

November 2023-Vol.9,No.11



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The Edible Garden in November

By Ralph Morini | November 2023-Vol.9,No.11



November has arrived and our outdoor planting season has ended. Gardeners who have planted fall crops are enjoying an extended harvest. Crops that can resist the cooler weather to varying degrees include beets, brassicas, carrots, greens, lettuce, spinach and leaks. With the average first frost date for our hardiness zone 7a of October 15-25, frost is likely in November. To protect plants from frost damage, have row covers or other protective devices ready as needed, while keeping an eye on the extended forecast. It is time to clean up garden beds whose growing seasons are completed, protect soils for winter and take steps that will be of benefit next spring. Here are a few recommendations.

Cleaning and Protecting Beds

Beds that no longer have a growing crop should be cleaned. Remove plants and plant debris. It can be composted if clean, but if it shows evidence of disease or pest infestation, it should be bagged for disposal. It is late now to establish a cover crop, so covering soil with an organic mulch is the next best choice. Mulched leaves are a good and generally available option. Use the bagger on your mulching mower to collect chopped leaves, or mulch and rake them. Use them as a mulch to protect soil or mix them with grass clippings and kitchen scraps to start new compost batches. Chopping them up is important to allow water infiltration and

reduce wind dispersal. They also break down faster than uncut leaves, providing needed organic matter for the soil while reducing carbon loss, erosion and moderating soil temperature. Other mulch options include straw, wood chips and aged sawdust.

Cover Crops



Winter cover crop germinating. Photo: R Morini

Best soil building practice today is keeping live roots in the soil, year-round. Cover crops are a recommended way to do this when other crops are not being grown. A diverse winter-hardy cover crop is a great soil builder. The photo above shows a crop that includes crimson clover, a legume that will add nitrogen, daikon radishes that will loosen compacted clay soil, annual rye grass for added root mass and mixed grains. There is also some self-seeded buckwheat from the summer cover crop that will be winter killed but will add organic matter to the soil next spring so is a do-no-harm invader.

When cut, after flowering and before setting seed in the spring, the vegetative material can be tilled in as a green manure for new beds if you are still a tiller, composted or used to mulch transplants. The roots are left in the soil to decompose, where they are a good source of organic matter.

It is late to plant a cover crop now, but if you haven't done it, consider planting one next fall. More information on cover crops can be found in the article [Cover Crops](#) from the University of Maryland Extension.

Extending the Growing Season for Cool Weather Crops



DIY Row Cover: Photo: Ralph Morini

Winter hardy crops including many greens like lettuces, spinach, kale and other brassicas planted in September or early October, should be harvestable now. Mulching around the plants will help reduce cooling and keep them productive into the winter. Using row covers maintains a temperature beneath the spun polyester fabric up to 5 or 6° F higher than ambient, while still allowing rainfall and sunlight to reach the plants. For more information on row cover options including a simple DIY system like the one in the photo, see the *Garden Shed* article [Row Covers: A Gardening Season Extender With Benefits](#).

Adding Compost

A couple of inches of clean compost, worked into the top 3 to 4 inches of soil, then covered with an organic mulch will improve next spring's soil readiness. Best practice is not to till deeply or turn the soil over, but to stir the compost into the soil surface, letting soil organisms decompose and carry the organic material deeper into the bed.

To habitual tillers, this seems counterintuitive. However, research and the experience of organic market farmers demonstrate that tilling destroys soil structure, reduces soil organism activity, releases stored carbon into the atmosphere and tends to compact after a few rains. Rotating crops through garden locations, using diverse cover crops, adding organic matter, and amending as soil tests indicate, are the best ways to improve and regenerate soils.

Start a New Compost Batch



New fall leaf and grass compost batch: Photo: R Morini

With the abundance of fall leaves, start a new batch of compost that will be ready for next summer. Final lawn mowing and leaf removal generate a great mix of nitrogen and carbon-based organic materials to get decomposition started. Augment the nitrogen input it by mixing in kitchen fruit and vegetable scraps and coffee grounds during the winter. Microbial activity will definitely slow down during the coldest winter weather, but with a little mixing to keep it aerated and good moisture management, it will be primed to take off as temps rise above 50° in early spring. The finer you chop the materials, the faster they will break down. Check out this [brochure on home composting](#) from the Penn State University Cooperative Extension for detailed guidance.

Prepare a New Bed



Straw covered sheet mulch plot at CATEC garden. Photo: R Morini

One circumstance where tilling soil may be useful is in starting a new bed. Loosening compacted soil and adding organic matter can be beneficial. However, sheet composting or lasagna mulching provides a non-dig alternative that may make sense. It involves scalping the grass off the bed area and covering it with alternating layers of carbon and nitrogen rich materials. The layered material will cold compost over a few months, providing a carbon-rich surface that helps soil organisms flourish and carry organic matter deeper into the ground. Crops can be planted directly into the surface material. Starting the process now should provide you with a planting-ready bed for warm weather vegetables next spring. The photo above shows a sheet mulched plot using a paper barrier on the soil, covered with 6 inches of composted arborist waste and 3 inches of straw. For a detailed description of the process, refer to the Garden Shed article [Lasagna Mulching](#).

Other tips for the month include:

- Get your **garden documentation** in order. Knowing what you planted and where you planted it is important. Good crop rotation practice will help minimize disease and insect issues next year. Also, noting the crops and varieties that did and didn't do well provides guidance as you shop for seeds and plants for next year's garden.
- **Organize left over seeds** and store them in a cool dry place to maximize their germination success next year.
- **Root crops** such as carrots, radishes, turnips, and parsnips **store well outdoors** in the ground. Just before the ground freezes, bury these crops under a deep layer of leaves or straw.
- If you are a fruit grower, November is a good time to **mulch fruit trees**. Extend 2-3 inches of mulch to the edge of their canopy, while keeping it a few inches away from the trunk to prevent potential rodent damage.
- **Early November is a good time to plant new fruit trees**. Mulch the same as for established trees.
- **Fallen fruits should be cleaned up** and buried or placed in the trash. Good sanitation

practices will reduce insect and disease infestation next year.

- **Mulch strawberries** with straw or leaves. This should be done after several nights near 20°F but before the temperature drops into the teens. Apply the straw or leaves loosely but thick enough to hide plants from view.
- **Now is a good time to collect soil samples** to test pH and nutrient levels. Organic amendments are slow-acting, so fall application improves soil for spring planting. Soil test kits are available at your local Extension Office. The Charlottesville-Albemarle Extension Office is located in the County Office Building off 5th Street Extended at 460 Stagecoach Road, Charlottesville. Kits and instructions are available in a box on a bench outside the Stagecoach Road entrance.
- **Disconnect, drain and roll up garden hoses.** Best to do it before it gets cold and they get stiff and hard to handle.
- **Drain rain barrels, outdoor water pipes and irrigation systems** that may freeze during the cold weather.
- **Clean and sterilize used trays and flats** (9:1 mixture of water and bleach) to prepare them for planting next year.
- **Rhubarb** plants that are four years old or more can be **divided and transplanted**. Prepare the site by digging deeply and incorporating compost.
- **When asparagus vegetation browns, cut off the tops of the plants to about 2-4" above the soil level.** Weed, and add a winter dressing of compost or aged manure to the bed.
- If you have been thinking about installing a **deer fence** around your vegetable garden, the fall and winter months are a good time to [build it](#).

I hope you find this information helpful and recognize that some effort now, assures a more relaxed winter and easier start next spring. Thanks for your interest in following good gardening practices. I look forward to talking again next month. Comments are welcome.

Sources:

["Monthly Horticulture Tip Sheet: November,"](#) VCE Monthly Horticulture Tip Sheets, Virginia Cooperative Extension, Albemarle County/Charlottesville.

["Monthly Gardening Tips: November,"](#) Piedmont Master Gardeners website, Gardening Resources.

Upcoming Events

By Cathy Caldwell | November 2023-Vol.9,No.11

Garden Basics: Season Extenders in the Edible Garden

Saturday, November 18 @ 2:00 pm - 4:00 pm

Trinity Episcopal Church, 1118 Preston Avenue, Charlottesville

FREE

You can grow fresh produce all winter in Central Virginia with the use of season extender techniques. Participants will learn —

- How to use crop choice, garden layout, and row covers to extend the growing season
 - Where to go for supplies
- How to position and secure row covers in a garden through a hands-on demonstration.

Garden Basics is a partnership with the [Bread and Roses ministry](#) at Trinity Episcopal Church.

[RSVP Here](#)



Identify and Control Non-Native Invasive Plants in Fall/Winter

Part 1: Introduction and Identification

Zoom presentation: Tuesday, November 14 from 7:00 to 9:00 p.m. [Register here](#)

Part 2: Control Methods

Zoom presentation: Thursday, November 16 from 7:00 to 9:00 p.m. - [Register here](#)

Blossom-end rot

By Chris Stroupe | November 2023-Vol.9,No.11



Introduction

Blossom-end rot is hands-down my least favorite gardening problem. It's immensely frustrating when the tip of a developing squash or tomato suddenly turns soft and dark. What's more, nothing will stop the rot once it begins.

However, it is possible to prevent blossom-end rot. Blossom-end rot is caused by internal calcium deficiency, not a pathogen. Remedy the deficiency to prevent the rot. This article discusses the symptoms of blossom-end rot, its underlying causes, and methods for preventing this problem.

Symptoms

Blossom-end rot affects most fruiting plants in the edible garden: summer squash, zucchini, winter squash, melons, tomatoes, eggplants, and peppers. The rot begins as a dark, depressed, water-soaked spot on the end of the fruit opposite the stem (see picture). In peppers, the rot may appear on the side of the fruit, resembling sunscald (see picture). The dark spot enlarges as the fruit grows and could end up being half the size of the fruit (see picture).



Inside the fruit, the affected area will be under-developed (see picture). Seeds are small or missing, and the solid tissue is mushy, but the rest of the fruit appears unaffected. That said, it's best to cut affected fruit off the plant at the first sign of blossom-end rot. Nothing will stop the rot, and the developing fruit will sap calcium from the rest of the plant.

Cut your losses and remove fruit when they look like this. [Photo: M.E. Bartolo, Bugwood.org. CC BY 3.0](#)



On peppers, the affected tissue could be on the shoulders. [Photo](#): David B. Langston, University of Georgia, [Bugwood.org](#). [CC BY 3.0](#)

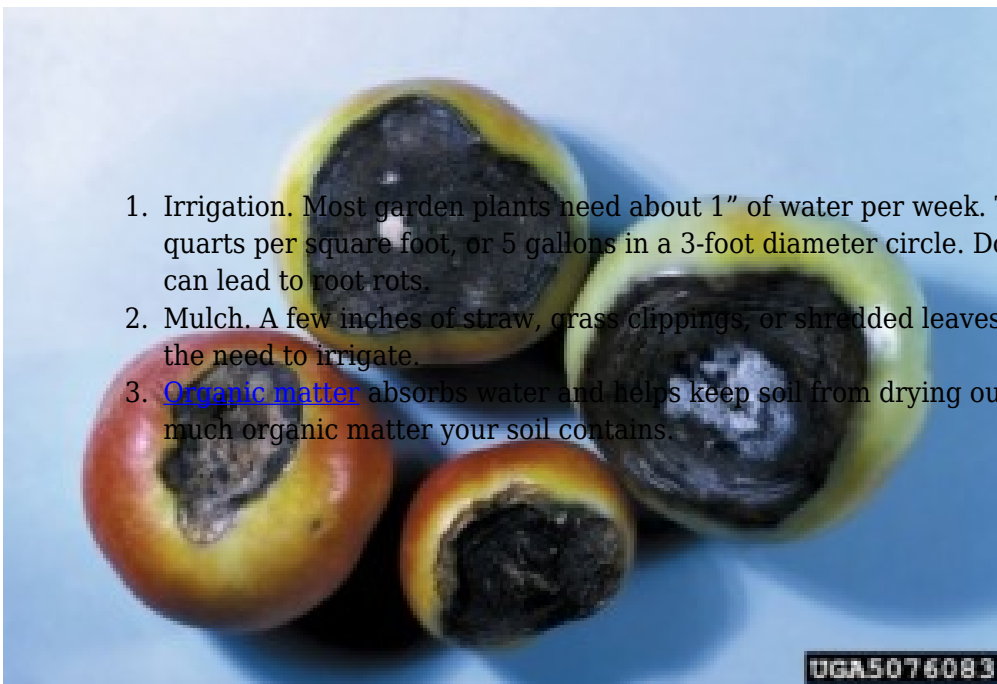
Causes and Prevention

Blossom-end rot occurs when plants have an *internal* calcium deficiency. The key word there is “internal.” Adding calcium to the soil is not necessarily the solution, and in most cases it is not. Typically, the underlying problem is that plants cannot move calcium from the soil to the fruit. Here are a few ways that can happen and how to remedy them:

Low soil moisture Plants need water to deliver calcium to developing fruit. Even if plants are growing in calcium-rich soil at the optimal pH, blossom-end rot is likely to occur when there isn't enough water to move calcium throughout the plant.

The solution is simple: keep the soil moist. There are several ways to accomplish this:

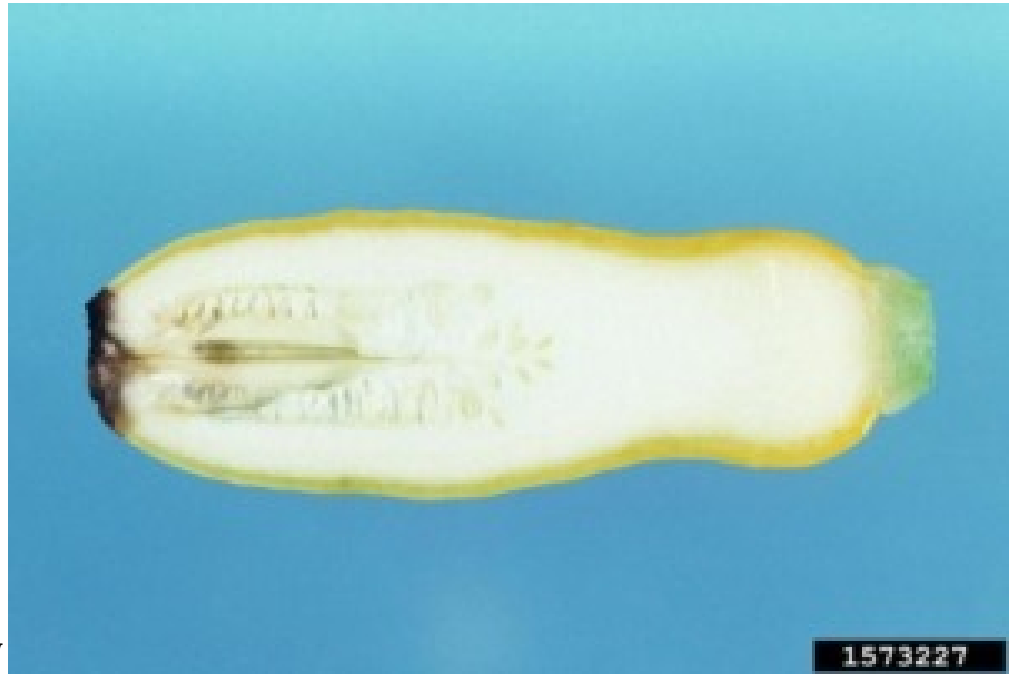
1. Irrigation. Most garden plants need about 1” of water per week. This works out to roughly 2.5 quarts per square foot, or 5 gallons in a 3-foot diameter circle. Do not over-water, though; this can lead to root rots.
2. Mulch. A few inches of straw, grass clippings, or shredded leaves will reduce evaporation and the need to irrigate.
3. [Organic matter](#) absorbs water and helps keep soil from drying out. [A soil test](#) will tell you how much organic matter your soil contains.



Blossom-end rot won't heal, and will eventually consume much of the fruit. [Photo](#): David B. Langston, University of Georgia, [Bugwood.org](#). [CC BY 3.0](#)

As much as possible, keep soil moisture levels consistent. In other words, don't let the soil dry out. In hot, dry weather, this could mean irrigating every day or two.

Low soil pH Calcium availability in soil is strongly dependent on soil pH (acidity). Availability begins to decrease around pH 6.0, and is very low at pH 5.0 or below. The acidic soils in the Virginia Piedmont can therefore be a big problem in this regard, even though they usually are rich in calcium! High pH, above 8.5, also reduces calcium availability, but this situation is rare.



Underdeveloped internal tissue of a summer squash with blossom-end rot. Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org. CC BY-NC 3.0

The solution is to raise the soil pH. Start by having your [soil tested](#). The results will include soil pH and instructions for modifying it. You might want to contact the Piedmont Master Gardener horticultural help desk (albemarlevcehelpdesk@gmail.com and 434-872-4583) for help interpreting the soil test analysis.



The pH comes before the phruit. Photo: Chris Stroupe, [CC BY-NC 4.0](#)

Note that it takes a long time – several weeks at minimum – to change soil pH. Autumn is a great time to do a soil test and make any needed amendments for better results the following year.

Excess nitrogen fertilizer Leaves compete with fruit for water and, therefore, calcium. Since nitrogen promotes leaf growth, an excess of nitrogen fertilizer can shift the balance in a growing plant from flower and fruit production to foliage production.

Plants need nitrogen, but how much nitrogen is too much? Unfortunately, soil tests usually do not measure nitrogen levels because these can fluctuate rapidly, depending on temperature and moisture. The [general guideline for nitrogen](#) is to supplement with 0.2 pounds (3.2 ounces) nitrogen per 100 square feet. For heavy feeders like tomatoes, supplement with 0.3 pounds (4.8 ounces) per 100 square feet. Note that these numbers are the weight of nitrogen, not fertilizer. Use the nitrogen content of the fertilizer – the first number on the label is the percent nitrogen by weight – to [calculate](#) how much fertilizer to add.

When should you add nitrogen? Here are [some general guidelines](#). For a synthetic nitrogen fertilizer like nitrate of soda, work half of the total into the soil a few days before planting. Then add the rest to the top of the soil 4-6 weeks later. Organic nitrogen fertilizers like blood meal break down in the soil and release their nitrogen slowly, so it's fine to add the whole amount to the soil before planting.

For details about how to fertilize particular crops consult the “Crop Specific Guides” section of the Virginia Cooperative Extension [Home Vegetable Gardening](#) webpage.

Cold soil Low soil temperature can be a problem in the spring. Cold soil reduces the ability of roots to take up calcium. What's more, new transplants have small root systems with little capacity for nutrient uptake. Together, these effects make early “rounds” of fruit prone to blossom-end rot. These early fruits remain susceptible to blossom-end rot after the soil warms up. Fruit tissue that forms without adequate calcium remains weak and rot-prone even if the plant's internal calcium levels eventually increase.

The solution is patience – and a soil thermometer. For [cool-season crops](#) like kale and Brussels sprouts, wait to transplant until the soil temperature reaches 50°F. For [warm-season plants](#) like tomatoes, peppers, cucumbers, squash, and melons, hold out until the soil hits 60°F – though 65-70°F is better. Virginia Tech's [“Home garden vegetable planting guide”](#) has more information about the timing of planting for specific crops.



If you're eager to plant in the spring, [clear or black plastic "mulch"](#) can raise soil temperatures by 10 or more degrees. Buy plastic mulch in rolls at garden stores, or use contractor-grade trash bags to cover smaller areas. Remove the mulch before planting to avoid overheating your transplants.

Calcium-deficient soil Low soil calcium is rare in the Virginia Piedmont but can be a problem elsewhere. [Test your soil](#) to determine if it's calcium-deficient. If soil calcium is low, the test results will include instructions for amendments.

Don't add calcium before having your soil tested. Excess soil calcium can block uptake of other nutrients, especially magnesium.

Black plastic mulch warms the soil. Photo: Katorisi, Wikimedia. CC BY-SA 3.0

Foliar calcium spray: an ineffective solution

Spraying a calcium solution on plants' fruit or leaves [doesn't prevent blossom-end rot](#). Fruit doesn't take up calcium through its skin. In botanical terms, fruit lacks stomata, the pores where fluids can enter the plant. Moreover, while leaves do have stomata and can absorb external calcium solutions, the calcium in leaves is immobile and won't move to the fruit.

Closing thoughts

The best overall practice for preventing blossom-end rot is to pay attention. Note how you treat your plants and soil, and how they respond to your interventions and to natural conditions. A [garden journal](#) is a fantastic tool for tracking what's happening in your garden. And of course, [soil testing](#)!

It may take a couple of years to fine-tune your practices and minimize blossom-end rot. Everyone's soil and local climate are different, and changing soil pH is slow. But with attention, care, and patience, you can mitigate this annoying issue and move on to worrying about [blights, wilts](#), and [insect pests](#).

References and further reading

[Featured image](#): Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, [Bugwood.org](#). [CC BY-NC 3.0](#)

[Blossom end rot](#). University of Wisconsin Division of Horticulture.

[Blossom end rot \(PDF\)](#), University of Kentucky Cooperative Extension Service.

[Blossom end rot and calcium nutrition of peppers and tomato](#), University of Georgia Extension.

[Blossom end rot causes and cures in garden vegetables](#), Michigan State University Extension.

[Blossom end rot in tomatoes and other vegetables](#), University of Minnesota Extension.

[Blossom end rot on vegetables](#), University of Maryland Extension.

[Fertilizing vegetable gardens](#), University of New Hampshire.

[Fertilizing vegetables](#), University of Maryland Extension.

[Gardening myths: fix blossom end rot with calcium sprays](#), Clemson Cooperative Extension.

[Home vegetable gardening](#), Virginia Cooperative Extension.

[Let soil temperature guide you when planting vegetables](#), Oregon State Extension Service.

[Mulches for the home vegetable garden](#), Virginia Cooperative Extension.

[Virginia home garden vegetable planting guide](#), Virginia Cooperative Extension.

[Virginia Tech soil testing lab](#).

Native Forest Plants for All Seasons

By Kaila Pennock | November 2023-Vol.9,No.11



As the last leaves fall from the trees leaving the forest bare for the winter's freeze, many summer season plants go dormant. They retreat with their nutrients under the soil and leaf cover to wait until spring. There are some specialists out there that persist over winter. They allow us a fascinating glimpse into the mutualistic relationship between these plants and the fungi that aid in their life cycles.

These plants can, of course, be found alone but once your eyes zoom in it's amazing how many are hidden in the leaves. Often they grow in large scattered groups that correspond with root and mycelium networks underground. Some of these plants could easily be overlooked during the lushness of summer but are more prominent in the autumn and winter woodlands.



Downy rattlesnake orchid evergreen rosettes. Photo: Amy Hill



Flowers. Sturgis McKeever, Georgia Southern University, Bugwood.org



Striking seed head. Photo: Amy Hill

The **downy rattlesnake orchid** (*Goodyera pubescens*) can be found in deciduous and coniferous forests. This eye-catching plant has silvery veins and is covered in fine hair. As with all orchids, fungi play an essential role during the downy rattlesnake orchid's entire life cycle. It requires complex associations with specific fungi in order to germinate and grow. Their seeds are tiny with limited nutrients so the soil fungi provides energy until the plant breaks through the surface and can begin photosynthesizing with its leaves. Still, the fungi will continue to provide nutrients from the soil while the orchid feeds the fungi carbohydrates. This downy rattlesnake orchid flowers in late summer, though it takes the new rosettes several years to get to this stage. After flowering a distinctive seed pod is produced which lasts for many months.

Crane fly orchid (*Tipularia discolor*) and putty root orchid (*Aplectrum hyemale*) have non-photosynthetic flowering shoots. Getting to know their leaves in the winter is the best way to remember where their ethereal inflorescences will appear in the summer after the leaves have died back. These orchids only do their carbon acquisition via photosynthesis when their leaves are out from fall to spring. During their flowering stage all energy comes from their symbiotic relationship with mycorrhizal fungi rather than carbon fixation. This means they are partially myco-heterotrophic.



Cranefly spotted topside. Photo: Kaila Pennock



Purple underside. Photo: Kaila Pennock



Flower with nectar spur. Chris Evans, University of Illinois, Bugwood.org

The **crane fly orchid** uses rotting wood as substrate for germination because they have a relationship with a type of fungus that decomposes wood. This orchid spends most of the year as a single leaf. Though it blends in during the summer it is relatively easy to spot in the winter as the enticing leaf stands out on the forest floor. If you see this leaf, you will often notice raised purple spots and can check underneath for a rich purple to confirm its identity. Return to this location in late summer to look for the subtly intricate asymmetrical flowers this orchid makes after the leaf dies back. Though many orchids have bilateral symmetry these differ to make sure their nocturnal moth pollinators are the only ones to collect the pollen during their short bloom time. When the moth reaches into the nectar spurs, the pollen sticks to the moth's eyes to help assure it is transferred only to another orchid.



Putty root orchid leaf. Photo: Amy Hill



Inflorescence. Photo: Amy Hill

The **Putty root orchid** has a bigger leaf that is lined with silvery, green and white veins. These silvery leaves are produced from corms (underground storage organs) and thrive with the low photosynthetic levels of winter woodlands. This plant shares the mycorrhizae of nearby trees to obtain nutrients which is essential when the leaves have decomposed and the non photosynthetic flower shoot begins to grow in early summer. The flowers on the stalk do not have nectar spurs as they do not need to attract specific pollinators. Putty root orchid is self fertile – though various bees do visit the flowers.

While these orchids spend a portion of their lives without photosynthesising, there is another group of plants whose entire life is spent this way. These are called obligate (or full) heterotrophic plants. Their intriguing husks often remain for the winter and into the next growing season.



Ghost pipe emerging. Photo: Amy Hill



Pollinated upturned heads. Photo: Amy Hill



Seed heads. Photo: Amy Hill

Ghost pipe (*Monotropa uniflora*) is a plant that can be easily mistaken for a mushroom with its otherworldly fleshy appearance. This wildflower lacks chlorophyll and obtains all of its nutrients from tree roots through a mycorrhizal fungal relationship making it an obligate myco-heterotroph. The mycelium that the ghost pipes interact with is specific to the Russulaceae family of mushrooms. An abundance of mushrooms in this family is a sign that there are likely many ghost pipes in the area. (Here are iNaturalist links to the two most common genera in the family: [Russula](#) and [Lactarius](#) - both of which have hundreds of species here in Virginia). Ghost pipes emerge in the summer with a downward facing flower. Bees pollinate the flower by hanging on it upside down. After pollination the flower points upwards. By winter the ghost pipes are no longer translucent but rather a woody stock with a seed head that blackens over the winter. Though a lot of people may be familiar with ghost pipes, there are many other non photosynthetic plants native to Virginia

that are just as alluring.



Beechdrops. Photo: Amy Hill



Close up. Photo: Amy Hill



Dried stalks. Photo: Amy Hill

Beechdrops (*Epifagus virginiana*) attach to the shallow roots of American beech trees (*Fagus grandifolia*), to get nutrients and grow, often in great numbers. They hide in plain sight but once you know them you'll see them everywhere in beech filled forests, especially surrounding older trees. Beech trees have smooth gray bark even as they mature. Their green serrated leaves turn yellow/tan in fall and winter and stay on the juvenile tree until spring, making them easy to spot. Like ghost pipes, the fleshy summer form of beechdrops dries and hardens as they mature to release their seeds. It is suspected that ants are involved in their proliferation. Their woody forms often stay all winter and into the spring before they decay and new growth begins. The beech tree actually releases a chemical signal that triggers beechdrops to germinate. It takes a few years for the above ground structure to break the surface after germination. During this time beechdrops rely on nutrients from the seed rather than the tree. For the rest of the beechdrops' life they rely on their host tree for nutrients but this does not negatively impact the host, in fact the presence of beech drops indicates a healthy forest.



Bear corn fruit. Photo: Amy Hill



Winter husks. Photo: Amy Hill

Bear corn (*Conopholis americana*) is another fascinating heterotrophic plant whose thick stalks look like ears of corn or pine cones. Each “corn” capsule contains many seeds. Black bears and deer will eat this plant and disperse the seeds. Bear corn seeds, like beech drops, must be near tree roots in order to germinate. In bear corn’s case its host is usually oak trees. They use specialized roots called haustoria to obtain nutrients from their host tree without causing issues for the tree. As winter comes along the fleshy corn like plant dries up to black husky spikes that will persist until spring. In late spring the plants that have been growing underground for four or so years break through the surface and the flowers form a few weeks later. Some pollinators may come by but bear corn is self fertile.

Hopefully you will be able to spot a few of these species over the course of the cooler months and greet them as friends when they bloom in the warmer months. Giving proper attribution to the fungal networks helps us

to see enchantment living in the forest, no matter the season.

SOURCES:

Featured photo: Bear corn in winter. Photo: Kaila Pennock

[Wildflower of the Year 2016 Downy Rattlesnake Plantain \(*Goodyera pubescens*\)](#) Virginia Native Plant Society

[Goodyera pubescens \(Downy Rattlesnake Plantain, Rattlesnake Plantain\)](#) |North Carolina Extension Gardener Plant Toolbox

[Orchids: Masters of Deception](#) -North Carolina Botanical Garden

[Importance of Woody Debris in Seed Germination of *Tipularia discolor* \(orchidaceae\)](#) - American Journal of Botany

[A Real Hidden Gem: Cranefly Orchid \(*Tipularia discolor*\)](#) - Durham Master Gardeners

[Aplectrum hyemale \(Adam and Eve, Putty Root\): Go Orchids-](#) North American Orchid Center

[Ghost Pipe - Plant-of-the-week](#) - U.S Forest Service

[Taxa - Russula](#) - iNaturalist

[Taxa - Lactarius](#) - iNaturalist

[Woodland Weirdos](#) North Virginia Department of Forestry

[Beechdrops - A Native Parasitic Plant](#) Extension Marketing and Communications

[Epifagus virginiana \(Beach Drops, Beech-drops\)](#) North Carolina Extension Gardener Plant Toolbox

[Conopholis americana \(American Cancer-root, Bear Corn, Bumeh, Cancer Corn\)](#) North Carolina Extension Gardener Plant Toolbox

Winter Sowing: Easy, Productive, Enjoyable

By Sarah Bingham | November 2023-Vol.9,No.11



It is widely acknowledged that a healthy and sustainable landscape benefits the environment. Yet the availability and cost of local native plants can present a challenge to the home gardener. There is, however, an easy and economical means to propagate perennial native plants from seeds - **Winter sowing is the answer!**

The Method

Trudi Davidoff developed the winter sowing method over 20 years ago in collaboration with the USDA. The purpose was to establish [winter sowing](#) as a viable plant propagation method. It is defined by the USDA as *“A propagation method used throughout the winter where temperate climate seeds are sown into protective vented containers and placed outdoors to foster a naturally timed, high percentage germination of climate tolerant seedlings.”* Simply **create mini greenhouses with recycled plastic containers that allow light.** Plant the seeds and wait patiently through winter’s natural stratification process with freezing temperatures, ice, rain, and snow. Containers protect seedlings from downpours, weed seeds, unwanted plants, four-legged critters, bugs, and birds.

Plan for Bounty

Winter sowing yields an excellent germination rate. After my first year I soon found the importance of developing a thorough landscape plan to accommodate new seedlings when around 100 American hornbeam (*Carpinus caroliniana*) saplings sprouted from a few small containers. Other considerations for transplanting seedlings are:

- [Soil testing](#) is recommended for planting areas. Contact your local Cooperative Extension office.
- [Sheet mulching](#) in the fall to prepare your beds for spring planting.

Plant Selection

Perennials, many herbs, hardy and half-hardy annuals, cold hardy vegetables, shrubs, and trees are all good choices for winter sowing. Which vegetable and flower seeds to use for winter sowing depends on the length of your growing season and how long it takes the plant to reach maturity. Tender annuals and heat-loving plants such as tomatoes and basil can be sown using this method but are planted later. It pays to research your desired plants to determine their needs. Of course, tropical plants are not recommended for winter sowing.



Suggested winter sowing plant lists are available through the links in the resources at the end of the article. Some lists give the zones appropriate for the plant. Albemarle County Virginia is in Zone 7a.

Sweetshrub (Calycanthus) seedlings, and on right, the growing plant.

Photos: Lisa Rittenhouse

Winter sowing provides abundant opportunity to replace non-native and invasive plants. Native plant habitats are more beneficial to our ecosystem than non-native plants as they promote healthy populations of pollinators, beneficial insects, birds, and other wildlife. For a wealth of information on this topic in Virginia refer to the following links:

- [Why Natives?](#) from the Virginia Native Plant Society.
- [Native Plants for Northern Piedmont — Plant Virginia Natives](#) makes it easy to identify plants appropriate for your existing site conditions by utilizing their section on Right Plants, Right Place.
- [Albemarle County Recommended Native Plants](#) is a relevant database for determining if a particular plant will thrive in your conditions, and it includes the surrounding counties. It allows you to search for plants by type, recommended use, plant needs, and plant characteristics and includes height and spread estimates as well as bloom colors and bloom times by month.
- Native [Plants for Conservation, Restoration, and Landscaping \(virginia.gov\)](#) is another great tool.

Germination

Seeds that require [stratification](#) are especially suited to this method; however, almost any seed will sprout and flourish if you follow some basic guidelines and the proper timetable. To germinate, seeds need the correct light, temperature, moisture, and air. Some seeds will sprout easily and quickly, others will need a full winter before sprouting and others will require several seasons. Some plant species will require special

treatment such as [scarification](#) or planting immediately or keeping moist in a container after ripening to prevent the seed from drying out. For a primer on what some familiar native seeds need for germination see:

- [Growing in the Off-Season – Native Perennials from Seed – Ecological Landscape Alliance \(ecolandscaping.org\)](#)
- [Seed Germination Database – Perennials\(hort.net\)](#)
- [Germination Requirements for Annuals and Vegetables | Horticulture and Home Pest News \(iastate.edu\)](#)

Look in seed catalogues, germination guides, or on a seed packet for the seed’s germination requirements. Take note of the date to germination (DTG) and the date to maturity (DTM). The germination code on a seed packet indicates sowing instructions (conditions) needed for that specific seed. Some seed companies have a germination code for each plant they offer for sale.

Collecting Seed



New York Ironweed seedheads (Vernonia noveboracensis). Photo: Lisa Rittenhouse

Gathering, collecting, and organizing seeds is one of the most enjoyable aspects of this method. Purchased seeds are a reliable option, but it is good practice to search on-line for seeds using the botanical name to be sure you are getting the right seeds. For instance, instead of searching for wild bergamot, search for *Monarda fistulosa*. Many winter sowers swap seeds locally with friends or through an online group.

Organized seed swaps are available through public libraries or organizations like the [Ivy Creek Foundation](#).

Native plants already growing successfully on your property can also provide a plentiful source of seeds. Most seeds are mature when the fruit, for example a tomato, is ripe or for perennials the seeds are hard, brown, brittle, and dry. Generally, gather seeds that are dry and ready to harvest, and please leave plenty for the birds and insects and other critters who depend on them.



Mature ironweed plant. Photo: Lisa Rittenhouse

Preparing Containers and Soil

A vast amount of information already exists on how to prepare containers and soil, so this topic will not be covered in detail. Many people use milk jugs, but I prefer to use clear **recycled salad containers** with lids and plenty of holes as it simplifies the process. It is easy to leave the lid off on warm days and close it at night. Be sure your [potting mix](#) is damp, but not soggy when you plant. Add at least 3-4" of soil to the container and be sure you will have enough head room for the seedlings. There are webinars and articles at the end of this article that give step by step instructions, should you decide to try this method of sowing seeds. The following *Garden Shed* article has information for starting common milkweed (*Asclepias syriaca*), butterfly weed (*A. tuberosa*), swamp milkweed (*A. incarnata*), and whorled milkweed (*A. verticillata*) from seed using winter sowing: [Starting Milkweed From Seed | Piedmont Master Gardeners](#).



Penstemon seedlings in their winter home.
Photo: Lisa Rittenhouse

Sowing the Seeds

Create a schedule for your winter sowing. Most natives and hardy annuals can be sown any time after winter solstice in the Northern hemisphere, usually on December 21 or 22. Tender annuals can be started in March to April, but cover the containers when frost is expected. Wait until longer for heat-loving plants. Early planting will not produce larger plants. You can experiment and plant some seeds earlier and save the rest for later when you are certain they will be safe from freezing temperatures. Last year I planted tomato seeds on March 16, and they germinated right on time, but I did have to protect them from frost.

Tiny seeds can be mixed with sand to make them easier to spread out in the planting container. If you are uncertain about how deep to plant the seeds, look up that particular plant. Be sure to label your containers unless you like surprises. Set the containers above ground to allow for drainage and reduce slug infestations. Avoid areas that prevent rain, or invite too much rain, such as under a gutter that overflows onto the containers. If your containers are under a tree be sure to move sun-loving plants to full sun when the trees leaf out.

Seedling Care

Watering is rarely necessary, but do check periodically to see if the soil is moist. There should always be condensation inside the containers. A pump sprayer, or shower/mist setting on the hose nozzle is helpful for watering should the soil dry out. Watering from below is another option that prevents disrupting tiny seedlings.

Remove the lids or open the tops of containers on warm days in the spring. If temperatures climb too high, the plants will succumb to the heat. Wildlife can be a continuous threat. Hardware or wire cloth can be used once the containers stay open to keep squirrels and other wildlife out.

When seedlings have several true leaves, it is time to transplant. Transplanting with a dinner fork is useful for scooping seedlings out or if the seedlings are packed in tightly, you can use the "hunk of seeds" method by cutting them apart with a knife. Tender plants can be protected by a row cover if frost is a threat. Keep

your transplants well-watered for the first year until they get established.

Conclusion

Winter sowing enables gardeners to reach goals much more quickly and economically by producing copious numbers of strong plants that do not need to be hardened off in the spring. Healthy native plant populations can easily be established to protect our water sheds from excessive runoff. The productivity that results from winter sowing can also be a catalyst for reducing food insecurity, producing a more sustainable landscape, and providing for the needs of pollinators, beneficial insects, birds, and other wildlife.

Whether you are a gardening novice, professional horticulturist, or somewhere in between, you should find this method to be easy, productive, and enjoyable. Some gardeners call it a healthy addiction!

SOURCES:

Featured Photo: Lisa Rittenhouse

[All the Dirt on Winter Sowing](#) | 24-minute webinar by University of Maryland Extension Charles County Master Gardeners

[Winter Sowing - YouTube](#) | 1 ½- hour webinar, hort.net

[Winter Seeding - A Shortcut to Spring? | Extension \(unh.edu\)](#)

[Winter sowing: How I get a jump start on my summer flower garden - Maryland Grows \(umd.edu\)](#)

[winter sowing method | NAL Agricultural Thesaurus \(usda.gov\)](#)

[Winter Sowing | Buncombe County \(NC\) Extension Master Gardener](#)

The Ornamental Garden in November

By Cathy Caldwell | November 2023-Vol.9,No.11



With the arrival of November, all signs point to the end of the growing season and the beginning of winter dormancy in the ornamental garden. On warmer days, bees, flies, beetles, and other insects continue to visit the few remaining flowers in search of sustenance. Take advantage of those milder days to finish preparing the garden for cold weather ahead.

IS IT TOO LATE TO PLANT TREES AND SHRUBS?

Perennials should be planted at least 6 to 8 weeks before the ground freezes so that they have time to develop good strong root systems before the onset of cold weather. Other plants, such as the following, may be planted right up until the ground freezes:

- **Continue planting deciduous trees and shrubs** until the ground freezes. As the weather turns chilly and you dread working outside, it may be tempting to cut corners on installing new trees and shrubs. Most failed plantings occur because the tree or shrub was planted too deeply or the root ball was not properly watered. Ideally, the hole should be no deeper than the depth of the root ball. Until the ground freezes, the root ball and surrounding soil should be watered slowly and deeply to keep it from drying out. For additional advice, see the Virginia Cooperative Extension's (VCE) guidelines for [planting trees](#).
- **Plant tulip bulbs** in a prepared sunny, well-drained site once the soil cools to about 55°F and night-time temperatures range between 40° and 50°. Tulips require cool soil so that they don't send up shoots before the roots are established. They may be planted up until the soil freezes. Plant them deeply (about three times the diameter of the bulb) to help protect them from frost heaving as well as from mice, voles and squirrels. Cover the planted area with a layer of mulch about three inches deep. TIP: If you have a deer problem, make a note to protect your tulips from deer browsing once the foliage starts to emerge next spring. Either use a physical barrier or a deer repellent.

THERE'S STILL TIME TO WRAP UP THESE TASKS BEFORE WINTER

If you're a procrastinator or just a very busy person, you may still be working on putting your garden to bed for the winter. Here's a suggested list of tasks to tackle before winter:

- **Dig up and store tender bulbs** that you didn't get around to digging up in October. University of Maryland Publication HG105 on [Overwintering Tropical Plants](#) provides good advice on how to store caladium and elephant ear (*Colocasia spp.*) bulbs. It also provides guidance on how to overwinter tropical plants in general.
- **Finish preparing ponds and water features for winter.** Use a pond net to scoop fallen leaves from the water. Prune dead stems and leaves from aquatic plants to prevent the debris from decaying in the water over the winter.
- **Drain garden hoses before the onset of cold weather** to help prolong the life of the hoses. Wipe off dirt and other debris, roll up the hoses, and store them in a shed, garage, basement or other protected place out of the weather.
- **Remove, clean, dry, and store garden stakes, portable trellises, and all breakable items,** including terra cotta pots, rain gauges, bird baths and garden art, that might be damaged by winter weather.
- **Inspect all containers of pesticides, fungicides, and herbicides** to make sure they are well sealed. Store them in a frost-free area to protect them from freezing temperatures.
- **Inspect lawn mowers, tillers, or other gardening equipment for any needed servicing** and plan to have the service completed now or over the winter months.
- **If you have a greenhouse, now is the time to do some basic clean up and maintenance.** Clean the windows thoroughly so that the maximum amount of sunlight can penetrate to your plants. Replace any broken or cracked windows. Check all opening panels to make sure they are in good working order. Grease the hinges if needed. If you rely on a heater to keep temperatures above freezing, make sure it is in working order.
- **Inspect garden tools** before storing them for the winter. Remove dirt and grime from metal surfaces to prevent the formation of rust. Sharpen any tools that have grown dull from use. Treat wooden handles with a mixture of two parts boiled linseed oil to one part paint thinner or turpentine to prevent the wood from cracking. Finally, organize tools so that they can be easily found next spring.
- **Cut back the stems and foliage of established chrysanthemums** about three inches above the ground now or, if you prefer, wait until late winter or early spring to cut them back. If the

chrysanthemums were planted this fall, they may survive cold weather better if the stems are left in place. The dead foliage will help protect the plant crown during winter. Also make sure the mums are well watered going into winter.

- **Leave tall sedum standing** over the winter months. The dried brownish-looking seed heads add plenty of color and texture to the garden in fall and winter. They're also stunning when covered in frost or ice.
- **Manage fallen leaves on turf and in flower beds.** A thick layer of leaves on turf can block sunlight from reaching grass. They can also trap and hold moisture beneath them, which can set the stage for turf disease. If you have a mulching lawn mower, use it to shred leaves so that the smaller bits and pieces can more quickly decompose and nourish the soil without harming the turf. See VCE publication [430-521](#), "Leave Them Alone - Lawn Leaf Management," for more information on mulching leaves. An alternative to mulching the leaves is to collect them and add them to a compost pile. See VCE publication [426-703](#), "Making Compost from Yard Waste," for more information on composting. As a third option, consider leaving fallen leaves in place in landscaped areas such as under shrubs or trees where they can decompose slowly without harming the plants. The reason for doing this is to help protect the eggs or larvae of butterflies, moths, and other beneficial insects until they can emerge in spring.
- **Don't get overly aggressive about cleaning up your spent ornamentals.** A little mess is actually not a bad thing. For example, plants with seed heads are a critical source of food for foraging birds over winter. Seeds from cone flower, aster species, black-eyed Susan, sedum, Joe Pye weed, coreopsis, globe thistle, and even zinnias and marigolds will be welcomed by a variety of bird species. Just focus on cleaning up stems and leaves from plants such as peonies and garden phlox, which are subject to fungal diseases, or irises, which are subject to borer infestations.
- **Fertilize dormant trees and shrubs** with a slow-release organic fertilizer so that nutrients will be available to the plants in early spring. See VCE publication [430-018](#), "Fertilizing Landscape Trees and Shrubs," for information on fertilization basics, such as the signs of plant stress and diminished vigor, types of fertilizers, when to apply fertilizer, and how much. When you apply fertilizer, water it into the soil. Otherwise, the plants cannot absorb the nutrients.
- **Collect soil samples** to test for pH and nutritional levels. Don't guess what your soil needs. If the soil test indicates your soil pH needs to be raised or lowered, now is a good time to apply either lime or sulfur as needed. For more information, see VCE Publication [452-129](#), "Soil Sampling for the Home Gardener."

DON'T FORGET TO PROTECT YOUR PLANTINGS FROM WILDLIFE DAMAGE

The garden may be going dormant now but that doesn't mean you can stop monitoring it for signs of wildlife damage.

- **Protect young trees from deer damage**, which can result from male deer rubbing and scraping their antlers against tree trunks to remove the "velvet" that has been growing all summer. Rubbing is also the way a deer marks its territory and intimidates other male deer. Protect the tree trunk and lower stems with a physical barrier such as a fence, a wire mesh trunk guard, or a plastic tube or pipe. Another strategy is to loosely wrap chicken wire around the trunk. Regardless of the method used, make sure the barrier does not rub against the bark or restrict the trunk from expanding as it grows.
- **Protect dormant trees from mouse and vole damage** over the winter months. Contrary to what some people think, these diminutive creatures don't hibernate. In fact, they can do some of their worst damage over the winter months. Voles, for example, can do extensive damage to the roots and bark of many woody plants. Several strategies can help mitigate the damage they

cause. Install a physical barrier of hardware cloth or wire mesh trunk guards at the base of vulnerable young trees. Wait until after the first hard frost to apply mulch at the base of trees and shrubs but not touching the trunks. If you were using vole and mole repellents over the summer months, don't stop just because the weather has turned cold.

HOUSEPLANT CARE

Now that houseplants are fully acclimated to the indoors after their vacation outside this summer, focus on keeping them healthy and happy within your home's warmer, drier conditions. To learn more about the general care and feeding of houseplants, see VCE Publication [426-100](#), "Indoor Plant Culture."

- **Reduce or hold off on fertilizing houseplants until spring.** Fertilizer requirements vary from plant to plant depending on their growth rate and the type of fertilizer being applied. In general, they require little or no fertilizer after they have been brought indoors for the winter because this is their time to rest.
- **Cut back on watering but do monitor moisture and humidity levels.** The biggest mistake many people make with houseplants is overwatering them. With the exception of ferns, which generally prefer evenly moist soil, allow the soil of other houseplants to dry between waterings. Meanwhile, most houseplants prefer relative humidity levels of about 40% to 50% and benefit from being misted two or three times a week. Another way to increase humidity is to place the plants on a tray of moist pebbles. Brown tips on the ends of leaves usually indicate that the humidity is too low.
- **Make sure light levels are adequate** for the needs of each houseplant. Give each plant a quarter turn weekly to prevent the plant from leaning toward the light.
- **Provide plenty of bright light to overwintered tropical plants** such as mandevilla, fuchsia, or hibiscus to encourage blooms indoors. Water the plant when the top inch or two of soil becomes dry and mist the foliage periodically to raise the humidity level. If the plant is too large to overwinter indoors, it may be maintained in a semi-dormant state in a frost-free garage or basement. If you choose this storage method, water the plant sparingly so that the root ball does not dry out.
- **Pot hardy spring bulbs for indoor forcing.** For advice on how to force bulbs into bloom, see VCE Publication [HORT-76](#), Fooling Mother Nature: Forcing Flower Bulbs for Indoor Bloom.
- **Start forcing paper white Narcissus bulbs** now in order to have them in bloom over the winter holidays. Paper whites don't require any period of chilling and are very easy to force. Once planted, they will bloom in about 5 to 6 weeks, according to VCE Publication [HORT-76 on forcing flower bulbs for indoor bloom](#). This publication provides excellent graphics and clear instructions on forcing bulbs. It also provides a useful listing of bulbs commonly forced into bloom and projections on the number of weeks they should be planted in advance of flowering.
- **Start Amaryllis bulbs** now for a spectacular in-door floral show over the winter months. One of the easiest and most satisfying of bulbs to force, these popular bulbs, like paper whites, don't need to be chilled in advance of forcing. They prefer to be planted in a pot that is only slightly larger than the bulb. So, select a pot that allows no more than one inch of space on each side of the bulb. If the pot is too big, the bulb may not bloom. Position the bulb so that the top third is above the soil line. Place the potted bulb on a sunny windowsill in a cool room (about 60 to 75° F). Water after potting. Afterwards, water only when the soil feels dry to the touch.

INVASIVE ALERT

Chinese Privet (*Ligustrum sinense*) is one of the most widely found invasive plants in the South, according to the Blue Ridge Partnership for Regional Invasive Species Management (PRISM). This evergreen to semi-evergreen shrub typically grows 10' to 15' tall but can reach 30'. Shallow, wide-spreading, suckering roots allow it to form large monotypic stands and impenetrable thickets that destroy wildlife habitat. Although Chinese privet and all other species of privet are invasive, they are still being sold in nurseries as hedges or privacy screens. White or off-white flowers bloom profusely in June; blue-black, berrylike fruits appear in August and last into winter. Although small seedlings can be removed manually, larger shrubs usually re-sprout, so consult the detailed [control guidance provided by the Blue Ridge PRISM](#), which discusses a variety of options that are effective at this time of year. For more information on [Chinese Privet](#), check out the YouTube video on the U.S. Department of Agriculture's National Invasive Species Information Center website, and for help in identifying it, the [collected photos at Invasive.org](#). To learn more about other invasive species in this area of Virginia and methods for controlling them, see the [Blue Ridge PRISM](#) website. See also the [Invasive Plant Control Calendar](#) in the May 2022 issue of *The Garden Shed*.



Chinese privet foliage. Photo: Richard Gardner, Bugwood.org, [CC BY-NC 3.0](#).

Featured Photo: Pink Muhly grass by Cathy Caldwell