, and pansies may come readily to mind as edible garnishes to decorate salads and desserts, the possibilities are much greater. A brief online search produced a list of no fewer than 50 edible flowers—from allium to zucchini—that are commonly found in Virginia gardens. Their uses are as varied as their shapes, sizes, scents, colors, and flavors.

A cautionary note: It's best to eat flowers you've grown yourself, or that you know haven't been treated with pesticides or otherwise contaminated. And, if you have plant or pollen allergies, avoid eating flowers or try just a bit to start.

Which are the best-tasting?

"Edible" being not necessarily tasty, the **following is a list of those having the most pleasing flavors:**

Allium Chives, garlic, leeks—all have tasty blossoms with flavors ranging from delicate leek to robust garlic. All parts are edible.

Angelica and **Anise hyssop** flowers have an anise flavor.

Arugula flowers have the same peppery flavor as the leaves.

Basil blossoms taste like a milder version of the leaves.

Bee balm's red flowers are minty.

Borage has beautiful blue flowers that taste like cucumber.

Calendula/marigold flowers are spicy-bitter and colorful in dishes.

Chervil and **Clover** flowers have a delicate anise flavor.

Dandelion's young blossoms have a honey-like flavor.

Dianthus/carnation flowers have a spicy, clove-like taste

Dill flowers taste like the leaves.

Fennel's pretty yellow flowers have the same subtle anise flavor as the herb itself.

Hibiscus has a vibrant cranberry flavor and makes a tart tea.

Johnny Jump-up blossoms have a subtle mint flavor that complements many foods.

Lemon verbena's blossoms are lemony.

Mint flowers are minty!

Nasturtium has it all—size, color, sweetness, and a peppery finish.

Oregano blooms taste like a subtle version of the leaf.

Radish flowers have a peppery bite.

Rosemary and **Sage** flowers taste like a milder version of the leaves.

Tulip flowers taste like sweet lettuce or baby peas.

Herb flowers make a fine garnish for anything seasoned with their leaves.

Some of the most highly scented flowers—such as **Carnation**, **Citrus, Jasmine**, **Lavender**, **Lilac, Rose** etc.—lend more fragrance than flavor and should be used sparingly. (I once baked a batch of lavender-laced cookies that tasted like a fine English soap.) Some—like **Pansy** and **Violet**—have little taste but make beautiful garnishes.

How to Prepare Flowers for Eating

Freshness is key. Pick flowers in the morning when their essential oils are most intense. Soak them briefly in

cool water to remove dirt. Remove the pistils and stamens, which can have a strong, unpleasant taste. The petals are the good part. Gently dry them, wrap them in moist paper towels and refrigerate them in an airtight container until you are ready to use them. Most will keep for several days.

Larger blossoms can be the center and substance of a dish. These include all **Squash** family members, **Daylilies**, even **Gladiolus**. Many recipes call for coating the blossoms with batter and pan-frying them, as my husband's mother Eva, a fine Italian cook, often did to excellent effect. Zucchini blossoms will be the first to appear in the spring, but the season is long, including winter squashes and pumpkins.

Zucchini blossom. Photo: Monika Baechler, Pixabay.

If you want to spare the fruit, choose only male blossoms. There are more of them anyway, and they typically appear all over the plant on longer stems than the female blossoms. The female blossoms, usually found nearer the center of the plant, will have a soft swelling at the base of the flower that will grow into the squash. Plan to use these blossoms the same day you pick them as they are very perishable. Gather them in the morning as they open towards the sun; later in the day, they close and may trap insects.

Before using, open the blossoms and inspect for insects. Trim out the anthers or style and pull off and discard the green calyx at the base. Give them a gentle swish in cool water and shake dry.

Stuffed Zucchini Blossoms

—*Adapted from Giada de Laurentiis's recipe*.

Serves 4 as a snack, first course, or side dish

1 cup all-purpose flour (or half flour, half cornstarch for a crispier finish)
1 cup water (or sparkling water for a lighter batter)
¾ teaspoon kosher salt, plus more for finish seasoning
1/3 cup (2 ounces) goat cheese (or garlic-herb goat cheese)
2 tablespoons (1 ounce) cream cheese
2 teaspoons heavy cream
1 tablespoon chopped fresh basil leaves
1 green onion, finely chopped
Freshly ground pepper
8 zucchini blossoms
Vegetable oil for frying

In a medium bowl, whisk together the flour, water, and salt until smooth. Set aside.

In a small bowl, combine the cheeses, cream, basil, and onion. Season with salt and pepper to taste. Spoon 1½ to 2 teaspoons of filling into each blossom. (It's all right to slit the blossom partway down the side to make it easier to fill.) Close the blossom and gently twist the petals to seal.

In a large heavy-bottomed saucepan, pour enough oil to fill about a third of the way. Heat over medium heat until a deep-frying thermometer inserted in the oil reaches 350 degrees. (A cube of bread will brown in about

1 minute.) Frying half the blossoms at a time will avoid lowering the temperature of the oil too much.

Dip the stuffed blossoms in the batter and allow excess to drop off. Fry for 1 to 2 minutes, turning occasionally until golden. Drain the blossoms on paper towels. Sprinkle with salt. Enjoy as is, or serve with marinara sauce.

Sources:

Featured Image: Borage flower, courtesy of Pixabay

Minn.Ext./Edible Flowers

Colo.St. Ext./Edible Flowers

Squash Blossoms/Harvest to Table

Squash blossom image by Monika Baechler from Pixabay

Master Gardener Favorites

By Liz Sutphen | May 2021-Vol.7, No.5

Pat Chadwick: President of the Piedmont Master Gardeners in 2019. Frequent contributor to *The Garden Shed* newsletter and occasional lecturer on gardening topics in support of the PMG's Garden Basics project.

Favorite Plant: Ornamental Onion (*Allium* species)

Why Your Favorite: "Ornamental onions provide height, drama, gorgeous color, and a touch of whimsy to the mixed border in May. 'Globemaster' and 'Purple Sensation' are two of my favorite selections. Although most Allium species are non-native, a few native species do exist. The two selections I've mentioned are neither native nor invasive. They have earned the right to dwell in my garden because, in addition to their many attributes as ornamental specimens, their oniony taste deters both deer and rabbits. This is a big plus on our property where the deer and bunnies are ever present. Also, I see a lot of bee activity around these plants when they are in bloom."

Photo: Pat Chadwick

Growing Tips: "Ornamental onions are drought-resistant plants that prefer soil on the dry side, particularly during the summer months when the bulbs are dormant. Plant in fall at a depth of about 2 to 3 times the diameter of the bulb. The strap-like foliage emerges in March and dies back later in spring. Unfortunately, the dying foliage can be unsightly, so it's wise to position the bulbs among other plants that will hide the foliage. For best effect, plant the bulbs in groups.

Christine Putnam: PMG Intern 2021

Favorite Plant: Arugula, also known as garden rocket

Why Your favorite: "Arugula is a leafy green native to the Mediterranean region. It is easy to grow. In my garden, it is rarely bothered by insects or diseases. Its peppery taste will jazz up any salad or sandwich. In the dead of winter and in the heat of summer, I can count on finding a bit of arugula in my garden. It is always there to satisfy my appetite for delicious and nutritious greens. Cool-weather sweetens it up. Hot weather makes it quite spicy. A splash of vinegar or mixing it with the acidity of fresh tomatoes will mellow its peppery bite."

Growing Tips: "Arugula does not do well in poorly drained soils, but it can be quite productive under dry conditions and marginally fertile soils. It is an annual that will reseed year after year. Let it go to seed! The flowers attract pollinators and will add the first bit of color to your vegetable garden when nothing else is in bloom. You can harvest a few of the flowers to enjoy in your spring salads. Collect the seeds, which are tiny, but also edible. Once the seed is ripe, I cut the entire plant at the base and lay it down where I want the next crop to germinate. The plant debris helps to keep the soil underneath cool and moist. The seeds often germinate in July after a good soaking rain. In the winter, you can protect it with a row cover. I often do this, but I have had arugula overwinter with no protection. Even' Star is a variety that is freeze-hardy to 6° F. It is fun to experiment with different varieties. I have tried the wild strains and one that tastes like wasabi."

Photo: Christine Putnam

Plant Partnerships in Your Garden

By mking | May 2021-Vol.7, No.5

What comes to mind when you hear the term *partners*? Perhaps you envision a healthy relationship between two people. Perhaps you think of successful business partners who work together. Perhaps you imagine satisfied co-workers who manage projects together. For gardeners, our attention turns to partnerships in the horticulture world. No matter which direction your mind goes, these phrases are likely to pop up: mutual support, beneficial association, and cooperative endeavor. Let's dive in to learn more about plant partners in the vegetable garden.

Fresh garden vegetables, courtesy of Pixabay

A partnership is a relationship that entails cooperation between two entities with shared rights and responsibilities. Science-based data helps us understand how morphology, microbiology, and chemistry influence interactions among living things in your garden. To start with, envision your vegetable patch as a living ecosystem (Hemenway, 2009). Aim for your garden to be a thriving plant community with a variety of interrelationships that mimic nature's rules (Cunningham, 1998). You might need to shift your view away from a neatly-engineered plot with straight rows of veggies toward a more natural-looking space with a varied collection of plants arranged to support beneficial partnerships. The goal? Purposeful plant diversity and plant companions as optimal neighbors in your vegetable garden.

Related Terms

You may have heard some of these phrases that refer to plant relationships. The following explanations will build greater clarity for these related techniques and principles.

Flowers and vegetables can work together in the garden, courtesy of Pixabay

Polyculture – This term suggests an agricultural system that includes a variety of unrelated plants occupying the same space (or garden), primarily to **deter the spread of pests and diseases** and amplify productivity (Chalker-Scott, 2015). As a gardening strategy, polyculture focuses on mutually beneficial relationships among plants, thereby increasing biodiversity to attract the "good guys" (beneficial insects) while confusing the "bad guys" (horticulture pests).

Bee on calendula flower, courtesy of Pixabay

Companion planting – This term, one of the oldest gardening traditions, suggests pairing up different plants that seem to do well together, including vegetables, herbs, and flowers. The goal is to create a more productive garden **based on the complementary physical characteristics** of certain types of plants, such as size, growth habits, nutrient needs, and ability to resist pests. The example of "Three Sisters Gardens," which comes from Native Americans, is probably the most well-known set of companion plants. In this case, planting corn, beans, and squash together works well. Rapidly-growing beans are nitrogen fixers, tall cornstalks support the beans that climb up them, and large, low squash plants discourage weeds and help retain soil moisture.

Beans growing next to corn in garden, courtesy of Pixabay

An issue with the companion planting approach is that it is considered an experimental field (Jeavons, 2021). Unfortunately, some recommendations for companion plants are not backed up by scientific evidence. Sure, tansy attracts ladybugs to a garden, and they dine on pesky aphids and other insect pests, but it's best to have science-based data to explain what's happening with those relationships. For example, Mexican marigolds are widely known as an effective deterrent for soil nematodes, so many gardeners plant their own favorite varieties of those flowers in vegetable beds. It turns out that some marigold varieties attract other pests, so this general recommendation for companion plants may not achieve desired results. Furthermore, to achieve the full benefit of nematode deterrence, marigold plants must be turned over and added into garden soil after the harvest.

Interplanting or intercropping – These terms refer to the practice of cultivating different varieties of plants in the same garden (or field), which conserves space. This method avoids the serious drawbacks of monoculture plantings that deplete soil nutrients and lure pests into their midst. Interplanting relies on particular reasons for whatever combination is chosen (Hemenway, 2009):

- Physical form and resource needs – Planting carrots next to onions and lettuce makes sense because of different root depths, leaf sizes, and requirements for sunlight.
- Growth and timing – Planting radishes, peppers, and lettuce near each other is useful because radishes grow and mature quickly, while peppers are slower to grow and ripen. The lettuce in-between them is happy for some shade.

The trouble with interplanting is that it just scratches the surface of why plant partnerships work, such as focusing on competition for sunlight. This method doesn't go far enough to capitalize on the mutual benefits of certain plant partnerships, such as which plants repel which insect pests or help to decrease the incidence of plant diseases.

Cover crops – This well-known farming method is achieved when non-harvested crops, such as winter rye, buckwheat, or crimson clover are planted in the vegetable garden. Cool-season cover crops "cover" soil during chilly winter months. Warm-season cover crops "cover" soil before vegetable seeds are sown. They can also "cover" a fallow area of the garden. Cover crops provide many benefits, including improved soil structure and fertility, addition of

Buckwheat, a good cover crop, courtesy of Pixabay

organic matter, reduction of soil erosion, weed suppression, and habitat-creation for beneficial insects. Usually, cover crops are turned into the soil or mowed down before vegetables are added to those areas of the garden.

How Plants Influence Their Environment and Each Other

Remember that any plant cultivated in an outdoor environment will adapt to and change its surroundings. A plant will enact various survival strategies, and some of those actions may benefit its next-door neighbors. When two different types of plants benefit from this interaction in their local community, it's called a plant association (Chalker-Scott, 2015)

Tomatoes and basil are good garden companions, courtesy of Pixabay

Think of your vegetable garden as a well-balanced system with a multitude of connections. For best results, strive for beneficial associations through intentional planning. To determine which plants will be good neighbors, consider the following aspects of gardening.

Soil Conditioning

All plants need nitrogen, which helps them develop leafy green growth. Some plants are nitrogen generators, and they are true heroes in the vegetable garden. Legumes, or members of the Fabaceae family, have the capacity for nitrogen fixation. They take nitrogen from the air and transform it into a form that plants can readily use. If you have beans and peas in your garden, those crops are adding nitrogen to the soil and sharing it with other crops. For optimal support, plant these helpful partners in close proximity to other vegetable crops and leave them in place after harvesting for added benefit to the soil.

Pea plants add nitrogen to garden soil, courtesy of Pixabay

Bean plants are legumes, known for nitrogen fixation, courtesy of Pixabay

To assist beans and peas in sharing nitrogen with their neighbors, the following are great partners to place in alternating rows (Walliser, 2020):

- Garden beans (green or yellow) and potatoes
- Fava beans and sweet corn
- Cowpeas and peppers
- Peas and lettuces
- Edamame and fall greens

Soil Structure

Heavy or compacted soil is far from ideal for vegetable gardening. Fortunately, some plants help loosen soil, while adding nutrients and organic matter as they decay. As a cover crop, buckwheat is particularly effective for this purpose. Two other plants are excellent "bio-drillers" that handily break up heavy soil and open up channels for water and air circulation: turnips and forage radishes. Look for special varieties of these two vegetables with elongated taproots that can grow several feet down into the ground. They are champions for improving soil structure (Walliser, 2020), and in doing so, these bio-drillers create a beneficial partnership with the soil.

Weed Control

Every gardener feels the pain of all those unwanted green things that appear just about everywhere. Alas, no matter how hard we try to get rid of them, they return in full glory. One approach is to grow "living mulches" between and around the crops in your vegetable patch. These plants will block light from reaching the ground and help prevent weeds from sprouting. They also increase mycorrhiza in the soil, a beneficial fungus that supports plant health. You can plant living mulches between rows of veggies, around the base of crops (especially taller plants), or as walking paths in the garden. Great choices for this purpose are common thyme, white clover, and alfalfa, which tolerate foot traffic. A word of caution: if these plants get too thick, they will compete with crops for nutrients. You can cut back living mulches periodically, so they don't grow out of control. **Here are a few recommended living mulch companions** (Walliser, 2020):

Crimson clover is effective as a living mulch, courtesy of Pixabay

- Crimson clover and Cole crops
- Red clover and winter squash
- White clover and strawberries or blueberries
- White clover and tomatoes or peppers

Beneficial Insects

Marigolds attract pollinators and help control soil nematodes in the garden, courtesy of Pixabay

Although most of us are quite familiar with the negative impact of insects on developing produce, let's not forget about predatory species that consume other insects or parasitic creatures that feed and disable other insects. Be sure to include nectar-rich plants that attract beneficial insects to your garden, so they can do their good work of dining on unwanted critters. By **partnering a plant prone to pests with a plant that lures in the predators of that pest**, you'll score a big win. The following pairings are well-suited to this relationship:

- Lettuce and greens with dill or fennel that offer desirable nectar to ladybugs, soldier beetles, damsel bugs, and parasitic wasps who zoom in to help control the aphid population
- Carrot-family herbs (dill, cilantro, fennel, anise) and mint-family herbs (sage, marjoram, oregano, rosemary, thyme, lemon balm) with vegetables that tend to have caterpillar problems. These herbs attract parasitic wasps that can take down pesky problem critters, such as unwelcome tomato hornworms.
- Cole crops, such as broccoli, cabbage, and cauliflower with lacy phacelia to control cabbage aphids. The lovely flowers of this plant attract bees and other pollinators, some of which are predatory insects that gobble up aphids.

Pest Management

A garden free of pests is impossible, but certain plant partnerships lend a hand in bolstering pest control. Insects find host plants through visual and chemical cues, so mixing up these cues with other plants can confuse potential pests. In "trap cropping," vegetable crops are planted with companion plants that are purposefully "sacrificed" to insect pests, in order to save desired produce. In some instances, the trap crop can be located on the edge of the garden to keep pests away. This works well for potato beetles, squash bugs, and cabbage worms. In other cases, especially if pests are not highly mobile, the trap crop should be interplanted with the vegetable crop. This strategy is more effective for aphids, mites, and whiteflies. The following combinations have a good track record of success.

- Cowpeas for southern stink bugs – Stink bugs feed on tomatoes, beans, and peaches, but if cowpeas are planted a few feet away, you can collect and dispose of them before they get to those veggies.
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  Hubbard squash, a favorite of squash beetles, courtesy of Pixabay

- Blue Hubbard squash for squash bugs and vine borers – These destructive insects prefer blue Hubbard squash over other squash, as well as pumpkins and melons. By planting a blue

Hubbard squash on the periphery of your garden 3-4 weeks ahead of the other crops, you will lure squash bugs and vine borers away from other squash varieties, pumpkins, and melons.

- Radishes for flea beetles – Adult flea beetles are notorious for wreaking havoc on many crops by chewing on the leaves, and their larvae nibble away on roots underground. It turns out that their preferred veggie is radishes. By interplanting radish seeds ahead of when the other crops will mature, you can save most of your peppers, tomatoes, potatoes, and Cole crops.

In some pairings, one type of plant will "mask" the chemicals that attract insect pests to a particular crop, thereby limiting damage to that host vegetable. Studies have shown that these combinations work well to reduce pest problems in a vegetable patch (Walliser, 2020).

Radishes help keep flea beetles away from garden crops, courtesy of Pixabay

- Zucchini or summer squash and nasturtiums to deter squash bugs –Look for bush-type nasturtiums if your space is limited, and try the vining type of nasturtiums that will surround squash plants if you have ample garden area. Colorful nasturtium flowers are edible, an added bonus, and they attract beneficial pollinators.

Nasturtium flowers attract pollinators and deter squash bugs, courtesy of Pixabay

- Peppers and allium plants to alleviate problems with green peach aphids (which carry plant viruses) – Onions, scallions, and garlic have the power to keep highly destructive aphids off your prized pepper plants.
- Tomatoes and basil to keep thrips away – The scent of basil masks the scent of tomato plants, discouraging thrips from landing on tomatoes and bringing unwelcome diseases.
- Collards and calendula to prevent aphid infestation – Aphids love collards (and most Cole crops), but calendula is an effective

deterrent that can save your crop from devastation.

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Bee visiting catmint flower, which keeps potato beetles away, courtesy of Pixabay

Potatoes and catmint to deter Colorado potato beetles – When planted right in your potato bed, the fragrance of catmint helps to drive away potato beetles from feeding on those plants.

Another pest management strategy reflects the "resource concentration hypothesis," which suggests that insect pests have a tougher time locating preferred host plants when there is greater diversity in a garden bed. In other words, if you embrace polyculture in your vegetable garden, the insect pests may have trouble figuring out where they want to hang out and cause damage.

Cabbage growing amongst calendula, courtesy of Pixabay

Summing It Up

Truth be told, I got quite excited when researching this topic because my vegetable garden has struggled with many of these issues. As a proponent of organic farming, I refrain from use of toxic chemical controls on vegetables for human consumption. Now, I have high hopes that effective plant partnerships will minimize or help to resolve the contentious problems that interfere with a bountiful harvest of healthy produce. I've redesigned my garden plot with an eye for mixing things up and the inclusion of more carefully-selected flowers and herbs. I've decided to be comfortable with a slightly untamed look that more closely represents nature. I'm looking forward to observing my garden as it is transformed into a diverse, self-sustaining system. And I'm delighted at the notion of plant partnerships that can take on some of the work required to maintain a thriving community of

edible crops.

Resources in Print *(recommended books on this topic)*

Chalker-Scott, Linda. (2015). *How Plants Work*. Portland, OR: Timber Press.

Cunningham, Sally Jean. (1998). *Great Garden Companions*. Emmaus, PA: Rodale Press.

Gillman, Jeff and Maynard, Meleah. (2012). *Decoding Gardening Advice.* Portland, OR: Timber Press.

Hemenway, Toby. (2009). *Gaia's Garden*. White River Junction, VT: Chelsea Green Publishing.

Jeavons, John. (2012). *How to Grow More Vegetables*. Berkeley, CA: Ten Speed Press.

Walliser, Jessica. (2020). *Plant Partners*. North Adams, MA: Storey Publishing.

Online Resources

Companion planting and trap cropping vegetables

Guidance from the University of Minnesota Extension Service

Companion planting in the vegetable garden

Recommendations from the University of Massachusetts at Amherst

Benefits of companion planting

Suggestions from the Penn State Master Gardener Program in Susquehanna County

Companion Planting Chart

Which vegetables grow well together and which pairings don't do so well together