

February 2021-Vol.7,No.2

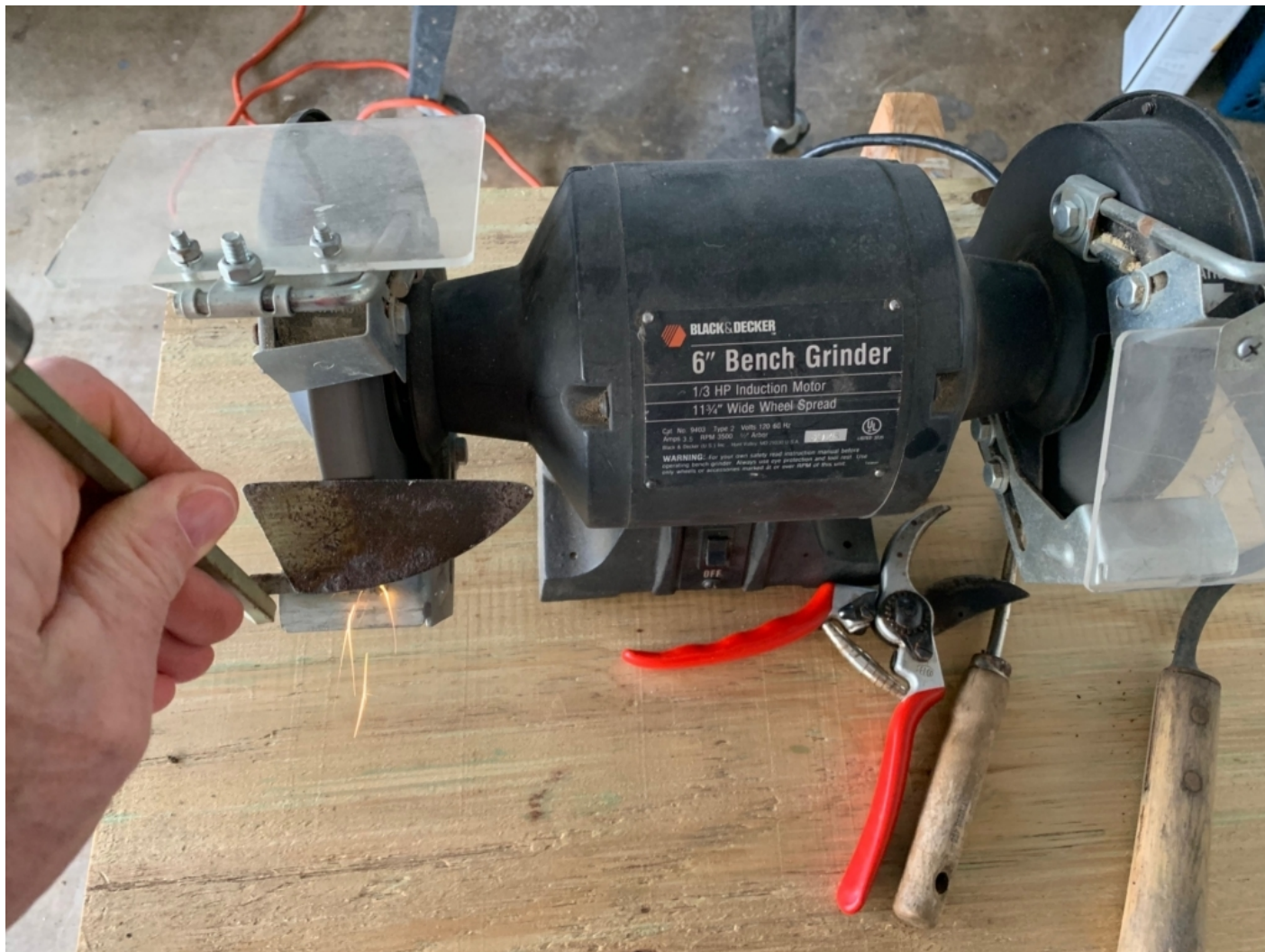


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Edible Gardening in February

By Ralph Morini | February 2021-Vol.7,No.2



February is still winter but days are getting longer and [temperatures are inching their way up](#) from the January lows. Edible gardeners want to get moving to acquire seeds, start seeds indoors for mid-to-late March transplanting of cool weather crops, and to make sure tools and equipment are ready to go. It is also a good time for fruit growers to plan new plantings and prune existing trees and bushes.

Planning

As we've discussed in recent issues, maintaining a garden journal can really contribute to gardening success. If you haven't done it yet, now is the time to:

- Make a reproducible sketch of your garden area. Organize where you will plant different vegetables, herbs, and flowers, making sure that tall plants don't shade short ones, that plants are rotated through the garden on a 3-year cycle to minimize disease prevalence, and utilize [intensive gardening techniques](#) to get the most out of your space while helping reduce weeds and insect issues.
- Review hardiness and time-to-harvest information from seed packets to plan when to make

initial and follow-up plantings to maintain a steady harvest and progress from spring to summer to fall crop plantings.

- Review seed catalogs to choose what to purchase this year. Check the new [All America Selection Winners 2021](#) to see what's new and interesting.
- Clean, sharpen and lubricate your hand and power tools, and clean and disinfect pots and containers with a 10% bleach solution.
- Check your seed inventory so you don't waste time trying to germinate non-functional seeds. Find guidance for germination testing in the January 2019 Garden Shed article "[Good Seeds, Bad Seeds](#)"

Seed Starting



"seeds started" by [anneheathen](#) is licensed under [CC BY 2.0](#)

Starting plants from seeds is less expensive and allows gardeners a broader variety of selection than buying transplants from local garden centers. Here are some guidelines for [successful seed starting](#):

- Planting is typically best done about 6-8 weeks before transplanting. Starting too soon yields leggy, spindly plants that don't do well outside.
- Light is important. It can come from a south facing window or a fluorescent fixture equipped with one warm and one cool fluorescent bulb. Commercial grow lights also work well. Keep the light about 6 inches above the tops of plants, and keep it on for about 16 hours per day.
- A sterile potting mix that is fine, uniform, loose, and aerated is best. Common commercial mixes are a combination of peat and perlite or vermiculite. In any case, start with something that is insect, disease, and weed seed free.
- Most plants prefer a temperature of 65-75°F. If the growing area is cooler than this, a heating mat is a good idea for both germination and seedling growth.
- Containers can be anything from purchased or home-made flats to vegetable cans to yogurt containers. It is essential that they have drainage holes. Space seeds in flats according to the package directions, and thin overly dense seedlings soon after germination.
- Plant seeds at a depth of 2-3 times their diameter (not length). Moisten thoroughly after planting. Keep moist, not soaked. If it dries out, the seed won't germinate. Too wet invites

fungus and damping off.

- To help maintain soil moisture while waiting for germination, cover pots or flats with clear plastic wrap or other clear cover. Keep soil below the top of the flat or container so that any cover is an inch above the soil. Remove cover immediately after germination.
- Transplanting should take place after one or two sets of [true leaves](#) appear.
- More on transplanting next month.

For another, more detailed look at indoor seed starting, see this month's article, [How to Start your Garden Seeds](#). The VA Cooperative Extension offers good advice for seed-based gardening in [Plant Propagation from Seed](#) and [Seed for the Garden](#).

VCE publication [Virginia's Home Garden Vegetable Planting Guide](#) offers guidance for both planting times and which vegetables are best transplanted vs direct seeded outside. In hardiness zone 7a, March is the time to transplant broccoli, cabbage, cauliflower, and head lettuce. So get those seeds started now to be ready to transplant next month.

Organic Weed Management

If you dislike weeding during the summer, you might like to try **occultation** as a **technique for weed control**. Its use is increasing in the organic market-farming community. The first step is to cut your cover crop or trim all growing vegetation in the garden beds as close to the ground as possible. Then cover beds with black plastic sheeting or tarps, well secured around the edges. Keep light out and let the sun's heat penetrate the soil for 6 weeks or more. Then remove the plastic, rake off dead vegetation and rake the surface smooth to be ready to plant.

Reports in organic gardening literature claim significant reduction in weed infestation and weeding labor when following this technique. I'm trying it for the first time this year and will report results in a couple of months.

Fruit Grower Tasks



"Pruning pear trees" by NSW DPI Schools program is licensed under CC BY-NC-SA 2.0

The best time to prune fruit trees is while they are dormant, just prior to active growth. Pruning helps manage tree size and shape. Most importantly, it can help trees support heavy crops without damage while allowing abundant air and sunlight penetration. At a minimum, remove dead and damaged wood. Remember to disinfect cutting tools before and after. Detailed guidance for fruit tree management is provided in the VCE publication [Tree Fruit in the Home Garden](#).

A broader-based article on good pruning practice for a variety of trees and shrubs is available in the article [A Pruning Primer: Tools, Techniques and Timing](#) from the February 2020 Garden Shed.

For guidance on growing small fruits, [Small Fruit in the Home Garden](#) is a helpful resource. It covers location, soil management, variety selection, planting, and pruning

techniques for strawberries, blueberries, raspberries, blackberries and grapes. Because best practices and requirements vary significantly by type of fruit and even within varieties, it is a worthwhile read before purchasing and certainly while caring for any of these crops.

I hope you are as excited as I am to get this gardening season moving and look forward to visiting again next month.

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How Gardeners Can Help Mitigate Climate Change

By Cathy Caldwell | February 2021-Vol.7,No.2



I recently had the good fortune to hear a virtual presentation by Dr. Deborah Lawrence, a professor of environmental sciences at the University of Virginia, where she is serving as director of the Environmental Thought and Practice Program. Much of her research is focused on the links between tropical deforestation and climate change. One of her goals is to build community around climate action, and Dr. Lawrence believes gardeners can contribute mightily in the effort to combat climate change. Her recommendations are outlined below.

Protect and Expand Forests

Trees are made of carbon, and they absorb quite a bit of carbon dioxide, too. [Stanford.edu](https://www.stanford.edu). Deforestation

contributes 12% of the total global greenhouse gas emissions. We gardeners can certainly aim to add more trees to our own properties, and we can encourage our neighbors to do the same. In addition, we can protect any forests near our homes. We tend to be keen observers, so let's put those tendencies to work by monitoring our trees for signs of trouble, like pests, diseases, or choking invasive vines. Oriental bittersweet can swallow trees whole and kill them, so be vigilant and remove it early. For photo guidance in identifying tree disease, check [Forestry Images.org/Diseases](https://www.forestryimages.org/Diseases). If you would like to enhance your knowledge of diseases affecting oak trees, be sure to check out a recent *Garden Shed* article, [What's Killing our Oak Trees](#).



American Holly (*Ilex opaca*). Photo: Richard Webb, [Bugwood.org](https://bugwood.org), CC BY 3.0

Planting new trees is a powerful way to help mitigate climate change. [Proceedings of the National Academy of Sciences, Oct. 2020](#). You'll definitely want to plant native trees, since they'll do double duty — not only sequestering carbon, but also providing food for native bees, beneficial insects, and other wildlife hard hit by climate change. If you're making a decision about which tree to plant, an excellent place to start is [Piedmont Native Plants: a Guide for Landscapes and Gardens](#), formerly available only in book form, but now available online. This Guide is helpfully divided into two chapters on trees — short and tall. Another source is [Common Native Trees of Virginia](#).

Remember that you can easily search prior issues of *The Garden Shed* for articles on trees of interest to you. You'll find the "Search this site" function on the front page of each issue of *The Garden Shed*. Here are links to recent articles on native trees: For detailed information about maples, see [Red Maple Earns its Popularity, The Garden Shed](#), and for our native white oak, see [White Oak — A Majestic Native Species, The Garden Shed](#), for native hornbeam, see [Consider a Hornbeam, The Garden Shed](#).

Dr. Lawrence also recommends that we **avoid cutting large trees** — which sequester large amounts of carbon — to the extent possible. This recommendation might be easier said than done; however, it has me rethinking some of my garden plans. For example, I've been planning to remove a native tree that is in the way of a hedge I'd like to create, but now I'm looking for ways to achieve my goal without chopping down a large tulip poplar.

Manage Yard Waste and Food Scraps to Avoid Methane Emissions

Dr. Lawrence urged us to manage our yard waste thoughtfully, or it could end up producing methane. I knew that methane was one of the "greenhouse gases" that trap heat near the Earth's surface, but I learned that there's plenty more to know about methane. Perhaps the most important thing to know is that "according to the Intergovernmental Panel on Climate Change (IPCC), **methane is more than 20 times as effective as CO2 at trapping heat in the atmosphere.**" [Carbon, Methane Emissions and the Dairy Cow](#) (Penn. St. Ext. 2016). Unfortunately, scientists are reporting major increases in methane in recent years.

Methane gas has both natural and man-made sources, and oil and gas operations are major emitters. But natural sources of methane? Well, we've all heard about the methane produced by cows, which scientists politely refer to as "enteric fermentation." But, unfortunately, methane is often produced by the decomposition of biodegradable materials — like tree limbs and clippings from yards — in landfills. That's because the decomposition process in landfills often occurs in the absence of oxygen — anaerobically — and

that results in methane gas emissions. Happily, some landfills now have some method for managing the methane, but until that's the case universally, we can all help out by diverting our yard waste from the landfill.

What's the final resting place of our local yard waste? The City of Charlottesville does not offer curbside yard waste collection, nor does it accept yard waste in its composting drop-off programs. Albemarle County does not have a landfill, so trash haulers send trash to a transfer station, perhaps the Ivy Materials Utilization Center (MUC) or to another transfer station where trash is consolidated into larger trucks and then hauled to the [Shoosmith Landfill](#) in Chesterfield County or to another Virginia landfill. [Albemarle County.org/Solid Waste & Recycling](#).

The good news is that if yard waste is delivered to the Ivy MUC, it is ground into mulch, which is then sold to the public. [Ivy MUC Services and Fees/Disposal Charges/Rivanna.org](#). But what happens to the yard waste that is collected by the many private trash haulers in our area? That's an important question, but it's not easily answered. Looking at a particular hauler's website has not been illuminating, at least in my research. **The Albemarle County website has the following statement:**

Some haulers use the County Waste Material Recovery Facility (MRF) co-located at the Shoosmith Landfill to sort their recyclables. The County does not oversee these services so encourages residents to ask their haulers about what recyclables they collect and what happens to them.



The Grinding Operation at Ivy Materials Utilization Center. Photo courtesy of Ivy MUC, Rivanna Solid Waste Authority

We gardeners can make inquiries of our private haulers, and we can make it clear that we do NOT want our yard trimmings and brush to end up in a landfill. Who knows what might happen if they are inundated with telephone calls?

Statistics on compost and wastes

268 MILLION

TONS OF WASTE WERE GENERATED IN THE U.S. IN 2017, WITH THE AVERAGE AMERICAN PRODUCING 4.5 POUNDS PER DAY

28 PERCENT

OF WASTE DEPOSITED IN LANDFILLS CAN BE COMPOSTED. THIS WASTE LEADS TO INCREASED EMISSIONS OF METHANE, A POTENT GREENHOUSE GAS.

7.8 MILLION

IF EVERYONE IN THE UNITED STATES COMPOSTED, IT WOULD BE EQUIVALENT TO REMOVING 7.8 MILLION CARS FROM THE ROAD.

2.5 TIMES

SOIL WITH COMPOST ADDED TO IT CAN HOLD 2.5 TIMES MORE WATER THAN TRADITIONAL SOIL, REDUCING THE AMOUNT OF WATER THAT NEEDS TO BE APPLIED.

Key Statistics for Waste and Compost in 2017, courtesy of Indiana University Environmental Resilience Institute and U.S. Environmental Protection Agency

Avoiding the landfill is perfectly do-able when you're dealing with grass clippings and smaller trimmings. But does this mean I should be going in on a chipper/shredder with my neighbors? It might make sense on large properties that produce lots of yard waste, but that chipper/shredder is going to produce greenhouse gases, too. If your yard has an out-of-the-way area or adjoins a woods, what about making a pile of limbs and brush there as cover or habitat for birds, bees and other wildlife? Those tree limbs will decompose slowly and naturally, and **this process does produce some carbon dioxide as part of the natural carbon cycle:** i.e., plants remove carbon from the atmosphere for photosynthesis, the carbon moves among organisms through the foodweb, and is then released by decomposition. Still, from the standpoint of reducing greenhouse gas emissions, a brush pile in your yard is preferable to sending it to a landfill. And whatever you do, avoid burning your brush, since combustion produces carbon dioxide and other greenhouse gases.

Use Best Composting Practices

We gardeners know that composting is good, right? Well, it's not that simple. Composting food scraps and clippings actually produces some greenhouse gases as part of that natural decomposition process mentioned above. This was news to me. And I was shocked to learn that methane is sometimes found at the bottom of compost piles because that's where anaerobic conditions can occur. It turns out that my **garden fork is an important weapon in reducing greenhouse gas emissions** because **aerating your pile helps prevent methane**. Combine this with other good composting practices — balancing the carbon-to-nitrogen ratio and providing adequate moisture — and you will minimize greenhouse gas emissions.

Are you composting your paper towels? I have to admit that I had not been doing this until the pandemic

rolled over my life. Then suddenly my family and I were doing way more handwashing, and in our efforts to be really clean, we were avoiding the cloth towels by the sink. I wasn't comfortable with throwing all that paper into the garbage, so I did some research. The good news is that paper towels and napkins — even those that are food-soiled — should definitely go into your compost bin, unless they were used with harsh chemicals or have a lot of grease or oil attached. [Backyard Composting, Va. Coop. Ext.](#) It's a good idea to shred or tear paper towels first. In fact, do the same with newspapers, paper bags and the like; most paper is safely compostable. [Composting at home/Indiana Environmental Resilience Institute.](#)

Make your Yard and Garden Part of the Solution



Native perennials like this Echinacea store carbon for longer than annuals. Photo: Pat Chadwick

Another surprising thing I learned from Dr. Lawrence is that our plant choices can make a difference in mitigating climate change. When we choose ornamentals, the factors we usually consider are ease of culture, size, native status, flower color, pests, and the like. Dr. Lawrence would have us add another factor: **how long can carbon be sequestered in this plant?** The answer to this question **favours perennials over annuals**, and gives a **major endorsement to shrubs and trees**. This approach can be called a “climate victory garden.” Part of that garden should be for growing as much of our own food as possible, thus reducing the fossil fuel emissions entailed in the production and transportation of food grown in large agribusiness operations.



A garden featuring shrubs and trees designed by Fran Boninti, the much-admired PMG'er whose garden has been featured in Through the Garden Gate tours. Photo: Cathy Caldwell

Avoid combustion engines. Did you know that gas-powered yard tools cause 4% of carbon emissions? Rake your leaves; don't blow them. Mow your yard with a push or electric mower. These tactics might strike some as burdensome — with relatively little benefit — but they can make a major impact if enough of us are willing to change.

Advocate for Climate Action

People who garden tend to be lovers of the earth; they are also quick to notice changes in whatever spot of earth they cultivate. These traits make gardeners well-suited to advocacy for climate action. Dr. Lawrence suggested involving ourselves with Climate Action Together, a program uniting Charlottesville, Albemarle County, and the University of Virginia in planning for and taking steps to achieve emission reductions. Find out more about this project and how you might assist at [Climate Action Together/Advancing Climate Action in Charlottesville-Albemarle-UVA](#).



Using human power to mow the lawn is one way we can reduce greenhouse gas emissions. Photo: Sue Mecklem, CC-BY-NC-ND-2.0, [flickr.com](#)

Become a Citizen-Scientist

If buds on dogwoods open earlier than usual, we gardeners are often the first to take notice. We can put our observational tendencies to work by monitoring and recording our observations, building data for researchers to mine for new insights into our changing climate. Here are a couple of citizen-science projects you might like to be part of:

[Budburst/Chicago Botanic Garden](#): Volunteers observe and report on leafing, flowering, and fruiting of plants. The data is used by research scientists, educators, and horticulturists “to answer specific, timely, and critical ecological research questions. These observations are used to better understand how plant species and ecosystems respond to changes in climate locally, regionally, and nationally.” In addition to this project, the Chicago Botanic Garden sponsors other citizen-science projects. You may want to look at the entire list, [Project List/Budburst](#), but the following may be of particular interest:

- [Cherry Blossom Blitz](#): Observe and report on blossoming of cherry trees near you.
- [Nativars Research Project](#): Participants observe and report on pollinator visits to five species of natives and cultivars in their yards to help scientists answer this question: “Do nativars provide the same resources for pollinators as their wild cousins?” This project runs through the fall of 2022, so there’s time to add some of the target plants to your garden or to containers on a porch or patio. For detailed coverage of the natives vs. nativar issue, see [Native Species or Cultivars of Native Plants — Does it Matter? / The Garden Shed](#).

[Audubon Climate Watch](#): By observing birds in your area, using a specific protocol, you can assist scientists studying how climate change is affecting birds. To see an article that used citizen-gathered data, check here: [Audubon.org](#). The next survey will take place **January 15 - February 15, 2021**, and is open to the public. Find out more here: [How to Join Climate Watch](#).

[Caterpillars Count!](#): Participants survey shrubs and trees for caterpillars and other arthropods, and the data is used to determine periods of abundance, and to what extent climate change is affecting their populations. This project is sponsored by the University of North Carolina and is part of the nationwide [Pheno Mismatch](#)

project funded by the National Science Foundation. These scientists are studying *phenological mismatch*, a possible result of climate change. For example, if a plant species blooms earlier than prior years, but the pollinators that feed on and pollinate this flower do not arrive or grow earlier as well, then a phenological mismatch has occurred; as a result of this mismatch, the plant population declines, and the pollinators must find other sources of food.

[Monarch Model Validation Project/Univ. of Maine Cooperative Fish & Wildlife Research Unit](#): Observe and report monarch butterfly migration stopover habitats.

[Monarch Watch](#): Volunteers track the number of monarchs seen in their yards during spring and fall breeding periods. The data will be used by scientists seeking “to identify critical factors that explain the inter-annual variation” in monarch numbers. The observation periods for 2021 begin in March for those in the South, and in April for residents of the North. Find out more about this project and how to register here: [Monarch Watch/calendar, registration and recording](#).



Monarch butterfly and caterpillar on milkweed. Photo: Rob Routledge, Sault College, Bugwood.org, CC BY-3.0

For those of us who love and care for plants, it’s easy to sink into hopelessness as we watch how climate change is advancing. But there are things we can do, and gardeners are nothing if not doers. As we plan for spring gardening, let’s plan also to accomplish as many of Dr. Lawrence’s recommendations as possible.

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[Small Scale or Backyard Composting/Cornell Waste Management Institute](#) (includes extensive list of resources)

[The Virginia Yard-Waste Management Manual](#), (2d ed. Va.Tech)

[Regenerative Gardening: Growing Food Successfully & Sustainably in a Changing Climate](#) (video, July 2020, Dr. Sarah Via, Professor & Climate Extension Specialist, Univ. of Maryland)

Why Do Rhododendron Leaves Droop and Curl in the Winter?

By Cathy Caldwell | February 2021-Vol.7,No.2



Editor's Note: We are delighted to be able to share with you this article which originally appeared in the internationally-recognized podcast and blog, [In Defense of Plants](#), by the notable plant expert Matt Candeias, Ph.D. His book — [In Defense of Plants: An Exploration into the Wonder of Plants](#) — comes out this month.



Broad leaved, evergreen plants living in the temperate regions of the world face quite a challenge come winter time. Freezing temperatures, lack of water, and often intense sun can exact quite a toll on living tissues. These are likely just some of the reasons why, relatively speaking, broad leaved evergreens are a rare occurrence in temperate zones. By far the most popular group of plants in this category are the *Rhododendrons*.

Many a Rhodo lover has said that they can tell how cold it is outside by looking at *Rhododendron* leaves. Indeed, as temperatures drop, the leaves of these evergreen shrubs frequently droop and curl up like green cigars. These leaf movements do seem to be tied to the weather but their triggers and function have been the

source of a lot of debate. Certainly not all *Rhododendrons* are cold hardy but those that are seem to benefit from reorienting their leaves. Why does this happen?

In the past it has been suggested that leaf reorientation may have something to do with reducing snow load. If the leaves were to remain horizontal, this could cause enough snow buildup to break branches. The fact that a considerable amount of ice and snow can accumulate on branches regardless of leaf position, and largely without harm, seems to suggest that this is not the case. Others have suggested that it could be a way to reduce water loss. As the leaves droop and curl, they are hypothetically increasing the humidity around their leaves and thus reducing their chances of desiccation.



Nature's Thermometers: Rhododendron maximum at Pinchot State Forest in Pennsylvania. Photo: Nicholas A. Tonelli. [CC BY 2.0](#)

This seems pretty far fetched for a few reasons. For starters, *Rhododendron* simply do not open their stomata during the colder months. By keeping them closed, there is no net transfer of water into or out of the leaves. Also, their thick, waxy cuticle keeps water within the leaves from evaporating out as well. Finally, leaf drooping and curling happens long before the ground freezes and therefore doesn't seem to be triggered by a lack of water in the environment.

The leading theories on this phenomenon seem to deal more with issues at the cellular level. The first of these has to do with the sensitive photosynthetic machinery inside the chloroplasts. Leaf drooping may actually be a response to increased light. Though we generally don't think about photosynthesis in the winter months, evergreen plants actually experience the highest light intensities of the year during this time period. Throughout the growing season, they are generally shaded by the overstory. However, once the canopy leaves fall, things change.

Because the plants are, for the most part dormant, the photosystems within the chloroplasts have no way of dissipating the energy from the incoming sunlight. Photosystem II is especially vulnerable under such scenarios. Experiments have shown that leaves that were forced to stay horizontal during the winter experienced permanent sun damage and photosynthesized considerably less than leaves that were allowed to droop once favorable temperatures returned. The thought is that by positioning the leaves vertically, the plants are reducing the amount of direct light hitting them throughout winter and therefore reducing the potential for light damage.



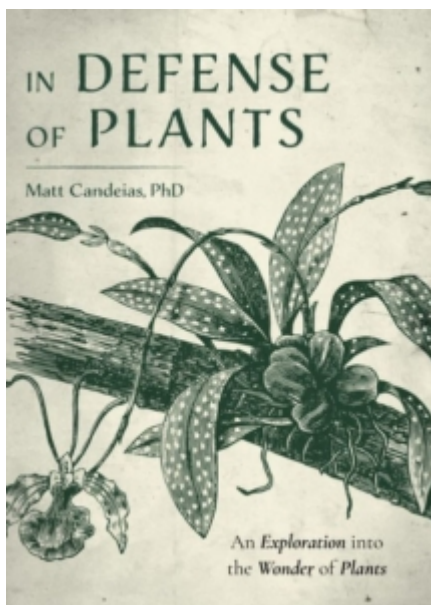
Snow-laden rhododendrons. Photo: Lorianne DiSabato, CC BY-NC-ND-2.0, [Flickr.com](https://www.flickr.com/photos/lorianne/)

These experiments also revealed something else about the changes in leaf position when it comes to shape. As it turns out, curling made no difference in protecting the leaves from light damage. It would seem that drooping and curling are responses to two different types of environmental stress. So, why do the leaves curl?

The answer to this question is physical and one that has gained a lot of research attention in the field of cryogenics. When living tissues freeze, ice crystals build up to the point that they can rupture cell membranes. This is only exacerbated if the tissues thaw out quickly. Anyone that has ever tried to freeze and then thaw leafy vegetables knows what I am talking about.

To best preserve tissues via freezing, they must freeze quickly, which reduces the size of the ice crystals that can form, and then thaw out slowly. Researchers found that *Rhododendron* leaves freeze completely at temperatures below -8 degrees Celsius (17.6 degrees Fahrenheit), temperatures that occur regularly throughout the range of temperate Rhodo species. Again, experiments were able to demonstrate that flat leaves thaw much more rapidly than curled leaves. This is because a curled leaf exposes far less surface area to the warming sun than does a flat leaf. As such, curled leaves don't thaw out as fast and thus are able to avoid much of the damaging effects of daily freeze-thaw cycles.

Though these are all components of the Rhodo leaf puzzle, there is still much work to be done. What we do know is that leaf drooping and leaf curling are two separate behaviors responding to different environmental pressures. Indeed, it appears that these two traits seem to be tied to cold hardiness in the genus *Rhododendron*. What the exact triggers are and how they produce the changes in shape and orientation, as well as the mechanics of winter survival at the cellular level are topics that are going to require further study. Until then, I think it's safe to say that we can appreciate and, to some degree, rely on the spot forecasting abilities of these wonderful shrubs.



Matt Candeias's new book is available from Barnes & Noble, Amazon, Apple books and Bookshop.org.

Editor's Note: The term "**photosystem II**" in paragraph 6 refers to an enzyme that plays a part in photosynthesis. "Oxygenic photosynthesis is the primary solar energy-conversion process that supports much of life on Earth. It is initiated by photosystem II (PSII), an enzyme that extracts electrons from H₂O and feeds them into an electron-transport chain to result in chemical synthesis using the input of solar energy." [Nature.com](https://www.nature.com)

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Featured Photo: Hanna Sorensson, CC BY-SA 2.0, [Flickr.com](https://www.flickr.com)

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Upcoming Events

By Susan Martin | February 2021-Vol.7,No.2

PIEDMONT MASTER GARDENERS

“Garden Basics” Virtual Workshop via ZOOM - FREE

Saturday, February 20

2:00-3:30 PM

“Starting Plants from Seeds.”

Learn basic seed-starting techniques for vegetables and flowers, and how to care for seedlings once seeds have germinated. [Register on PMG’s Events webpage](#) by **February 15**. An invitation for this Zoom presentation will be sent to your email address on the morning of February 20th.

Other Upcoming Garden Basics Workshops, Saturdays, 2:00-3:30 pm, via Zoom:

March 20, “Starting a Vegetable Garden”

April 17, “Herb Gardening: Tips on Growing & Design”

May 15, “Tomatoes and Tomato Diseases”

See the [PMG Events Webpage](#) to register.

PIEDMONT MASTER GARDENERS

SPRING LECTURE SERIES 2021 - VIRTUAL AND FREE

THURSDAYS IN MARCH

Take advantage of these free educational opportunities just in time for spring! Check the [Piedmont Master Gardeners Events Webpage](#) for more information, and to register.

Thursdays 7- 8:15 p.m.

Free and open
to everyone

ONLINE!

Visit:
[piedmontmastergardeners.org/
events/](http://piedmontmastergardeners.org/events/) to register and receive
invitation to Zoom session

March 4
Ira Wallace
*Better
Backyard
Tomatoes*



March 11
Carol Heiser
*What is
Conservation
Landscaping?*

March 18
Mike Raupp
*What a
Warming
World Means
for Plants, Pests
and Their
Natural Enemies*



March 25
**Robyn
Puffenbarger**
*Robins
to Raptors*
Observing Birds
in Our Backyards

2021
**Spring
Lecture
Series**



CHARLOTTESVILLE AREA TREE STEWARDS

Free Classes via ZOOM Announced for first half of 2021

Registrations are now open for the February class. Further information on additional classes will be available nearer the time. These Virtual classes are free, but if you would like to attend, we ask that you register through the links below. After you register, you will receive an email with a Zoom link a few days before the class.

“Tree Basics Class: Tree Identification by Season: Winter”

Tuesday, February 9

7:00-8:30 PM

Throughout the winter season the underlying tree architecture is revealed, providing us with an opportunity to focus on the fundamentals of tree ID. Join us for an evening to learn some key characteristics to identifying trees throughout the year. Emily Ferguson, a Tree Steward, will discuss bark, branching patterns, and more. **Click link to register:** <https://forms.gle/9HuCoqobciMFaF5k9>

ADDITIONAL CLASSES

- **“Select, Plant and Care for Trees,”** Saturday, March 20, 2:00 – 4:00 PM, **Register [here](#)**
- **“Identify Trees in Spring,”** Tuesday, April 13, 7:00 – 8:30 PM, **Register [here](#)**
- **“Identify and Control Non-native Invasive Plants,”** Sunday, May 23, 2:00-4:00 PM
- **“Identify Trees in Summer,”** Tuesday, June 15, 7:00-8:30 PM

See this [link](#) for information on when May and June class registration begins.

CITIZEN’S CLIMATE EDUCATION

“Soil Regeneration and Sustainable Agriculture” FREE via Zoom

Thursday, February 4

6:30-8:00 PM

This **free virtual forum** will discuss the importance of regenerative soil practices in agriculture focusing on soil health to produce better food and to help mitigate climate change. See this [link](#) for more information and to register.

ECOLOGICAL LANDSCAPE ALLIANCE

“Focus on Sustainability”

February Webinars

This webinar series is geared to landscape professionals, land managers, garden enthusiasts, and anyone who stewards the land. The series is presented through collaboration of the Ecological Landscape Alliance (ELA), the Chesapeake Conservation Landscaping Council (CCLC), ReScape, DeepRoots Kansas City, and the American Public Gardens Association (APGA). **Interactive webinars** are taught by experts from across the country and cover a wide range of topics relevant to sustainable landscapes. Additional webinars are being scheduled; please check back often for an updated list of offerings.

Wednesday, February 3 - “American Oaks - Diversity, Ecology, and Identification”

Monday, February 8 - “Regenerative Design - How Living in Agreement with Nature Helps Organizations Thrive”

Wednesday, February 10 - “Oak Red-List Project - Main Threats to Oaks and Saving Oaks from Extinction”

Wednesday, March 31 - “Foliage & Focal Points: Ideas for Budgets and Gardens of All Sizes”

See this [link](#) for information on Ecological Landscape Alliance, membership info, webinar descriptions, times, and fees.

VIRGINIA NATIVE PLANT SOCIETY

POWTOWMACK CHAPTER

“Life in Your Wild Garden” with Laura Beaty via Zoom, FREE

Thursday, February 11

7:30 pm - 9:00 pm

See this [link](#) for more information and to register.

GREAT BACKYARD BIRD COUNT

The Cornell Lab/Audubon/Birds Canada

Friday-Monday, February 12-15

Each year people from around the world come together to watch, learn about, count, and celebrate birds. All you need is a free Cornell Lab account to participate. This account is shared with Merlin, eBird, Project FeederWatch and other projects at the Cornell Lab of Ornithology. Please see this [link](#) for information on

how to participate, and how to register your backyard bird count. Be a part of something BIGGER!

**VIRGINIA NATIVE PLANT SOCIETY
PRINCE WILLIAM WILDFLOWER SOCIETY
“The Pollinator Victory Garden” with Kim Eierman via Zoom, FREE
Sunday, February 21
2:00 pm - 4:00 pm**

See this [link](#) for more information and to register.

**VIRGINIA NATIVE PLANT SOCIETY
ANNUAL WORKSHOP VIA ZOOM in TWO PARTS - -FREE
“Earth’s Climate: Present, Past, and Future”**

Enjoy two evening workshops, March 2 and March 9, and find out how both the present and the past can inform our understanding of climate and climate change.

**Tuesday, March 2 (Part 1)
Tuesday, March 9 (Part 2)**

Zoom Meet & Greet, Welcome and Introduction 5:30 PM each evening, followed by two presentations, one at 6:00 PM, and one at 7:00 PM. See this [link](#) for program descriptions, and to register.

**VIRGINIA COOPERATIVE EXTENSION
LOUDON COUNTY EXTENSION MASTER GARDENERS
11th ANNUAL GARDENING SYMPOSIUM - VIRTUAL
“PLANT, NURTURE, GROW”
Saturday, March 20
9:00 AM - 3:15 PM**

Please see this [link](#) for a full program description, registration, and fee information. REGISTRATION OPENS ON FEBRUARY 1. There is a limited number of spots for this virtual event. Registrants who are not able to attend on March 20 will have access to a recording of the speakers at any time until the end of March.

**VIRGINIA COOPERATIVE EXTENSION FREE ZOOM PRESENTATION
“How to Have the Best Lawn in the Neighborhood”
Monday, February 22
7:00 - 8:00 PM**

Master Gardeners get a lot of questions about lawns. Now is the time to “bone up” on your turf grass knowledge. Adam Nichols, Research Manager for Turfgrass and Weed Science at the Hampton Road Agricultural Research State, will focus on how to establish and maintain your lawn. The presentation will be on Zoom and is free and open to the public. You do not need to register for this event. Use this Zoom link to attend the event: <https://virginiatech.zoom.us/j/89365867543>

**VIRGINIA ASSOCIATION FOR ENVIRONMENTAL EDUCATION (VAEE)
“Seasons Through Virginia’s Regions”
VIRTUAL Mini Conference Series**

Attend one or all of the virtual mini conferences to be held on February 20, July 17, and October 23.

Registration for the February 20 event is open until February 15. See this [link](#) for more information on session, fees, and to register.

GREENSPACE SYMPOSIUM - LIVE ZOOM EVENT

“Back to Our Roots: Leveraging Native Plants to Restore the Environment”

Friday, February 19

9:30 AM - 4:00 PM

Join us for a fascinating day of innovative presentations that dig deep into how native plants can restore natural ecosystems in a range of landscapes, from backyards and public gardens to urban and commercial projects. Experts will tackle the native vs. non-native plant debate: Is a native plant-only prescription necessary? Under what conditions should non-native plants be incorporated, and what are the risks of using cultivars? Join the conversation as experts assess the environmental benefits that native ecosystems create, such as decreasing pollution and fighting climate change.

Register using this link [ActiveMontgomery.org](#) (Course #87621) or call 301-962-1470. Registration includes link to watch recordings of each session after the event.

LEWIS GINTER BOTANICAL GARDEN

VIRTUAL WINTER SYMPOSIUM

“Seek Inspiration Globally, Garden Locally”

Wednesday-Thursday, February 10-11

This year, we present a virtual opportunity to gather and learn from a roster of remarkable garden and design experts. Join us for this two-day symposium to spark your creativity and stretch your imagination in time for the spring season of renewal and hope. See this [link](#) for detailed program description, and for information on fees and registering.

On Friday, February 12, there will be a **pesticide certification day**. See the above link for more information.

LEWIS GINTER BOTANICAL GARDEN

1800 Lakeside Avenue
Richmond, Virginia 23228
804-262-9887

Enjoy the cozy heat of the **conservatory** filled with cacti, tropicals, and orchids, and sate your desire for seeing and sniffing beautiful blooms. See the [calendar](#) for tips what’s blooming outside in February. Masks & online tickets required for entry to the gardens and the conservatory. See this [link](#) for visitor information

NEW DIRECTIONS IN AMERICAN LANDSCAPE (NDAL)

Virtual Presentation “Bird-Friendly Home Landscapes”

Wednesday, February 17

2:00-3:15 pm

What can we do to support birds visiting our homes this spring and beyond? In this workshop, Jillian Bell will take an in-depth look at native plants that will make your home more bird-friendly to our year-round residents and those stopping over on their migration journeys. She will also discuss how to select native plants to attract specific birds to your yard. This virtual presentation is from a New England perspective.

NDAL “Prairie-side” Chats”

Larry Weaner Interviews Gerould Wilhelm, PhD
Tuesday, February 23
1:00 - 2:15 PM

For descriptions of these and other upcoming offerings, and to register, see this [link](#).

ELECTRONICS RECYCLING UNPLUGGED

Friday, February 19

7:30 am - Noon

A local dental office is hosting a one-day electronic recycling event in their parking lot. The event is sponsored by Electronics Recycling Unplugged and will accept a variety of small electronics, including small appliances such as vacuum cleaners, microwaves, hairdryers, fans, old toasters. TV's (Non-CRT Glass fronts), VCRs, cell phones, copiers, laptops, fax, speakers.

Due to the current pandemic, **all drop-offs will take place outside in the parking lot**. Wear a mask and social distance. (6 feet away!). Additionally, if you have Covid symptoms (or have been around anyone with any), you will need to make other arrangements for drop-off to ensure the health and safety of everyone.

The drop-off location is at the lower level parking lot of Charlottesville Dental Health Partners:

3025 Berkmar Dr,
Charlottesville, VA 22901
434-973-4355

****LOWER LEVEL****

www.charlottesvilledental.com

RECYCLING #5 PLASTICS

Whole Foods Market
1797 Hydraulic Rd, Charlottesville, VA 22901
(434) 973-4900

Very few recycling centers take #5 plastics (including yogurt and cottage cheese containers, some carry out containers, etc.), but, at least for now, they can be recycled in the blue **"Gimme 5" bins in front of Whole Foods** at the Charlottesville location. They are then sent to Preserve's manufacturing facilities to be transformed into recycled household products like toothbrushes, razors, tableware, cutting boards, colanders and other kitchenware. Please note that Preserve's website indicates that **the Gimme 5 recycling program has been paused due to the pandemic**, so check with the Charlottesville store before you go.

As of publication, the store confirmed that the bins are still in place and accepting #5 plastics.

[Preserve.eco/Gimme 5](http://Preserve.eco/Gimme5)

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. Starting in January, webinars will be held live on the 4th Tuesday of the month at 2 PM Eastern Time. * The

November and December dates have been moved to avoid conflicting with major holidays. Each webinar will be recorded and [available here](#) for later viewing as well.

Check out the webinar titles and dates below, and click on a title to register:

- **January 26th** - [Evaluation of Canopy Structure, Light and Wind in California's Monarch Groves from Below and Above](#)
- **February 23rd** - [The Beauty and Resilience of Prairie](#)
- **March 23rd** - [Monarchs, Milkweed and Grassland Disturbance](#)
- **April 27th** - [Western Butterflies: An Overview of Threats and Population Trajectories](#)
- **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](#)

Please note this list is subject to change. Their [events page](#) will have the most up to date information on our webinar series, as well as a calendar of additional monarch-related events.

THE NATURE FOUNDATION AT WINTERGREEN

March Guided Hikes

Zoom Lecture Series, "The Birth of the Blue Ridge"

The last two session of a four-part lecture series on **"The Birth of the Blue Ridge" will be offered via Zoom on Friday, February 12, and Friday February 26, 7:00-8:00 PM.** Please see this [link](#) for more information and to register.

For information on **guided hikes**, difficulty ratings, and to register, please see this [link](#) to the February/March calendar.

VIRGINIA COOPERATIVE EXTENSION (VCE) VIDEO LIBRARY

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

Small Fruits in the Home Garden

Good Bugs, Bad Bugs

Succulent Propagation and Care

Boxwood Blight: How it Spreads

For these and many more videos that address specific topics or those of more general interest, see this [link](#).

Starting a Home Vegetable Garden

By Ralph Morini | February 2021-Vol.7,No.2



One of the silver linings of the COVID-19 cloud is that it has put food security issues in the spotlight and motivated many people and community groups to start vegetable gardens. For those with limited or no prior gardening experience, it can be a daunting task. This article presents basic guidance to help new gardeners get started, at a scale and style that fits available space and commitment levels.

General Advice

Gardening can be fun and satisfying, but it requires dedication. Starting small and manageable is a good idea. Learn as you go and grow the garden as you learn.

Sunlight is a critical variable for every garden. A minimum of six hours of direct sun per day is recommended.

We have three somewhat separate, if overlapping, growing seasons in Virginia. Cool weather annual vegetables can be grown in the spring and fall. Warm weather crops grow during summer into fall. Edible plants like asparagus and strawberries can be grown as perennials. Even a small garden, well-planned, can provide fresh produce for most of the year.

Style Options

The article presents three garden style options, one of which will be appropriate for most aspiring vegetable growers:

- **Container Gardens:** If space or ambition is limited, a productive container garden can be assembled on a balcony, deck, patio, or just about any area so long as it receives 6 or more hours of direct sun per day.
- **Raised Beds** are appropriate for a range of outdoor garden spaces. They can be built from many different materials, sized to fit available spaces and made attractive in appearance. They offer a convenient way to build excellent soil quality, while minimizing weeding, watering and maintenance effort.
- **In-ground gardens** can be maintained in a conventional row style or utilize a permanent bed arrangement, with paths between the beds. Many organic market farms operate using permanent in-ground beds with grass or mulched paths to provide access. Rows are good for more mechanized practices but are less space efficient. Beds require manual tending. Like raised beds, permanent in-ground beds lend themselves to intensive planting to maximize production for a given space. Permanent paths prevent walking on growing areas, reducing soil compaction.

Container Gardens



Growing vegetables in containers is a good option for restricted spaces or as an easy-to-access addition to larger raised bed or in-ground gardens. Containers can be quite attractive, using companion planting techniques where a mix of plant sizes and colors are arranged with presentation in mind. Since they can be located close to living spaces, they offer easy access to herbs and other often-used crops.

Important issues include:

- **Sunlight:** Six hours of direct sun per day is a practical minimum for successful growing. Leafy greens might get by with a little less, but fruiting vegetables like tomatoes, peppers, cucumbers, and eggplants like at least eight hours.
- **Container Selection:** Containers can range from 12-inch diameter flower pots to half whiskey barrels. Depth is an important consideration. Crops like lettuces, spinach, chard, and most herbs require at least eight inches of soil depth for root growth. Larger plants like peppers and tomatoes prefer a minimum depth of about 13 inches and a diameter of at least 15 inches.

*Photo: "container garden - week 12"
by eggrole, licensed under CC BY 2.0*

Bigger is generally better. It allows for freer root growth and requires less frequent watering. Containers can be purchased, built, or recycled. All containers need drain holes. Wood, clay, and unglazed ceramics require more frequent watering than plastic or glazed ceramic pots.



Photo: "Container Garden" by climbingcrystal, licensed under CC BY 2.0

- **Soil:** Commercial soilless potting mixes are a good choice. They are loose, lightweight (a help if pots are moved), pH adjusted, pest and disease free, and can be purchased with a starter dose of fertilization included. Do it yourselfers can create a good potting mix with 1/3 compost, 1/3 perlite or vermiculite, and 1/3 potting soil. Vermiculite and compost retain moisture, reducing watering requirements

Raised Beds



Photo: "More Garden Veggies, less FRaNkEnFOodS ~ oscote365 229" by Don J Schulte is licensed under CC BY-NC-SA 2.0

Raised beds are a flexible and efficient option that can fit many circumstances. Beds can be raised as much as six inches above ground level without any sidewalls. Taller beds can be bordered by wood, stone, block, logs, or other materials. Untreated softwoods have about a 5 year life. Cedar and redwood are about double

that. Treated wood has a relatively long life and is ok if it is type ACQ (Alkaline copper quaternary). Don't use treated wood types CCA or ACA, which are treated with arsenic. Don't use creosote-treated wood.



"Edible yard part 3: raised gardens" by juhansonin licensed under CC BY 2.0

Whatever bed height you choose, loosen soil to about a 12-inch depth to avoid limiting root growth. Higher beds require more side support material and more soil to establish, but also require less bending to reach soil level.

Bed length is flexible but they should be 4 feet or less across for 2-sided access and 2 feet across for single-side access. Goal is to reach all parts of the bed without having to step onto the soil. Beds should be level to minimize runoff and erosion.

It is a good idea to calculate the volume of soil you will need to fill the beds and price purchase options. Bags of garden soil from a garden supply outlet make sense for smaller projects. For larger requirements purchasing bulk garden soil from a reputable source is more economical. In any case, add organic matter in the form of compost, manure (not from pets), or mulched yard wastes like grass or leaves. Organic matter fuels the soil organisms that release soil nutrients to plants, while improving water infiltration, soil structure, and the bio-diversity that helps manage pests.

In-Ground Gardens



Photo: "vegetable garden, mid april" by woodleywonderworks is licensed under CC BY 2.0



Considerations for an in-ground garden include:

Raised beds with deer fence. Photo: Ralph Morini

- **Site:**

- Choose level ground with loose, well-drained soil and 6 or more hours of sun per day. In the Virginia Piedmont, our soil is typically clay, neither loose nor well-drained. The soil can be fixed, but the sun likely can't.
- If slopes are the only option, establish beds across the slope and terrace them to minimize runoff and erosion. Use wood, stone or similar materials to support the soil on the downhill side.
- Maintain distance from trees or shrubs that will compete with the smaller vegetables for water and nutrients.
- Avoid unprotected windy areas and the bottom of slopes where colder air collects.
- Locate near a water source. Hauling water to the garden during

summer heat is a serious de-motivator.

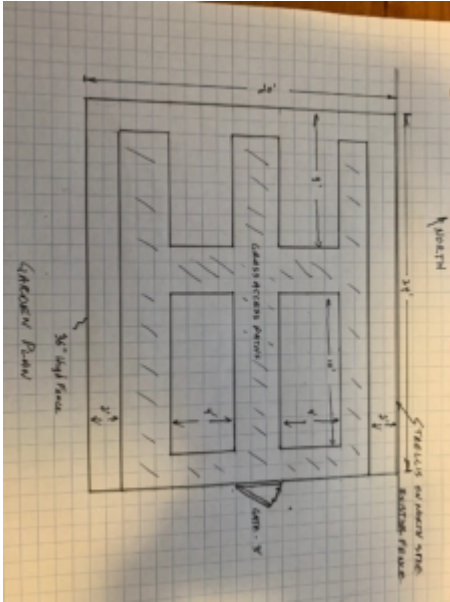
- Consider fencing needs. Different varmints require different fence mesh and heights. A three-foot high fence can keep rabbits out, but deer require something closer to eight feet. Squirrels and chipmunks can circumvent just about anything. If you plan to expand the garden over multiple years, but need to fence in year one, fencing the larger area now and increasing the cultivated area over time may make sense.

- **Garden size:**

When we moved into our current house, five years ago, I built four 4×6 foot raised beds. We grew tomatoes, lettuce, greens, carrots, and cucumbers.



Raised beds. Photo Ralph Morini



This year we built the garden in the design sketch at left and photo at right. It has grass access paths, permanent in-ground beds, and is 480 square feet total. By [succession planting](#) in spring, summer and fall, it will supply plenty of vegetables for a family of four for much of the year.



New garden is a 20' wide x 24' deep permanent bed garden with 36" high fence. Photo: Ralph Morini

New garden plan • Soil Preparation

- The one time that tilling may be recommended is when starting a new bed. It provides an opportunity to loosen compacted soil and add organic matter, a critical step to building soil health. This can be done with a tiller, or by turning the soil with a shovel. The turf can be scraped off and composted, or turned under and allowed to decompose. Working chopped up leaves into the soil at the same time is a good idea. Give them a few weeks to break down before planting.
- Another option is occultation. This requires scalping the grass with a lawn mower and covering it with a black plastic tarp for several weeks to kill grass and weeds. Remove the tarp, rake off dead vegetation, cover with several inches of compost and plant into the compost.
- A third option if you have six months to a year before planting is [sheet or lasagna mulching](#). This requires alternately layering organic carbon- and nitrogen-rich materials to a foot or more high, and letting soil organisms decompose the organic matter while carrying it below the surface. When it is decomposed, plant into the surface material.
- [Getting a soil test](#) prior to planting is important. They are an inexpensive way to learn what the soil requires in order to provide needed plant nutrition. Call your local Virginia Cooperative Extension office to get a sampling kit and advice for testing your soil.

Advice for All Garden Styles

What to plant

- Plant what you like to eat
- Plant amounts based on your intentions to eat fresh and/or to preserve (can, freeze, dehydrate etc.) some of your harvest.
- Items like salad greens can be planted in stages. A new planting every two weeks will provide a steady supply over an extended period.
- Starting with seeds is inexpensive, but requires more attention until seeds germinate and plants become established. Transplants, while more expensive up front, provide more certainty and faster time from planting to harvest.

How to plant

- Prepare seedbeds by driving a digging fork into the soil as deep as possible, and rocking it back and forth to loosen compacted soil while minimizing damage to soil structure and organisms. Remove debris from the surface and rake smooth.
- Follow seed depth and spacing directions from the seed packet. For intensive planting, ignore row spacing and use seed-to-seed spacing in both directions. The goal is to space plants so that mature vegetation of adjacent plants just touches, shading soil and reducing weed growth.

When and How Much to Plant

- In the Virginia Piedmont, Hardiness Zone 7a, we have three planting times each year: spring, summer and fall. Cool weather crops, including lettuce, spinach, carrots, beets, greens, and cabbage family crops, can be planted as early as March 1 for spring harvest and again in early- to mid-August for fall harvest. Summer vegetables, including beans, peppers, tomatoes, cucumbers, squash, and eggplant require warm soil and are damaged by frost. Planting time is late April and early May for summer harvest. The Virginia Cooperative Extension publication [Virginia's Home Garden Vegetable Planting Guide](#) provides planting times for many vegetables and suggests quantities for each.

Where to plant

- Place taller plants on the north side of the garden to avoid shading shorter crops
- If vining crops like peas, snap beans or cucumbers are trellised, a good space saver, be careful not to shade smaller plants.
- Vine crops like melons and squash whose fruits are too heavy to be grown on a trellis need a lot of space and shouldn't be squeezed into a small area.
- [Companion planting](#), grouping certain different items together, can provide benefits, including diversifying soil nutrient demands, reducing pest problems, and increasing yields for a given space.
- [Intensive gardening methods](#), including close spacing, vertical gardening, inter-planting, and succession planting help get the most production from a given area.
- Keeping a journal is a good idea for planning space use and guiding future [crop rotation](#), an important practice to minimize year to year soil borne disease transmission.

Plant Care

- After seeds are planted, keep them moist until germination. Once moistened, if they dry out, they will likely not germinate. Maintain moisture for seeds and transplants until plants are well established.
- Transplants germinated indoors should be introduced to the outdoors and direct sun in small doses over several days to allow them to adjust to outdoor conditions.
- Rule of thumb is that plants require about an inch of water per week, including watering and natural rain. Fewer, deeper waterings are better than multiple surface sprinklings. More during dry periods. Raised beds require more water than in-ground, and containers require more than both. Unglazed ceramic, clay, and wooden containers require more water than glazed and plastic containers.
- Water the soil, not plants, and avoid splashing onto plants. Splashing can transmit soil diseases to otherwise healthy plants. Mulching can help reduce soil splash.
- Potting soils may or may not include plant nutrients. [Fertilization will likely be required](#) during plant growth. Most vegetables are moderate feeders. Cucumbers, squash, and tomatoes require

more fertilization. Potting soils likely don't have thriving organism populations, so synthetic fertilizers make sense. Raised and in-ground beds with added organic matter will have an active soil food web, and organic fertilizers provide a natural slow release food source. Organic fertilizers will be identified on package labelling and include blood and bone meal, cottonseed meal, fish emulsion and other materials that are derived from once living things.

- Weeding is very important to prevent invaders from stealing moisture and nutrients from crops. Pull or scrape them out before they set seed and compost them for adding back to the soil later.
- Mulching, after plants are established, will help conserve soil moisture and keep weeds down. Straw, mulched leaves, grass clippings, and weathered wood chips all work and will also help build soil as they break down.
- Plants are focused on reproduction. If vegetables are left on the plant after maturity, the plant sees its job as done and stops putting energy into continuing to create fruit. Harvest when vegetables are just ripe and remove damaged or diseased items to keep plants producing.
- Spend time in the garden regularly, inspecting plants for pests, disease, or other issues. Yellowing leaves may indicate a need for nitrogen fertilization. Pests like cabbage worms, squash bugs, and cucumber beetles can destroy a crop and spread disease. There are organic pesticides to treat invasions, but the best way to start dealing with them is to pick them off plants and squish or drown them. The internet is a good resource for identifying pests and prescribing solutions. Practice [Integrated Pest Management \(IPM\)](#), which advocates management of problems using the least toxic solutions first.
- Greens and root crops are not grown for fruit, and don't need pollination. But other popular vegetables like tomatoes, beans, cucumbers, squash, peas, and others that produce a fruit containing seeds, must flower and be pollinated. Make your eco-system attractive to pollinators by adding flowering plants. Consider using [native plants that appeal to native pollinators](#).

Give Vegetable Gardening a Try!

I hope that trying to make this article comprehensive hasn't made vegetable gardening seem complicated. There is a lot to it, but after you get a basic understanding, it makes sense. Both [Virginia Cooperative Extension](#) and [North Carolina State Extension](#) have produced publications that address multiple aspects of starting a garden and are good references.

Vegetable gardening can be fun. For many of us, the garden is a refuge. It promotes healthy eating and connects us with our environment at a time when it is existentially important. If you are still tentative, start small. But please, start.

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Featured Photo: [“Raised Bed Garden”](#) by [Lori L. Stalteri](#) is licensed under [CC BY 2.0](#)

How to Start Your Garden Seeds

By Liz Sutphen | February 2021-Vol.7,No.2



The winter can be an exciting time when it comes to garden planning, especially if you are starting plants indoors. It is gratifying to have your garden dreams, whether they be beautiful flowers or bountiful vegetables, sprouting in your own home with relatively little work and expense overall. In addition, with many of us home this winter, it is easier to keep an eye on those remarkable little seedlings and share the caretaking experience with your family.

If you've never started seeds indoors, don't be intimidated.

The steps are outlined below, and if you'd like to watch a video before you start, here's the link: [Video/Starting Seeds Indoors/Univ.Md.Extension](#).

The first step, if you are planning to start seeds at home, is to read the back of the seed package very carefully and determine the germination requirements for the plant you are hoping to sprout. Some seeds germinate in the dark, (e.g. tomato and peppers), while other seeds require special



treatment (e.g. scarification - breaking seed surface — or stratification - chilling). Next, there is the calendar planning. Determine the last frost date for planting in your area and simply subtract the weeks necessary for sprouting to know when you will need to start the seeds in your home. All of this information is clearly outlined on the back of the seed package. For expert advice on timing, take a look at the VCE's "Home Garden Vegetable Planting Guide," [Va.Coop.Ext.](#) *Video: "Seed Starting Indoors," Univ. of Md. Extension.*



Indoor seed-starting setup. Photo: Life of a Gemini, CC-BY-NC-SA-2.0, [Flickr.com](#)

The most important consideration and investment for starting seeds at home is the light source. Light is the secret to successful seedling growth. The light from a window is usually inadequate, so most gardeners use fluorescent lights, often called "shop lights" at the hardware store. LED grow lights are also gaining popularity but come at a slightly higher cost. For the least cost, T5 High Output (HO) fluorescent lights are still the favorite as they can be used for all phases from germination to vegetative growth of your plants. For detailed information on your light options, see [Kansas St.Ext./Lighting options for starting seed \(LEDs vs. Fluorescent\)](#), and [Univ.Maryland Ext./Grow Lights](#).

Any room in your house can be used for seed starting as long as you have a good light source in place. A typical setup might be a counter or a couple shelves, with two standard size trays (or flats) under one 4 ft. long fluorescent fixture with two tubes. You can grow four trays under two fixtures.

Next, gather the following essentials:

- A growing medium free of weeds, insects and diseases (e.g. **soilless seed starting mix** that is labeled sterilized and usually made from peat moss, perlite, coconut fiber, and/or vermiculite)
- Clean containers with good drainage (e.g. recycled cottage cheese containers, yoghurt containers, egg cartons, cardboard containers, paper containers, plastic salad containers). You can buy plastic trays (flats) that are 10.5 in. × 21 in. × 2 in. deep and contain drainage holes, or perhaps you have old ones you can re-use.
- Clean source of water, which you'll need to apply via spray (e.g., spray bottle or gentle nozzle) or through bottom watering
- Heat source to achieve soil temperature 65-75°F (e.g., special heat mats for seed starting, or the top of a water heater, top of refrigerator, or nearby radiator/space heater)

Procedure for Germination

Now that you have all of the critical elements for seed starting, you are ready to begin with these simple steps:

- Moisten sterile medium and then place it in your container to within 3/4 inch of the top
- Plant your seeds.
 - **For flats**, make rows about 1- to 2-inches apart and 1/8" to 1/4" deep across the surface (this formula works for all small to medium-size seeds, which covers all crops *except* cucumber, squash, melons, corn, beans).
 - **For small pots**, plant 1-3 seeds/container.
- Moisten again, cover with plastic wrap or dome lid
- Place in warm area or on heat mat
- Insure all containers are labeled



Newly-planted seeds under plastic cover. Photo: Life of a Gemini, CC-BY-NC-SA-2.0. [Flickr.com](https://www.flickr.com/photos/lifeofagemini/)

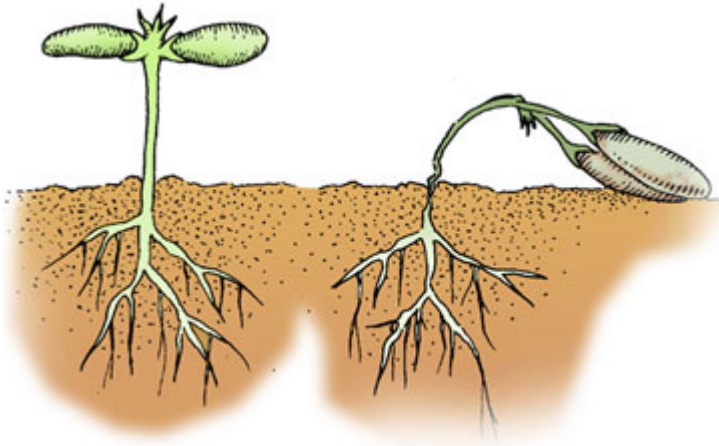


Cotyledon and one true leaf of a cucumber. Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, bugwood.org

After your seedlings germinate, you can remove the plastic cover and expose the containers to your light source for 12-16 hours/day. If using artificial light, keep the light source 3-6 inches above the seedlings, and keep the soil moist, but not wet, at all times. Soon the first set of [true leaves](#) will appear, which is the sign of success in starting your seeds. The *true leaves* appear after the “seed leaves” or cotyledons, both of which are pictured at right. Continue with the long hours of artificial lighting, keeping the light approximately 4 inches above the seedlings. For best results, your seedlings need slightly cooler temperatures at night, (55-60°F), and somewhat warmer temperatures during the day (65-75°F).

Once your seedlings have the first set of true leaves, competing seedlings must be removed to prevent crowding. This can be done by snipping out the competing seedling or using a cocktail fork or other small implement to gently remove. Since all the nutrients in the seed have been used up for sprouting, the application of a dilute all purpose fertilizer or organic fertilizer (e.g. fish emulsion) at half strength, once a week, is recommended.

At this point, many gardeners choose to transfer their sprouted seedlings to larger, sterile containers for hardening off. **Hardening off** is the process of gradually introducing your seedlings to the outdoors; this is an essential step before planting them in the ground. When the time for outdoor planting is a week or two away, place your seedling containers in a protected and shaded area for the majority of the day, bringing them in at night. Continue this procedure for one to two weeks. Caution is exercised to avoid strong winds, freezing temperatures, or excessive watering. A watchful eye at this stage is especially important to insure optimal conditions that discourage [damping off](#).



Damping-Off (Rhizoctonia) is a fungal disease of seedlings that girdles the plant stem where it enters the growing medium, causing it to topple over. Source: USDA

Once the hardening off stage is completed, you are ready to plant your seedlings in the ground. Handle with care as you gently guide the seedling directly into the soil. If your seedling is in a peat pot, this pot can be buried in the soil as long as the entire pot is below the soil line to prevent water wicking from the soil.

Now you can enjoy watching your garden grow. You have saved considerable expense by starting your own seeds and your time investment will pay off in terms of the diversity of unique flowers and vegetables you will be able to enjoy. Any leftover seeds may be stored in a sealed container and kept dry and cool for next season. Next year you can test the viability of these seeds by placing a few seeds on a folded moist paper towel inside a plastic bag. After a couple of days in a warm place, you will be able to determine if your seeds are still viable. Accurate record keeping throughout your seed starting endeavors will help capture lessons learned for next year.

Easy flowers to start from seed include: zinnias, sunflower, sweet pea, marigolds, globe amaranth, cosmos, calendula and bachelor's button.

Easy vegetables to start from seed include: turnips, beets, radishes, beans, carrots, kale, chard, arugula, lettuce, peppers, okra, tomato, zucchini, melons, summer squash, cucumbers.

References

[Starting Seeds Indoors/Univ.of Maryland Extension](#)

[Plant Propagation from Seed](#), Virginia Cooperative Extension Pub. No. 426-001, [Pub. No. 426-001](#), [Enhanced Digital Version](#)

“Starting Seeds Indoors,” [The Garden Shed, Mar. 2016](#) (C.Campbell)

[“Damping-off in Flower and Vegetable Seedlings.”](#) NC State Extension Publications, Ornamental Disease Information.