May 2022-Vol.8, No.5

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May in the Ornamental Garden

By Patsy Chadwick | May 2022-Vol.8, No.5

It's May and frosty nights are now a distant memory! The garden centers are abuzz with plenty of exciting new plant choices to try. Besides planting and transplanting, there's plenty of weeding, dividing, and general sprucing up to be done in the ornamental garden.

With so many plant choices available to you at this time of year, **look for drought-tolerant selections** that will require less water once hot, humid mid-summer weather arrives. Some potential candidates include black-eyed Susan (*Rudbeckia*), blanket flower (*Gaillardia*), butterfly weed (*Asclepias tuberosa*), catmint (*Nepeta)*, goldenrod (*Solidago*), hyssop (*Agastache*), mountain mint (*Pycnanthemum muticum*), purple coneflower (*Echinacea purpurea*), sneezeweed (Helenium), Stokes' aster (*Stokesia laevis*), and yarrow (*Achillea millefolium*). Important: Although these plants are drought tolerant, they require ample moisture their first year while they are getting established.

Clustered or short-toothed mountain mint (pycnanthemum muticum). Photo courtesy of

With our last average frost date behind us, it's now time to **direct sow seeds of heat-loving annuals** such as cosmos, marigolds, cleome, gomphrena, or zinnias. After the plants reach 4 to 6 inches in height, pinch them back to promote bushier growth. This will ultimately produce more flowers.

Missouri Botanical Garden Plantfinder.

Transplant bedding plants on a cool, calm, cloudy day. The cooler temperatures and cloud cover will cause less stress to the plants and will help them settle in sooner. Some common fast-growing annuals that are sold as bedding plants include celosia, dusty miller, geraniums, lantana, lobelia, petunias, portulaca, salvia, and begonias.

Plant tender bulbs such as dahlias, gladioli, or cannas in full sun. If you don't have full sun (at least 6 hours per day), try planting shade-loving caladiums and tuberous begonias. For a touch of drama, try growing elephant ears in part-shade but give them plenty of room. Depending on the variety, they can grow seriously huge!

Install supports for fast-growing plants that tend to flop. Secure tall plants such as delphiniums or foxgloves to a single stake using jute or other soft twine. For mounding plants such as peonies, use "grow-through" ring or grid-style supports.

Protect newly planted seedlings and transplants from drying wind and hot sun for the first few weeks while they establish strong root structures. Keep the soil around the fragile roots moist but not soggy. If the root ball dries out, the plant may not recover from the stress. Too much water is just as bad for seedlings and transplants because soggy soil may cause their roots to rot.

Monitor moisture requirements of newly planted trees. In general, it takes 2 to 3 years or more for a tree to become established in the landscape. Adequate moisture is particularly critical during this period to encourage healthy root development beyond the original root ball. In the absence of good soaking rains, provide supplemental water, particularly as daytime temperatures grow hotter. Cover the entire area under the tree canopy to keep the soil evenly moist but not soggy around the root ball and surrounding soil.

Prune spring-flowering shrubs after they finish blooming. If you put off doing this until later, you run the risk of cutting off the buds for next year's blooms. Virginia Cooperative Extension (Va. Coop. Ext) Publication 430-462, Shrub Pruning Calendar, provides guidance on the best time of year to prune a variety of shrubs.

Lightly fertilize azaleas and rhododendrons after they finish blooming if a soil test indicates that nutrients in the soil are low. Use a fertilizer that is specially formulated for acid-loving plants and follow the directions carefully. Lightly scatter the fertilizer at the edge of the root zone. Azaleas have delicate roots that are close to the soil surface and can be easily burned by excess fertilizer. Too much fertilizer may also cause scorched leaf margins.

Finish acclimating your houseplants to the outdoors by gradually increasing their exposure to sunlight. Monitor them carefully so that they don't become sunburned. Make sure each pot has a drainage hole. Lack of good drainage is an invitation for root rot.

Experiment with container gardening if you've never tried it before. For best results, keep in mind the "thriller, filler, spiller" concept: plant something tall as a focal point, something mid-size to fill in around the "thriller," and something low that cascades over the rim of the pot and softens the overall effect. Just remember to keep container gardens well watered over the growing season.

Incorporate pollinator-friendly plant species that attract bees, flies, butterflies and other pollinating insects to your ornamental garden. Flowers with single petals rather than double petals are generally a better choice. Echinacea (cone flower) and zinnias are examples of plants that have undergone significant breeding for fuller, showier flowers. While they offer more variety and pizzazz for the garden, the downside is that such breeding efforts affect the flower's ability to produce pollen. In order to produce double flowers, the stamens (male portion of the flower) are bred to transform into extra petals. Because of this alteration to the basic anatomy of the flower, the blossom may not produce as much pollen as a flower having single petals.

Replace mulch with ground covers in your landscape. Mulch is useful in holding moisture in the soil, moderating soil temperatures, preventing erosion, and controlling weeds. However, in certain situations, such as under trees where grass struggles to grow in the shade, a living ground cover instead of mulch may be a more practical solution. Like mulch, ground covers shade the soil, hold it in place, and smother weeds. On top of the practical aspects of ground covers, they add an attractive layer of color and texture in the landscape. Consider planting native ground covers such as: wild ginger (*Asarum canadense*), green and gold (*Chrysogonum virginianum*), Allegheny spurge (*Pachysandra recumbens*), foamflower (*Tiarella cordifolia*), blue-eyed grass (*Sisyrinchium angustifolium*), and creeping phlox (*Phlox stolonifera*).

Monitor your prized plantings for pests of all kinds – creeping, crawling, flying, etc. Here are a few to be on the alert for in May:

- **Aphids** – These voracious insects have mouth parts that are designed to pierce and suck the sap from a plant. They damage plants by causing yellowing, stunted growth, mottled leaves, browning, and even plant death. Ladybugs and lacewing larvae are the natural predators of aphids and may control them for you. If not, then a sharp spray of water is usually sufficient to dislodge aphids from plants. See the University of Maryland extension website for additional information and photos of aphids on a variety of plants.
- **Slugs** – These nocturnal members of the mollusk family can do a lot of damage in just one night – especially to hostas. To eliminate these slimy creatures, take a flashlight outside after dark, hand pick any slugs you find (wearing gardening gloves, of course), and drop them into a container of soapy water. If that approach doesn't appeal to you, sprinkle finely crushed eggshells around vulnerable plants. Slugs don't like crawling over the sharp edges. Another approach is to use a shallow dish filled with beer to entice slugs. Any brand of beer will do. Just nestle the dish into the soil leaving about half an inch of the rim exposed above ground. The slugs crawl into the dish and drown in the beer. End of problem. The University of Vermont extension's website offers good advice on controlling slugs.
- **Ticks** – Ticks are arachnids rather than insects and are at their most active between May and July. During this time, wear light colors, closed-toe shoes, socks, long pants and long sleeves when working outdoors. Don't forget to tuck pant legs into socks. Check yourself, your children, and your pets after you or they have spent time outdoors. For a description of the primary types of ticks found in Virginia, see VCE publication 2906-1396 "Common Ticks of Virginia."
- **Eastern Tent Caterpillars** are the larval form of an ordinary looking yellowish-tan to brown moth (*Malacosoma americanum*). The hairy larvae hatch out in spring at which time they spin unsightly "tents" of silk webbing where they spend their nights. They emerge from the tents in the daytime to feed on the host plant, stripping it of its foliage. Insecticides are generally not effective when tent caterpillars are inside their tents. VCE publication 444-274, Eastern Tent Caterpillar offers more information on this insect. While tent caterpillars can be destructive to trees and shrubs, they are also an important food source for some bird species. Before deciding to kill the larvae, check out Entomologist Michael J. Raupp's Bug of the Week website which provides useful information on tent caterpillars. While not many bird species will eat hairy

caterpillars, the yellow-billed cuckoo is one bird species that will, according to Cornell University's All About Birds.

Bad bugs get all the press but there are far more good bugs than bad, including:

- **Praying Mantis —** If you spot a praying mantis in your landscape, leave it alone. These large, green or brown, stick-like beneficial insects blend in well with their surroundings and are sometimes hard to spot. Mantid eggs overwinter in a small tan, frothy-looking, hardened case (ootheca) and then hatch out around early May. Young praying mantids eat small insects whereas the mature versions tackle big insects, such as crickets, grasshoppers, cabbage moths, and stink bugs. Unfortunately, mantids make no distinction between bad bugs and beneficial ones and eagerly gobble up both. However, in general, they appear to do more good than harm in the environment.
- **Syrphid Fly (*Sphaerophoria philanthus*)** – Syrphid flies (also called hover flies or flower flies) serve double duty as both pollinators of a wide variety of plants and predators of other insects. These small black and yellow-striped insects measure less than ½ inch long and are often mistaken for bees or wasps. However, Syrphid flies don't have stingers and, like all fly species, they have only one pair of wings, whereas bees and wasps have two pair. In their adult form, syrphid flies feed only on pollen, nectar and aphid honeydew and do not prey on other insects. As larvae, they are highly effective natural enemies of aphids, scales, thrips, and other soft-bodied, slow-moving insect species. Just one larva can consume hundreds of aphids. For photos of both the adult and larval forms of this beneficial insect, see North Carolina State University Extension's publication on Syrphid Flies.

Syrphid fly. Photo: Whitney Cranshaw, Colorado State University, Bugwood.org

Take preemptive steps to keep deer out of the garden. As beautiful as deer are, they can do a devastating amount of damage to plants that are just emerging or leafing out. A tall fence or other physical barrier is the most effective way to keep deer out of your garden. If a fence is out of the question, then try growing plants with strong scents (such as herbs), tough or leathery foliage, and spiky or spiny foliage. Confuse deer by tucking vulnerable plants in among plants they normally shun. Use repellents that either smell or taste bad to deer. Repellents that have a sulphur-based odor of rotten eggs appear to be more effective than taste-based ones but alternate their use so that the deer don't become accustomed to them. To learn more about deer and strategies for living with them, see Garden Shed article Deer, Deer, Deer!, which provides lots of great information on the subject.

Invasive Alert: Spring rains make the soil moist and easy to work in, which makes conditions ideal for homeowners to **hand pull small, young sprouts of invasive plants.** To control these species, it's important to remove all parts of the root so that the plant cannot regrow. Look for the following species: English ivy (*Hedera helix*), climbing euonymous (*Euonymous fortunei*), Japanese honeysuckle (*Lonicera japonica*), Oriental bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergia*), autumn olive (*Eleagnus umbellata*), wineberry (*Rubus phoenicolasius*), and garlic mustard (*Alliaria petiolata*). Visit

the Blue Ridge PRISM (Partnership for Regional Invasive Species Management) website for factsheets on each of these species, including photos and control options.

No Mow May

By Cathy Caldwell | May 2022-Vol.8, No.5

It's that time of year when lawnmowers come out of hibernation. You may be hauling yours out of the garage as I write this. But in a growing number of communities, the mowers are still lying about doing nothing. Why? Because it's "No Mow May" in these places, but it's not about laziness; it's to provide forage for pollinators, particularly during the early part of the growing season.

While turfgrass does not provide much of anything for pollinators, most lawns harbor flowering weeds that native bees and other pollinators need. Yes, weeds like dandelions provide essential pollinator food — nectar and pollen — early in the season when flowering plants are in short supply. And because human activities like development and intensive farming have reduced the supply of pollinator nutrition, we humans must do all we can to remedy that shortfall. After all, as any vegetable gardener knows, our own nutrition depends to a large extent on pollinator services. To learn more about pollinator nutrition, see articles at Penn State's Center for Pollinator Research.

So leaving lawn weeds to flower is one way we can all do our part. And that's how the No Mow May movement was launched. It started in the United Kingdom, and jumped the pond in 2020 to Appleton, Wisconsin, at the urging of two local professors, Dr. Israel Del Toro and Dr. Relena Ribbons. In its first year, 435 Appleton residents signed up to participate in No Mow May.

Sign designed by Andrew Burandt, courtesy of the Village of Cross Plains, Wisconsin.

Professors Del Toro and Ribbons then proceeded to gather data on the impact of the first No Mow May in 2020. The result? Their research showed that the No Mow lawns had five times the number of bees and three times the bee species as nearby mown areas in town parks. By 2021, a dozen communities across Wisconsin had adopted No Mow May, and soon the movement had been taken up by communities in Iowa, Minnesota, Illinois, and Montana.

There's lots more good science to support the No Mow May campaigns. The scientists at **Penn State's Pollinator Research Center urge us all to adopt a "lazy lawn mower" approach** to our yards. The entomologists define this approach as follows:

> *"Mow your lawn less frequently or increase mower height to sustain more low-flowering plants in your lawn. Flowers that grow in lawns, such as dandelions, bird's-foot trefoil and clover provide underrated, but very important, pollen and nectar resources for foraging bees."*
>
> *—Penn State Entomology/Pollinators/What Can I Do?*

Photo: Martin LaBar, CC BY-NC-2.0

While one researcher concluded that an every-two-weeks mowing schedule is ideal for bees, No Mow May/Bee City USA./Xerces Society, experts at the University of Vermont say that "ideally, mowing for pollinator health would be done only in the fall or winter," but simply **delaying spring mowing** gives flowering weeds time to flower and provides early season food for pollinators. Of course, spring generally arrives earlier in central Virginia than in the midwest, so a "No Mow April" would be more apropos in our region. That's the name of the campaign in College Park, Maryland, which launched for the first time this spring.

How you mow can matter to pollinators, too.

> *"The one-third rule is a good guide: do not mow more than one-third of the vegetation at one time to a height between 3.5 and 4 inches to ensure that flowering plants survive and produce flowers to sustain pollinators."*
>
> — Bee Lawn Brochure/Penn StateCenter for Pollinator Research

Since a tidy, well-mown lawn may be required by local ordinances or HOA rules, most No-Mowers have found it helpful to post a sign alerting neighbors to the purpose of their "lazy lawn mower" approach. Most communities have enacted ordinances authorizing participants to leave lawns un-mown for the month.

There are more ways to help our pollinators. One of the professors who helped launch No Mow May, urges us all to do exactly that:

> *"**The initiative is only a starting point for bee conservation. "What you did for one month, that's cool, that helps," Dr. Del Toro said. "But what are you going to do the rest of the summer, or the rest of the year, to make sure that our pollinators are protected?"***
>
> –"Stowing Mowers, Pleasing Bees," NY Times

Here's one option: a "**bee lawn**" — and no, I'm not making this up. If you purposely cultivate flowering plants in your turfgrass, you'll have a "bee lawn." You may not be inclined to encourage dandelions, but there are some attractive, low-growing, flowering plants that provide pollinator food. According to experts at the Minnesota Extension, "Dutch white clover (*Trifolium repens*), self heal (*Prunella vulgaris*), and creeping thyme (*Thymus praecox* ssp. *arcticus*; formerly *Thymus serpyllum)* are three species that benefit pollinators and will flower in a mowed lawn. White clover offers the additional benefit of adding nitrogen to the soil, plus it tolerates drought. For more about bee lawns and how to turn yours into one, see Planting and Maintaining a Bee Lawn/Minn. Ext. and this Bee Lawn video, Univ.Minn. .

Self heal (Prunella vulgaris) in a lawn. Photo: John D. Byrd, Miss.State University, Bugwood.org

Finally, educate yourself about bee decline and share your knowledge with neighbors and friends. I recommend reading Factors Contributing to Bee Decline/Utah State Extension. Bees are critical to our food security, so we all need to know why they are threatened and how to protect them.

SOURCES:

FEATURED PHOTO: No Mow May sign designed by Andrew Burandt, ajbshoeless@gmail.com, consultant for the Village of Cross Plains No Mow May Campaign.

Mowing for Pollinators, Univ. of Vermont Extension (2022)

No Mow May/Bee City USA./Xerces Society.

Anne Readel, "Stowing Mowers, Pleasing Bees," NY Times

Bees, Bugs & Blooms – A pollinator trial/Penn State Dept. of Entomology

https://www.researchgate.net/publication/344340220_No_Mow_May_lawns_have_higher_pollinator_richness_and_abundances_An_engaged_community_provides_floral_resources_for_pollinators

Utah State Extension.usu.edu/factors-contributing-to-bee-decline

Univ. Kentucky/.uky.edu/cgi/Dwarf white clover in lawn supports pollinators et al

Green Bay Botanical Garden/gbbg.org/2020/06/no-mow-may-benefits-pollinators-bees/

College Park Md.gov/No-Mow April

May in the Edible Garden

By Ralph Morini | May 2022-Vol.8, No.5

May is here and we are preparing to plant summer vegetables. Eager planters enter the lottery of predicting the last frost. Here in hardiness zone 7a, ***average*** last frost date is April 15-25. “Average” is the operative word. In 2020, after a warm winter and spring we had a couple of surprise frosts in the second week of May, requiring us to scurry around and cover early tomato transplants. Watching the long-term forecast and having some row covers ready is advisable for early planters.

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

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

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

You can test soil with a soil thermometer, available at garden shops. Poke the thermometer about 2½ inches into the soil. Since soil temperature will vary throughout the day, a good average is found between 10 and 11 am. It's good to check the upcoming weather to be sure there isn't a cold snap on the horizon.

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

For a detailed **list of recommended planting times** for vegetables in Hardiness Zones 6a through 8a, check out the Virginia's Home Garden Vegetable Planting Guide.

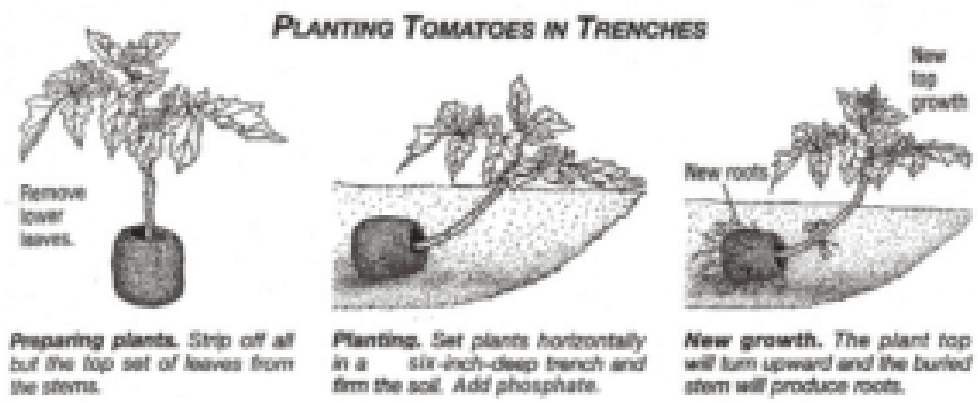
Photo: Second year asparagus bed. Photo: R Morini

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

Other tips for May vegetable gardening in our area:

Tomato transplants. Photo R Morini

Tomato transplants are ready to be placed in the garden when they have 5-7 leaves. When transplanting tomatoes, place 2⁄3 of the plant below the soil surface. Pull leaves off the bottom 2⁄3 of the plant and either dig the planting hole deep enough to stand the plant up or lay the underground stem section on its side as the illustration demonstrates:



Planting tomato in a trench. Courtesy of NC State Extension

Tomatoes will add roots underground and build a stronger root system if planted this way.

When **choosing your tomato varieties** consider determinate types that ripen within a narrow time period if you are a canner and want a single harvest. Indeterminate varieties will provide a steady supply of ripening fruits until frost, if well cared for.

Eggplants like 80° to 90° temperatures and plenty of water. Water them thoroughly twice a week during dry periods.

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

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

Missing corn kernels on your corn ears? This may be the result of **poor pollination**. Sweet corn is wind-pollinated. Pollen from the corn flower at the top of the stalk has to reach every strand of silk on each growing ear to develop fully-kernelled mature corn ears. **Block planting in short rows** (3-4 rows or more) will pollinate more successfully than 1 or 2 long rows. Find more information on VCE publication Sweet Corn.

Keep potatoes covered. The skins of potatoes exposed to sunlight will turn green. This green color comes from the pigment chlorophyll which is produced as a response to sunlight. “Green Potatoes” often develop a bitter taste and may even become toxic. This can be prevented by covering the exposed potatoes by hilling-up dirt over them or covering them with straw mulch. For additional information on growing potatoes, watch this VCE video.

To control weeds in the garden, **destroy them before they develop seeds**. Avoid cultivating and hoeing deeply; this can cause damage to shallow rooted vegetables. Also, avoid using mulch or compost that is

contaminated with seeds.

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

Where do I water? Photo R Morini

When **watermelons, muskmelons, squash, and cucumbers** are planted in a hill, **place a stick** upright in the middle of the hill and leave it there. Later in the summer when the hill becomes hidden by the vines, you will know where to water. You'll save time looking for the main root, and save water as well.

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

DIY Row Cover. Photo: R Morini

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

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

3 Bin Compost System at CATEC Garden. Photo: R Morini

This is also a great time to **start a fresh batch of compost**. The warm temperatures will speed up

decomposition if you keep the pile moist and aerated. Grass clippings and kitchen scraps become available as we begin mowing lawns and eating seasonal fruits and vegetables. If you've saved some leaves from last fall, you have what you need to create a good compost batch that will be ready for use this fall. VCE publication Backyard Composting offers helpful guidance for several composting approaches.

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

Garden season is in full swing now. Get out there and enjoy it! And let's talk some more next month.

Resources:

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

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

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

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

Featured photo: Strawberries in Bloom. Photo: R Morini

Growing Tomatillos

By Chris Stroupe | May 2022-Vol.8, No.5

What exactly is a tomatillo? Sometimes called “husk-tomatoes” because of the papery calyx surrounding the fruit, *Physalis philadelphica* – also known as *Physalis ixocarpa* – is a member of the Nightshade, or *Solanaceae*, family. Members of this family include other New World favorites such as peppers, tomatoes, potatoes, and tobacco. Tomatillos are more closely related to peppers than to tomatoes and potatoes, and more distantly related to tobacco.

But really, tomatillos are just…tomatillos, tart and with a unique, lively flavor reminiscent of citrus and green apples. They're fantastic raw or cooked and taste great with meat, garlic, onions, chilis, and cilantro. Best of all, they're easy to grow in the home garden.

Purple tomatillo.
Photo: Frank Vincentz, CC BY-SA 3.0, via Wikimedia Commons

Tomatillo Varieties

Tomatillos were domesticated in Mexico and Central America long before European contact, so it's not surprising that there are many cultivated varieties. Your favorite seed catalog(s) will have even more cultivars.

De Milpa: Strongly flavored, common in Mexican cuisine
Tamayo: Green, very large fruit
Purple de Milpa: Sweeter than the green version
Rendidora: An "improved" variety developed in Mexico with upright growth habit
Ground cherry: A different species, *P. pruinosa*.; tiny, sweet, yellow-orange fruit

Starting from Seed

Tomatillos don't self-pollinate, so start enough seeds for at least two plants in the garden. The two plants don't have to be different varieties.

Sow seeds indoors about eight weeks before planting (see below). Incubate at 80°F until germination, then adjust the temperature to 65-70°F. Seedlings will grow best with lots of light; for example, cool-white fluorescent lights placed a couple inches above the plant tops and turned on

Ground cherries.
Photo: Pen Waggener, CC BY 2.0, via Wikimedia Commons

for 16 hours per day works well.

Keep the growing media moist, but not saturated. A fan directed at the seedlings helps prevent fungal diseases by keeping stems and leaves dry; it will also encourage stronger growth by mechanically stimulating the plants. If they become root-bound or crowded, transplant into larger containers.

Two weeks before planting in the garden, "harden off" tomatillo plants by gradually introducing them to an outdoor environment. Put them outside in a warm spot with partial sunlight for a couple hours per day at first, increasing the length of exposure each day by about an hour. If a cold snap, heavy rain, or high winds are predicted, keep the plants inside.

It's absolutely fine to buy seedlings instead, but they should be hardened off also, so they are ready for the garden. Remember to buy at least two plants to ensure plenty of pollination

Site Preparation

Make use of indoor growing time by preparing the planting location. Choose a spot with 6-8 hours of sun per day. Lay out north-south rows, and don't put tomatillos where taller plants will block the sun. If possible, plant in soil where members of the *Solanaceae* family haven't been grown for 2 or 3 years to reduce the chance of disease. Remove weeds and plant debris from previous years, which can harbor over-wintering insects. Finally, tomatillos need plenty of room, so leave 2-3 ft between each plant. ('Rendidora' plants can be spaced by as little as 16".)

If you haven't had your garden soil tested in a few years, you may want to do that to ensure that soil pH and nutrients are suitable for vigorous plants. Tomatillos grow best in acidic to slightly alkaline soil, pH 5.5 – 7.3. The Virginia Tech soil testing lab will provide amendment recommendations along with test results.

Ensure that soil has adequate drainage because tomatillos grow best in well-drained soils. North Carolina State University has a nice description of an easy "percolation test" to measure soil drainage. If soil drains too slowly or too quickly, the solution is the same: add organic matter, such as compost. A good rule of thumb: incorporate 4 inches of compost into the top 12 inches of soil.

Transplanting and Cultivation

Don't rush to plant your tomatillos outside. Being tropical plants, cold temperatures may damage tomatillos. Wait for garden transplanting until soil temperatures reach 60°F and the danger of frost is low.

When the time is right, dig holes a little wider than the plant root balls. Tomatillos grow roots from their stems – just like tomatoes – so make holes deep enough for the bottom set of leaves to be just above ground level. Loosen the root balls and place plants in their holes. Backfill, then water thoroughly.

Prune one of the two stems exiting junctions.
Photo: Frank Vincentz, CC BY-SA 3.0, via Wikimedia Commons

To avoid diseases, support tomatillo plants to keep them off the ground. Tomatillos branch more than tomatoes, so a central stake is not sufficient. I've had good results by putting stakes in a square with 2-3 ft sides, centered on the plant, then passing twine around and diagonally across the square. I add another layer of twine every 12 inches or so as plants grow, but it's not necessary to tie the plants to the twine.

I've found that tomatillos need aggressive pruning to control their spread and support vigorous fruit production. Early in the season I leave the plants alone. After several weeks (late June in Virginia) I begin cutting the "suckers," secondary stems that grow out of the "axils," the stem-leaf junctions where flowers appear (see picture). This ensures that I don't get too many immature flowers at the end of the season (i.e., first frost). Don't worry, the plants will still make plenty of flowers and fruit.

Otherwise, treat tomatillo plants like tomatoes. They need about 1½ inches of water per week; this works out to just under one gallon per square foot. Use mulch, such as straw or grass clippings, to preserve moisture and prevent weeds.

Diseases and Insect Pests

Tomatillos are relatively disease-free. Once disease sets in, though, it usually cannot be cured. Prevent disease with crop rotation, support and pruning (to allow airflow and keep things dry), good sanitation practices (clean tools and clean-up), and insect control (to prevent pathogen spread). Preventative fungicide application may help, as detailed in the Virginia Cooperative Extension's 2022 Pest Management Guide for Home Grounds and Animals (PDF). Refer to the "tomato" section.

If a tomatillo plant shows signs of disease, the diseased parts should be removed as quickly as possible to prevent spread. Dispose by burning, burying, or bagging for household trash pick-up.

Leaf with powdery mildew on its bottom half. (And downy mildew on its top!) Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

Tomatillo diseases

Name	Signs and symptoms	Prevention and control
Anthracnose	black spots on fruit	support/pruning, fungicides
Blights (early/late)	lesions on leaves, then dead foliage	support/pruning, fungicides
Powdery mildew	white fuzzy patches on leaves	support/pruning, fungicides
Root rots	wilting	soil drainage, proper watering
Verticillium wilt	wilting, yellowing of leaves	crop rotation
Viruses	discolored, distorted leaves	sanitation, insect control

For more details about the following insect pests, consult the Virginia Cooperative Extension's 2022 Pest Management Guide for Home Grounds and Animals (PDF). Refer to the "tomato" section.

Insect pests of tomatillos

Name	Signs and symptoms	Prevention and control
Aphids	"honeydew"/sooty mold, stunting	insecticides
Colorado potato beetle	defoliation	hand-pick, Bt, insecticides
Cutworms	damage to base of plant	collars (foil or paper)
Flea Beetles	many tiny holes in leaves	insecticides, cultural practices
Tomato hornworms	defoliation	hand-pick, Bt, insecticides

Harvest

Harvest after the fruit has grown to fill the husk, and the husk has turned brown. The husk may tear and expose the fruit. This is useful for purple varieties, which are green until they ripen. Ripe fruit will be firm, but not hard. Overly ripe fruit will be soft and tasteless (green tomatillos will turn yellow). Fruit may fall off the vines before it's fully ripe, but will ripen if stored at room temperature. Ground cherries, however, will fall off the vine when they are ripe (and sweet).

Potato leaf with flea beetles and flea beetle damage.
Photo: Whitney Cranshaw, Colorado State University, Bugwood.org

Storage, Preparation, and Cooking

Store fruit with husks attached. Tomatillos will keep for at least two weeks in a paper bag in the refrigerator. For longer storage, remove husks, wash fruit to remove the sticky residue, and freeze. To prep for cooking, remove husks and wash off the sticky residue.

Salsa verde!

There are many ways to use tomatillos. Some of my favorites include: salsa verde with cilantro, garlic, and onions; chicken-tomatillo stew; tomatillo-corn soup; and savory tomatillo pie. Enjoy your tasty tomatillos!

Photo: HuriAguilar, CC BY-SA 3.0, via Wikimedia Commons

References and Online Resources

Featured photo attribution: © Tomas Castelazo, www.tomascastelazo.com / Wikimedia Commons / CC BY-SA 4.0

Grow your own tomatoes and tomatillos Oregon State University Extension Service

Growing tomatillos Texas A&M Agrilife Extension

Growing tomatillos and ground cherries in the home garden Minnesota State Extension

Off the beaten path: Ground cherries Penn State Extension

A phylogenetic framework for evolutionary study of the nightshades (Solanaceae): a dated 1000-tip tree Särkinen et al. (2013) *BMC Evolutionary Biology* 13, article no. 214

Tomatillo, husk-tomato Purdue University Center for New Crops and Plant Products

Tomatillos (PDF) Iowa State University Extension and Outreach

Tomatillos in the garden Utah State University Yard and Garden Extension

Invasive Plant Control Calendar

By Susan Martin | May 2022-Vol.8, No.5

Invasive plants along our roadsides, in our natural areas, or on our own properties destroy natural habitats. Great hulks of intertwining vines hide the identify of trees and shrubs. Hikers are impeded by stands of thorny, vine-wrapped, impenetrable thickets. Homeowners are now fighting the invasions of stiltgrass and wavyleaf grass in their lawns. Eradicating invasive plants can be a discouraging, costly, time- and labor-intensive battle. All these nonnative invasive plants share a fearsome ability to **reproduce prolifically and outcompete native plants.** The changes they impose **threaten the existence of insects, birds, and wildlife.**

This treatment calendar is based on data compiled by **Blue Ridge PRISM** (Partnership for Regional Invasive Species Management, Inc.). This volunteer-driven, nonprofit organization is dedicated to reducing the negative impact of invasive plants in the northern Blue Ridge Mountains of Virginia. For more information about the history of the organization, its mission, and the services it provides, see Blue Ridge PRISM.

Many of these nonnative plants will be familiar to you; some are not. **Many are still sold in the trade by nurseries and plant purveyors because they are deemed to have ornamental beauty. But don't let appearances deceive**. These plants are a scourge whose rippling effects will pass from one decade to the next. For a brief discussion of the legislative process for controlling invasive plants, see "Don't Buy Nonnative Invasive Plants – Even If You Can."

The goal of this calendar is to provide an easy reference for identifying WHEN to treat WHICH invasive. This goal is complicated by the fact that there are often **multiple types of treatments** recommended for each invasive depending on several factors: **the time of the year, the area in which the invasive grows, and the stage of plant maturity. This means that many invasives can be treated at different times of the year and will appear in more than one control month**.

The following examples illustrate how control methods are influenced by multiple factors:

- When plants are small, manually pull in the spring **when the soil is moist** and there is a better chance of **getting ALL the root fragments.** Many invasives resprout if even a small piece of their roots is left in the ground. **Manual methods are a good choice for smaller, newer infestations when the soil is moist.**
- Larger plants may not respond well to manual pulling because it is more difficult to get all their root fragments. They either can't be pulled at all, or you risk leaving the remaining roots in the ground to regrow.
- **Tree stump methods, including cut stump (followed immediately by an herbicide application to the cut), hack and squirt, and basal bark can be done anytime of the year EXCEPT during leaf out** when the sap is flowing upward to the new leaves. When sap is flowing upward, the herbicide won't be readily absorbed by the roots.
- When using the **hack and squirt technique, slow deterioration from the herbicide might create a falling hazard in high traffic areas.** In this case, cut the tree down and treat the stump with herbicide.
- Fall to late winter (October-February) is usually considered a particularly good time for tree stump eradication methods because the plants will be easier to access without heavy undergrowth, and the temperatures are cooler.
- **Foliar treatments** (applying herbicide to leaves) are always effective for woody evergreen invasives such as English ivy, wintercreeper, and vinca. Foliar treatments are also usually effective for deciduous plants after they have leafed out and until leaf drop in the fall.
- If a foliar treatment is recommended, **avoid damage to native plants that are in proximity,** and use aquatic-compatible herbicides near water sources.

This calendar summarizes the information provided in the PRISM fact sheets; please refer to these Fact Sheets for more in-depth information on plant characteristics, environmental impact, and multiple treatment options. To see **the PRISM Fact Sheets on each plant and photos for identification,** click on the link highlighted in the plant's name. For a description of different control methods, see Blue Ridge PRISM/Fact Sheets/Control Methods. For types and amounts of the recommended herbicides, Blue Ridge PRISM refers to Va. Dept. Forestry/Non-Native Invasive Plant Species Control Treatments.

NOTE ON HERBICIDES: THE LABEL IS THE LAW. READ THE LABEL. Carefully prepare and apply herbicides according to label directions; apply the minimum amount of recommended herbicide that will be effective for a particular situation. Be aware that the labels can change; refer to labels for updated information.

We would all like to avoid herbicides, but these invasives are so prolific and so persistent, that **herbicides are often necessary. To minimize the use of herbicides,** use a paintbrush approach or a spot application whenever possible rather than a foliar spray. If a foliar spray is the most effective method, woody shrubs can be cut back first to minimize the amount of herbicide that's needed. When using the cut stump method for larger diameter trunks and vines, herbicide can be painted 1″ around the inside perimeter of the cut stump rather than on the entire surface. This VIDEO demonstrates how to use a paintbrush approach with the cut stump method. Be aware that cut stump, hack and squirt, and basal bark treatments require a much higher concentration of an herbicide's active ingredient (a.i.) than any foliar spray. Using foliar spray concentrations for cut stump, etc. will be ineffective. See this Blue Ridge PRISM article for instructions on how to safely and effectively use herbicides.

INVASIVE WATCH BY MONTH

FEBRUARY

Paradise Tree or Tree of Heaven (*Ailanthus altissima)* is a nonnative invasive that threatens natural areas,

agricultural fields, disturbed areas, and developed landscapes. Ailanthus is a particularly important target plant because the nonnative insect pest, **Spotted Lanternfly,** prefers, and may even require, *A. altissima* trees to complete its lifecycle. A spotted lanternfly infestation has the potential to severely damage Virginia's orchard crops and canopy trees. Small ailanthus saplings, up to about 3', can usually be hand pulled or foliar sprayed. If the stem is too big to hand pull, try breaking it with your hands. The wood is very brittle and breaks easily. Apply concentrated herbicide to the end of the broken stem. This can be done all year, except during leaf out. If the stem is too thick to break, use the cut stump technique applying herbicide immediately to the cut. The basal bark treatment can be used for trees with 4-6" stems. The hack and squirt technique can be used on stems that are 4" in diameter up to mature trees. Do not use the hack and squirt method if the tree is situated in a high-traffic area; deterioration from the herbicide over time might create a hazard once the tree falls. *NOTE: If you are not using herbicide and the tree is too big to hand pull, LEAVE IT ALONE.* Without applying herbicide, ailanthus will initiate its survival response and generate dozens of root sprouts worsening the infestation.

Lesser Celandine or Fig Buttercup (*Ficaria verna,* previously named *Ranunculus ficaria*) grows so densely and so rapidly that it forms a continuous thick mat of foliage that smothers low perennials and prevents the seed of wildflowers, grasses, and trees from germinating. A member of the buttercup family, this plant has toxic properties that can cause illness in livestock. The foliage sprouts from underground roots and tubers and appears in late winter before anything else greens up. Flowers begin blooming in March or early April and stop when the weather becomes hot. When blooming finishes, the leaves yellow and the plants go dormant. **Small infestations of lesser celandine can be controlled by hand digging when the soil is moist.** Care must be taken to remove as much of the plant material (including all root material, bulblets and tubers) as possible. For larger infestations, **apply foliar applications of herbicide to lesser celandine during the late winter through the early spring (February-March) before native plants emerge.** Lesser celandine is usually found growing close to water; in this case, use an aquatic-approved glyphosate applied at a rate of 1.5%-2.0%. Despite its invasive properties, ***F. verna* is still commercially sold by nurseries and plant purveyors.**

MARCH

Asiatic or Oriental Bittersweet (*Celastrus orbiculatus*) is a branched, deciduous vine with woody stems that can scale trees up to 60' high. Stems of old vines are commonly 4" in diameter. Be careful with identification; Asiatic bittersweet closely resembles American bittersweet (*Celastrus scandens*), a relatively rare native. In fall, the fruits turn red and remain in winter when they are eaten by birds and dispersed to other locations. **Hand pull small vines in spring when the soil is moist. Be sure to remove the crown and all large roots or vigorous new growth will occur. Low bushy vines or resprouted vines can be killed with a foliar herbicide spray after leaves appear in spring through fall.** Be mindful of native plants growing in the area. It is best not to spray large vines. From fall to winter, use the cut stump method with herbicide applied immediately to the cut or use the hack and squirt method when vines are large enough.

Garlic Mustard (*Alliaria petiolata*) has displaced native wildflowers such as spring beauty, wild ginger, bloodroot, trillium, and toothworts in many forested areas. Although this plant is easiest to recognize after it produces white flowers in early April, its foliage is also distinctive, and all parts of the plant emit a strong garlic odor. It is **easy to pull in spring when the ground is moist. If the infestation is too large for hand pulling, spot-spray the rosettes** with a recommended herbicide any time the ground is not frozen. **It is essential to remove garlic mustard before it sets seed in May-September.**

Mile-a-Minute (*Persicaria perfoliata*) is an annual vine and prolific seeder that can grow 6" a day and reach heights of 25' in a single season. Tiny, recurved, needle-sharp barbs arm its leaves and stems. Clusters of

tiny, white flowers appear in June followed by green fruits that ripen to bright blue. Seeds of green fruits are viable. The plant flowers and fruits continually from early summer until frost. Seeds of mile -a-minute can float for days, allowing the noxious weed to rapidly invade an entire watershed. **Mile-a-minute can be manually pulled before it sets seed but wear gloves to protect against the barbs.** Foliar sprays are effective but also kill whatever is underneath the vine. A **preemergent herbicide is called for in large areas of infestation.** The herbicide should be applied to the soil **in early to mid-March before seeds germinate in June.** Do not use preemergent herbicides near wetlands, streams, etc. because it harms aquatic life.

APRIL

Callery or Bradford Pear (*Pyrus calleryana* 'Bradford') and other ornamental pears started out as popular landscape trees in the 1960s and are now considered invasive in 29 states. **Control trees less than 6' tall with a higher-than-usual (3-4%) concentration of foliar spray.** Foliar sprays are effective from **when leaves emerge in spring until just before they begin to develop fall color.** Use the standard approaches for eradicating invasive trees: hand pull small saplings; if too big to pull, use the cut stump method with herbicide applied immediately to the cut; the basal bark treatment; or hack and squirt. You can hand pull any time and use the other approaches any time except at leaf out.

Wavyleaf Grass (*Oplismenus undulatifolius*) has now invaded Virginia and appears on the state's noxious weed list. It thrives in shady sites from very moist to somewhat dry, and spreads through root-like stems called stolons. The wavy leaves have the appearance of corrugated cardboard or water ripples**.** Pointed seed tips (awls) spread for miles by grabbing onto the fur of animals and the clothes of hunters and hikers. This perennial grass breaks dormancy and starts growing rapidly in April. Seeds germinate from April into June. **Wavyleaf can be hand pulled if populations are small, but all bits and pieces of stolons must be removed or they will resprout.** Be sure to remove tiny seedlings which resemble miniature, mature plants. **For larger infestations, two herbicide treatments during the same growing season are strongly recommended. Use a recommended grass-specific herbicide from April through June.** This herbicide won't harm wildflowers. After June, use a non-selective herbicide; some studies have shown that grass-specific herbicides are less effective in the summer. Non-specific herbicides may also be used from April until frost, but other plants will be at risk. In wet areas or near streams, use an aquatic-safe product. You must c**omplete** the **control treatment before wavyleaf begins setting seed in late summer.**

MAY

Garlic Mustard (*Alliaria petiolata*), generally described in the March treatment section, sets seed in May-September. **It is essential to remove garlic mustard before it sets seed. Do not mow garlic mustard when seed pods are present in May-September.**

Kudzu (*Pueraria montana* var. *lobata*) has engulfed at least 7 million acres of public and private land in the Southeast. It is easiest to spot kudzu when its very showy reddish-purple flowers appear in late summer to early fall. **Foliar herbicide sprays must be applied twice a year. The first spray is applied in late spring or early summer** after leaves mature. The second treatment is applied in late summer or early fall. New (small) outbreaks can be controlled without herbicide by grubbing (pulling out by the roots) any time of year.

JUNE

Autumn Olive (*Elaeagnus umbellata*) targets sunny fields and pastures, roadsides, forest edges near mowed fields, and open woods. Its silvery green leaves appear early in spring and last until late fall. Red, oval fruits ripen in August and September. **Seedlings and young autumn olive shrubs can be hand–pulled or dug**

when the soil is moist if the population is not extensive. Digging larger plants is problematic because they resprout from any roots left behind. For larger and/or mature stands, prevent seed production and dispersal by **cutting back and treating plants with herbicide by mid-July** to prevent seed ripening. Autumn olive can be controlled at any time of year, except during leaf out (spring growth), by cut stump with herbicides or hack and squirt for large stems. Watch for resprouts; cut and treat new stems or apply a foliar herbicide spray to the new foliage. **The basal bark method can also be used with** a concentrated herbicide in a horticultural oil. This is most effective in January-February or from **May-October.** Foliar sprays can be used from spring through fall but may need a second application and may not be effective. This is a very difficult plant to eradicate. See the PRISM Factsheet for more detail.

Mile-A-Minute Vine (*Persicaria perfoliata*, formerly *Polygonum perfoliatum*), included in the March treatment section, begins to flower in June with clusters of tiny, white flowers followed by green fruits that ripen to bright blue. The plant flowers and fruits continually from early summer until frost. **Both manual pulling and herbicide treatments should be done before seed setting in mid- to late-June.**

Multiflora Rose (*Rosa multiflora*) is a multi-stemmed, spreading shrub with branched, thorny arching stems (canes) that can climb high into trees. Multiflora rose forms dense thickets by three methods: rooting at the tips of its long, arching canes; forming new crowns and canes from its spreading root system; and producing abundant fruits. White, yellow-centered flowers bloom in May and June, followed by small, hard, green fruits (rosehips) in mid-summer. **It is best to control this invasive before rosehips ripen to red in fall. Several control methods will be necessary over several years.** Pulling or grubbing (remove by the roots) individual shrubby plants from the soil works only if **all roots are removed. Mow or weed whack the shrubs (using a brush cutter, not a string trimmer) and apply a foliar spray to the regrowth. You can also use a cut stump method on the shrub with an immediate application of herbicide to the cut. For vines that climb into trees,** cut the stems close to ground level and paint or spray an **herbicide immediately on the cut vine stump.** Do not confuse multiflora rose with native roses. Native roses have pink, not white, blossoms, as well as other different characteristics. Natives are rare and don't form the extensive expanses that you find with multiflora rose.

Tree of Heaven or Paradise Tree (*Ailanthus altissima)*, generally described in the February treatment section, can be treated with the **hack and squirt stump method best done from June 1 to October 1.**

JULY

Japanese Honeysuckle (*Lonicera japonica*) is a rapidly spreading nonnative vine that competes for both above- and below-ground resources, inhibiting the growth of desirable trees, shrubs, grasses, and wildflowers. This vine retains its leaves well into winter (year-round in mild climates). **Hand pulling young Japanese honeysuckle in a small area when the soil is moist can be effective, but any roots left in the soil will resprout.** Foliar sprays are less effective in spring because the herbicide does not thoroughly move from the leaves into the roots during spring growth. **If feasible, wait until after July 4 to treat with foliar sprays.** Don't spray overhead vines. Instead, cut them near the soil any time of year to kill the top growth; apply foliar herbicide to the regrowth. **For the cut stump method,** sever thick vines near the ground and **treat the cut ends with a recommended concentrated herbicide** from early summer into winter.

Porcelain-Berry *(Ampelopsis brevipedunculata)* is a woody perennial that is related to grape and grows so fast that it can engulf a small tree, such as a dogwood, in one growing season. This invasive vine has a vast, hard-to-kill root system. Tiny, yellow-green, nectar-containing flowers are arranged in flat clusters and bloom June through August. They are followed by colorful clusters of shiny berries of different colors, including creamy-white, green, yellow, and lilac. These eventually ripen to bright turquoise blue in September and October. Gardeners continue to buy this plant because of its attractive berries. **Herbicidal foliar treatment**

is most effective when applied between midsummer and early fall. For large infestations, foliar treatments are the only feasible option. To reduce the amount of herbicide needed, cut back the vines and spray the regrowth. **Hand pulling works only for young plants.** It is nearly impossible to dig up the taproot of an established porcelain-berry. To prevent seed dispersal, **remove porcelain-berry by pulling, cutting, or mowing from winter to midsummer, before any fruits develop for that season.**

Wavyleaf Grass (*Oplismenus undulatifolius*), described generally in the April treatment section, should be treated with two herbicidal foliar treatments within the same season. From April-June, use a grass-specific herbicide. **After June, use a non-selective herbicide;** some studies have shown that grass-specific herbicides are less effective in the summer. Be mindful, however, that non-selective herbicides will put other plants at risk. In wet areas or near streams, use an aquatic-safe product. **Complete control treatments before wavyleaf begins setting seed in late summer.** If pulling manually, get all parts of the stoloniferous roots.

AUGUST

Japanese Stiltgrass (*Microstegium vimenium*) forms a dense ground cover that smothers native plants and prevents regeneration of forests and fields. **Hand pulling small infestations when the soil is moist before plants set seed is effective but labor intensive. Mowing is best done just before stiltgrass flowers in August and September** and need be done only once if you wait until then. Mow stiltgrass as low as possible, scalping the ground, to remove all above-ground parts. **Foliar sprays are effective,** but the type of herbicide and the timing of application is important. See the PRISM Factsheets for more detailed information.

Kudzu (*Pueraria montana* var. *lobata*), generally described in the May treatment section, is easiest to spot when its reddish-purple flowers appear in late summer to early fall. **Foliar herbicide sprays must be applied twice a year.** The first spray is applied in late spring or early summer after leaves mature. **The second foliar treatment is applied in late summer or early fall.** Treatment using the **cut stump followed by herbicide treatment** is best done in late summer or early fall. New, small outbreaks can be controlled without herbicide by grubbing (pulling out by the roots) any time of year.

SEPTEMBER

Porcelain-Berry (*Ampelopsis brevipedunculata*), generally described in the July treatment section, is **easy to spot in fall** when clusters of different colored berries ripen to bright turquoise blue in September and October. **Herbicidal foliar treatment is most effective when applied between midsummer and early fall.** For large infestations, foliar treatment is the only feasible option. **Cut stump bigger vines** applying an herbicide immediately to the cut. If you can reach the largest stems in the tangle, **use a basal bark application**. Apply a concentrated, recommended herbicide mixed with horticultural oil to the lowest 12” of the stems; no cutting is needed. Be careful not to spray nearby desirable plants.

FALL / EARLY WINTER / WINTER (October- February)

Many invasive plants are **easily identifiable in fall** because of brightly colored berries, fall foliage color, or both. **Although there are multiple treatment approaches that work at different times of the year, this section describes eradication methods that are effective from fall to late winter.** These methods include cut stump, hack and squirt, and basal bark. The methods may be applied at any time of the year except for early spring when the sap starts flowing upward to the leaves.

Asiatic or Oriental Bittersweet (*Celastrus orbiculatus*), generally described in the March treatment section, is easy to spot from fall into winter due to its golden-colored foliage and brightly colored reddish

berries. Tag in fall if you want to treat in the spring. **It is best not to spray large vines; cut stump them from fall to winter and immediately apply herbicide or use the hack and squirt method.** Hack and squirt is faster and easier than cutting.

Autumn Olive (*Elaeagnus umbellata*), generally described in the June treatment section, can be effectively treated in January-February with the **basal bark method** using a concentrated herbicide in a horticultural oil.

Callery or Bradford Pear (*Pyrus calleryana* 'Bradford'), generally described in the April treatment section, can be treated from fall into early winter by using **cut stump, hack and squirt, or basal bark methods.**

Chinese Privet (*Ligustrum sinense*) is an **evergreen to semi-evergreen shrub,** growing 15-30' tall, that can form large stands and impenetrable thickets. 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 when they are eaten by birds and small mammals. Privet seedlings and small saplings can be removed by hand pulling when the soil is moist. Larger shrubs might require a Weed Wrench® or a forest mulcher. **From November to January, after deciduous plants have dropped their leaves, cut larger privets down to a manageable size and apply a recommended foliar herbicide at a concentration higher than is needed to control most invasive plants. The cut stump method with an herbicide application to the cut, or a basal bark treatment** are also effective methods and can be applied anytime except early spring.

Japanese Honeysuckle (*Lonicera japonica*), generally described in the July treatment section, is best treated with **foliar sprays from autumn to early winter** after most native plants have lost their leaves or are dormant, but **before a hard freeze (24°F). For the cut stump method,** sever thick vines near the ground and **treat the cut ends with a recommended concentrated herbicide** from early summer into winter.

Porcelain-Berry *(Ampelopsis brevipedunculata)* is generally described in the July treatment section and is also included in the September section. To prevent seed dispersal, **manually remove by pulling or mowing from winter to midsummer** before any fruits develop for that season. From **fall to winter, cut stump bigger vines** and apply an herbicide immediately after. If you can reach the largest stems in the tangle, you can **also use a basal bark application.** Apply a concentrated, recommended herbicide mixed with horticultural oil to the lowest 12" of the stems; no cutting is needed. Be careful not to spray nearby desirable plants.

Tree of Heaven or Paradise Tree (*Ailanthus altissima)* is generally described in the February treatment section and is also included in the June treatment section. Cutting down live ailanthus promotes prolific resprouting. If trees must be felled, apply a concentrated, recommended water-soluble herbicide IMMEDIATELY to the top and sides of the cut stump. **See the February treatment section for recommended treatment methods of cut stump, hack and squirt, and basal bark.**

OTHER ERADICATION METHODS

Goat grazing is an option for some invasives such as autumn olive, Chinese privet, kudzu, and multiflora rose. Goats will also eat desirable plants, however, and the area will generally need to be grazed for **several consecutive years** to rid the invasives because the roots are not eaten and must be killed. **Herbicides can be effectively used after invasive plants resprout.**

Manually pulling plants from the soil works only if all roots are removed, otherwise the roots will sprout new plants. This make digging larger plants especially difficult. In low–quality, heavily invaded

fields, large woody plants can be pulled with a chain or a tractor bucket. In many cases, manual pulling needs to be followed by herbicide treatments. Hand pulling works best on smaller, newer infestations and when the soil is moist. Please be aware that **manually pulling invasive plants will disturb the soil/leaf litter area** to some degree; the act of pulling a plant from the soil can **bring buried seeds of that plant or other invasive plants to the soil surface where they may germinate.**

Mowing is impractical in a forest setting. It makes sense only in limited circumstances, such as in a field where you might want to cut invasive grasses or woody invasives at a certain time of year to prevent flowering and seed set. You will need to mow or bush-hog several times during the growing season for several or even many years. **Weed whackers with string trimmers** can be used to cut herbaceous invasive plants to the ground. For example, using a string-trimmer in August-September is recommended for the control of stiltgrass before it sets seed. Be mindful that weed whacking may harm desirable plants along with the invasive plants.

Prescribed burns or controlled burns can be a feasible way to reduce the mass of vegetation so that herbicides can later be applied more effectively. Multiple burns are sometimes required. Prescribed burns are sometimes used for autumn olive, Japanese honeysuckle, Chinese privet, and newer infestations of kudzu. The roots of these plants are rarely killed, so grow back must be dealt with subsequently.

SOURCES

Feature Photo: Goats Grazing on Invasives, US Navy, Petty Officer 1st Class Michael Wagoner

Leadership of Blue Ridge PRISM, Inc., with particular thanks to William Hamersky

Blue Ridge PRISM Fact Sheets

"How to Control Invasive Plants: Manual, Mechanical and Biological Methods," Blue Ridge PRISM

"Controlling Invasive Plants Effectively and Safely with Herbicides," Blue Ridge Prism

VA Dept. of Forestry Nonnative Invasive Plant Species Control Treatments

"Don't Buy Nonnative Invasive Plants – Even If You Can," *The Garden Shed* (December 2018)

"Using the Buckthorn Blaster: Controlling Invasive Plants Using the Cut-Stump Method," Vermont Department of Forests, Parks and Recreation

Upcoming Events

By Erin Hall | May 2022-Vol.8, No.5

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PMG Spring Plant Sale

Saturday, May 7 | 10:00 am – 2:00 pm

Albemarle Square Shopping Center, Charlottesville

Join us for the annual Piedmont Master Gardeners plant sale! Featuring native plants, bulbs and tubers, herbs, ground covers, pollinators, perennials, drought-tolerant plants, houseplants, annuals, veggies, sun and shade plants, deer resistant plants, trees, shrubs, fruit, and a Green Elephant sale. VCE Help Desk and Information tables will be on site. Bring your gardening questions. Tool sharpening available.

Garden Basics: Preparing and Maintaining Garden Soil for Asters to Zucchinis

Saturday, May 21 | 2:00 pm – 4:00 pm

Trinity Episcopal Church, Charlottesville

Registration required

Presented by PMG in partnership with Bread and Roses, this session will provide information about soil testing and preparing soil for any type of planting. Space is limited.

Tour: Botanical Garden of the Piedmont

Saturday, May 7 | 9:00 am – 10:00 am

950 Melbourne Road, Charlottesville

RSVP: rsvp@piedmontgarden.org

Get up to date on all happenings and plans for the botanical garden while enjoying a guided walk of the site. Tour lasts for approximately 45 minutes.

Summer Invasive Plant Workshops by Blue Ridge Prism

Blue Ridge Prism is offering two **virtual** sessions:

Tuesday, May 10 | 1:00 pm – 3:00 pm (Identification). Registration

Thursday, May 12 | 1:00 pm – 3:00 pm. (Control). Registration

$10 per session

In-Person Field Workshop by Blue Ridge Prism

Sunday, May 22 | 12:30 pm – 3:30pm

Pen Park, Charlottesville

Registration required | $25

Presented by Blue Ridge PRISM, these sessions will cover the identification of common invasive plants and demonstrate manual and chemical control techniques. Specific topics include herbicide safety, using hand tools and power tools safely, and identification of specific invasive shrubs and vines.