February 2020-Vol.6 No. 2

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A Pruning Primer: Tools, Techniques and Timing

By Ralph Morini | February 2020-Vol.6 No. 2

I’m not a perfect gardener. In fact, I’m glad that most people reading this don’t know where I live. My landscaping, while improving, doesn’t yet match up to the practices I write about. But after observing poor pruning practices by several landscape professionals, I felt less guilty and thought that an article discussing good pruning practices could help many of us. In the first instance, VDOT indiscriminately topped and side sheared the white pines that border our neighborhood entrance, scarring an otherwise appealing roadside border. Then, a landscaper squared off a neighbor’s pretty forsythia hedge that had previously featured the naturally sweeping shape of the shrub’s canes. Finally, a tree service pruned a neighbor’s oaks in August, despite numerous oaks in the area dying of oak wilt and apparently not understanding that open wounds during active growth periods add susceptibility to fungal disease. So, if the “pros” are using such poor practices, maybe a brief summary of good technique is in order. This article will outline pruning’s importance, summarize basic techniques, provide calendars for pruning specific plants, and cite references for readers to go deeper as needed.

Why Prune?

There are several reasons to prune trees and shrubs:

- **To improve structure**: for example, removing branches that are structurally weak or interfere with other branches or plants.
- **To control size or manage space**: Not a substitute for putting appropriate size plants in appropriate spaces, but trimming to maintain a healthy and esthetic fit
- **Repair or prevent damage or disease**: This should be done promptly when an issue is identified
- **Create effects**: This is specialty pruning and won't be dealt with in this article, but topiary, espalier, etc., are special pruning practices that create specific appearances or functions.

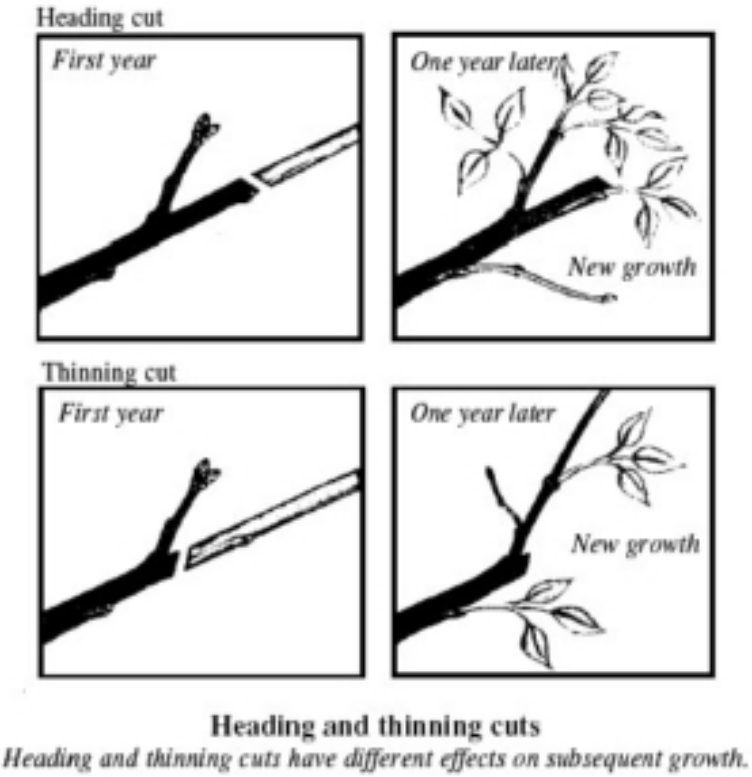
Tools

Pruning is generally broken down into three classes of plants: shrubs, deciduous trees and evergreen trees. While techniques vary, the tools used overlap.

Photo: Extension.uga.edu

The illustration above shows a cross section of basic pruning hand tools. A **hand pruner**, **lopping shear, pruning saw, and combination saw** comprise a nice starting point. **Hand pruners** are good for branches to about ¾" in diameter. Scissor action designs are preferred since they shear both sides with less crushing than anvil or snap cut designs. Ratchet action pruners are also available to provide a mechanical advantage that reduces hand force needed for a given cut. **Lopping shears** have more leverage and are generally the preferred tool for cuts up to 1.5" in diameter. Above this size a saw is necessary. **Bow saws** cut well but their shape can make it difficult to get into tight spaces, so a lower profile **pruning saw** is a necessity. **Combination pole saw pruners** are great for reaching high branches, offering both clipper and saw. **Chain saws** are also used for large work by those with the inclination. **Hedge shears**, like the hand shears shown above, or powered, are probably the most abused tools in the kit. Generally, they should be used sparingly, mainly for gentle esthetic improvements, without submitting to the temptation to shear shrubs into uniformity.

Fundamental Pruning Techniques



Heading and thinning cuts
Heading and thinning cuts have different effects on subsequent growth.

Illustration: ext.vt.edu Publication 430-459

There are two basic pruning cuts that are used across all classes of plants to remove healthy growth:

- **Heading cuts** trim the leader off a branch or stem. They should be made just above a bud that is growing in a desirable direction. Heading cuts stimulate growth in the vicinity of the cut by redistributing the hormones that drive the growth of the terminal bud.
- **Thinning cuts** remove branches at an attachment point, rather than adjacent to a bud. The effect is to reduce density without stimulating new growth.

In either case, the cut should be made close to the bud or attachment point to minimize stubs which die back and can provide entry points for pests or diseases.

When cutting back shoots or branches that are dead or diseased, make the cut at the branch collar, the thickened section where the branch joins the trunk, or on healthy tissue. This assures that diseased parts are completely removed and prevents further dieback. Clean and disinfect the cutting tool between cuts with Lysol, Listerine or rubbing alcohol. Pine- Sol and bleach are not recommended because they are corrosive to tools.

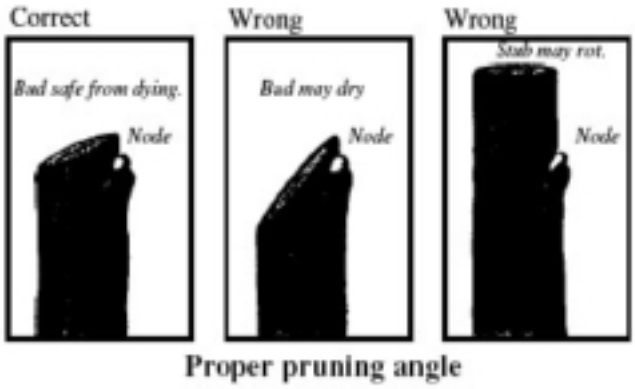


Illustration: ext.vt.edu Publication 430-459

Pruning cuts should be made at an angle of about 45 degrees to the branch. Also, when cutting back to a lateral branch, as in the thinning cut illustration above, the lateral branch should be at least half the diameter of the branch being removed.

Shrubs

In general, understanding and encouraging the natural growth habit of a shrub should guide pruning practice. Shrubs can have mounding (e.g. evergreen azalea, spirea), cane (e.g. forsythia, nandina, winter jasmine) or tree-like (e.g. witch hazel, rhododendron, crape myrtle) growth habits.

The important thing to understand is that heading cuts, where a terminal bud is cut off, generates thick new growth at the new end of the branch. When a shrub or hedge is sheared, removing many terminal buds, new growth flourishes at the outer perimeter of the shrub, allowing less light to reach the interior, resulting in a hollowing of the interior.

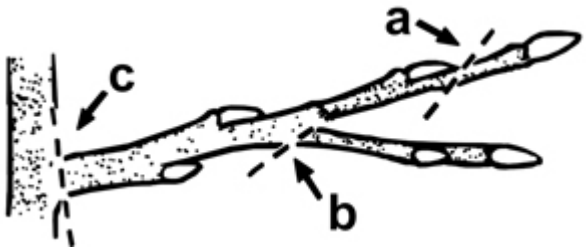


Illustration: ext.uga.edu Bulletin 961

Thinning cuts are usually the preferred technique. For mounding and tree-like plants this means cutting at a lateral bud (a above), lateral branch (b above) or branch collar (c above). Don’t leave stubs. For caning varieties it means cutting older interior canes at ground level, allowing younger growth to flourish.

Sheared forsythia

Forsythia natural growth habit

Shearing can be tempting to even out perimeter growth, but it is a short-term solution that leads to longer term issues. Better to use thinning cuts on older growth from the interior. Shrubs may not look as neat immediately after pruning is completed, but they will maintain a natural shape and be healthier in the long run.

For hedges, where formal shaping is desired, shearing is most difficult to resist. Follow the above principles to encourage balanced growth from the ground to perimeter of the shrub or shrubs. Shear minimally. And most importantly, the base should be wider than the top to allow access to sunlight and avoid ending up with hollow, leggy looking bushes.

Renewal pruning is recommended for older and overgrown shrubs. This means cutting plants back to 6-12 inches above the ground in early spring when new growth starts. By mid-summer, when new growth is 6-12 inches long, trim the tips at a lateral bud, as in (a) in the illustration above, to encourage new lateral growth and a compact shape.

Deciduous Trees

Good deciduous tree-pruning practice includes a variety of measures:

- Remove suckers that grow from roots alongside the main trunk.
- Ditto for weak vertical shoots or water sprouts growing on branch interiors.
- Cut away dead, diseased, rubbing, or internally crossing branches.
- Manage branch spacing to promote a desirable visual effect and prevent one branch from shading another.
- Remove branches with weak attachments. Branch angles of 45-60 degrees to the vertical are desirable for structural strength.
- If young trees have multiple leaders, remove all but one leader and cut back laterals that are higher than the leader.

Two techniques used primarily for deciduous trees deserve mention:

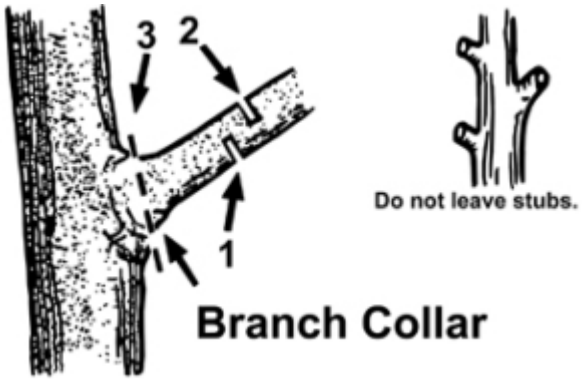


Illustration: ext.uga.edu Bulletin 961

If a branch is being removed, cut it at the collar, the slightly swollen area at the connection point of branch to trunk. Don't cut flush with the trunk. Don't leave a stub. A proper cut at the collar will heal and form a protective callus quickly, without further treatment or sealers.

Heavier branches, that will be unsupported during the cut, should be **cut in three moves** as illustrated above:

1. Cut about half way into the branch from the bottom, a few inches from the collar
2. Cut through the branch at a point just past the initial cut.
3. Remove the stub using a collar cut.

This three-move technique prevents peeling off bark or tearing wood that may leave the tree susceptible to pests or disease.

Evergreen Trees

Evergreens are grouped by branch arrangement:

- Whorled branches: growth forms a circular pattern around the growing tip. Examples include spruces, firs, and white pines.
- Random branches: grow in a random pattern, like yew, arborvitae, cedar and juniper.

Evergreen trees tend to have a single strong leader and typically require little pruning:

- Primarily, pruning is to remove dead, diseased or damaged branches.
- Avoid pruning branches in the inactive branch sections between green growth and the trunk of the tree, because whorled branch evergreens will not form new growth on the exposed stubs.
- New growth on whorled-branch conifers can be made **denser** by pinching or cutting off the tips of new growth (candles) in the middle of the growth as illustrated below.
- Random-branched conifers are pruned using similar practices as described for deciduous trees. General pruning is best done in early spring when new growth will cover pruning wounds. Maintenance pruning to control size can be done in early to mid-summer.

Trimming conifer candles. Illustration:ext.uga.edu Publication 961

Timing: When to Prune

It is important to understand a few basic rules concerning when to prune:

- Flowering trees and shrubs fall into two groups:
    - Those that flower in the spring that bloom on “old wood”, aka last year’s growth. These should be pruned after flowering in late spring/early summer. Common examples include azalea, dogwood, forsythia, redbud and rhododendron.
    - Those that flower later in the year on “new wood”, meaning on this spring’s growth. These can be pruned during winter dormancy or in early spring before buds begin to swell. Crape myrtle and abelia offer examples.
    - There are, of course, exceptions. Oak leaf hydrangea flowers in the summer on buds that form during the prior season.
- Dead, damaged and diseased material can be removed at any time.
- Late summer/fall pruning is a bad idea because new growth risks damage when cold weather arrives.
- Fall pruning is also a bad idea because fungal activity is high and plant susceptibility to disease is heightened when fresh wounds are exposed.

The following links provide **pruning calendars** for many specific plants, so if you’re wondering about when

to prune a particular shrub or tree, you'll find these very helpful:

- Shrubs
- Deciduous trees
- Evergreen trees

A mindful task

Pruning can be viewed as just another gardening task. Or, it can be seen as a thoughtful, even artistic exercise. Pruning for plant health, beauty and function can be very satisfying gardening work for those of us who enjoy the esthetics of appealing landscapes. I hope that the principles and guidance offered in this article makes pruning a more effective and satisfying activity for all who read it.

Sources:

The Virginia Master Gardener Handbook, Chapter 11, 2015 edition.

The Garden Shed, "When To Prune", Cleve Campbell, March 2017 Vol. 3 No. 3

A Guide to Successful Pruning, Pruning Shrubs, VCE Publication 430-459

A Guide to Successful Pruning, Pruning Deciduous Trees, VCE Publication 430-456

A Guide to Successful Pruning, Pruning Evergreen Trees, VCE Publication 430-457

A Guide to Successful Pruning, Pruning Basics and Tools, VCE Publication 430-455

A Guide to Successful Pruning: Stop Topping Trees, VCE Publication 430-458

Pruning Ornamental Plants in the Landscape, Univ of Georgia Extension, Bulleting 961

Hand pruner photo: *"pruning SS 001" by Shepherd'sDog is licensed under CC BY 2.0*

Sheared forsythia photo: *"Spring is here!" by fotobydave is licensed under CC BY-NC-ND 2.0*

Natural forsythia photo*: "20090411-_IGP9311" by danieldanyels is licensed under CC BY-NC-SA 2.0*

Fennel Slaw with Candied Walnuts

By Cathy Caldwell | February 2020-Vol.6 No. 2

Ingredients:

1 cup walnut halves
2 Tbsp sugar
3 bulbs fennel, peeled and thinly sliced
1 red onion, peeled and thinly sliced
4 seedless navel oranges, peeled and cut into segments
3/4 cup orange juice
1/4 cup white wine vinegar
2 cups canola oil
cayenne pepper to taste
Kosher salt and freshly ground pepper to taste
2 Tbsp orange zest

Directions:

In a small skillet over medium heat, combine the walnuts and sugar with 1/4 cup water, and cook, stirring until the sugar begins to brown and the walnuts seem glazed, about 4 minutes. Remove from pan, set aside to cool.

In a large mixing bowl, combine the fennel, red onion, and orange segments. Set aside.
In a medium bowl, combine the orange juice and vinegar. Slowly whisk the oil into the orange juice and vinegar until it is fully incorporated. Add the cayenne and season the orange juice with salt and pepper. Pour the liquid over the fennel mixture, toss, and refrigerate 1 hour.

Transfer the fennel mixture to a serving bowl, top with candied walnuts and orange zest.

Serves: 8-10

Adapted from Molly O'Neill
NYT Magazine 2000

Upcoming Events

By Susan Martin | February 2020-Vol.6 No. 2

FEBRUARY EVENTS

Virginia Native Plant Society Jefferson Chapter
"Invasive Plants in State Parks"
Wednesday, February 12
7:30 – 9:00 p.m.
Education Building at Ivy Creek Natural Area
1780 Earlysville Road, Charlottesville, VA 22903

Al Cire will join us to discuss invasive plant removal and related issues in Virginia State Parks. Our state parks have experienced significant issues with exotic invasives, and staff like Al have had to come up with creative solutions for addressing the issues. Al has been a Conservation Officer with the Virginia Dept. of Conservation and Recreation since 1989. He is currently serving as Operations Coordinator for the Division of Natural Heritage.

Culpeper Virginia Cooperative Extension
"Spotted Lanternfly Update"
Friday, February 14
6:00 – 7:00 p.m.
Culpeper VCE Office, 1010 S West St, Culpeper, VA 22701

Topics include: Insect identification; Tree of heaven (host plant) identification; description of damage to woody plants, fruiting plants, and crops; and discussion of the range of spotted lanternfly in Virginia and the United States.

Please register by contacting the Culpeper VCE Office by phone at (540) 727-3435 ext. 0, or by email at ashappling@vt.edu

Piedmont Master Gardeners Garden Basics Class
"Soil, Mulch, and Compost"
Saturday, February 15
2:00 – 4:00 p.m.
Trinity Episcopal Church
1118 Preston Avenue, Charlottesville, 22903

UPDATE: THIS CLASS IS FULL. Thank you for your interest and check our Events Calendar for more Garden Basics classes.

League of Women Voters of the Charlottesville Areas
"Hot Matters! Climate Crisis: What Action Should We Take?"
Sunday, February 16
2:00 – 3:30 p.m.
CitySpace, 100 5th St NE, Charlottesville, VA 22902

We understand the depth and urgency of the warning–global warming is placing our planet in peril. But what

specific actions can we take, both individually and as the Central Virginia community, that would be most effective in confronting climate change?

To answer that question, we have invited panelists Cheryl Gomez, UVA Facilities Management, Director of Operations; Susan Kruse, Executive Director of the Charlottesville Climate Collaborative; Kristel Riddervold, City of Charlottesville Environmental Sustainability Manager; and Kristie Smith, Virginia Conservation Network Policy & Campaigns Manager – Energy & Transportation. In addition to learning about effective actions in our day-to-day activities and in our advocating work, we also will seek their guidance on how to prioritize where we should focus our energy and support.

American Boxwood Society
Third International Summit on Boxwood Challenges
Wednesday, February 19
USDA Library, Beltsville, Maryland

This day-long seminar will include two topics: the morning session will cover the Boxwood Tree Moth and the afternoon session will cover Boxwood Blight. Please register online at www.boxwoodsociety.org.

Culpeper Office, Virginia Cooperative Extension
"Update on Boxwood Blight"
Friday, February 28
6:00 – 7:00 p.m.
1010 S West St, Culpeper, VA 22701

For more information or to **register**, please contact the Culpeper VCE Office by phone at (540) 727-3435 ext. 0 or by email at ashappling@vt.edu

Landowner's Woods & Wildlife Conference (16th Annual)
Saturday, February 29
8:30 a.m. – 5:00 p.m.
Daniel Technology Center
Germanna Community College
18121 Technology Dr., Culpeper, VA 22701

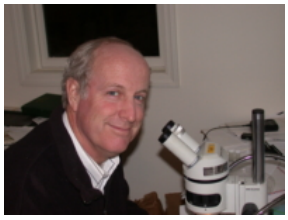
This popular event is different every year and at each location with diverse topics and speakers throughout the day for you to choose from. Geared toward large and small acreage woodland owners, and great for citizen scientists desiring to expand their applied knowledge base!

Details and registration at:
https://forestupdate.frec.vt.edu/landownerprograms/ConferencesandWorkshops2/WoodsandWildlifeConferences.html

UPCOMING EVENTS MARCH

Piedmont Master Gardeners
Spring Lecture Series
Thursdays: March 5, 12, 19, 26
7:00 – 8:30 p.m.
Albemarle County Office Building, 5th Street Extended, just off I-64*

On March 5, Tim McCoy, an extension associate with the Virginia Tech Entomology Department, will present, “Pesticides and Pollinators: What Gardeners Should Know.” McCoy has been researching and teaching pesticide safety and pollinator protection for 17 years. He will discuss how pesticide misuse threatens bees that play an essential role in supporting a diverse and healthy garden, and he will offer practical ways to help these invaluable pollinators thrive in our landscapes.



On March 12, Doug Tallamy, a leading voice for growing native plants in our yards and gardens, will present “Nature’s Best Hope: Creating a Vibrant Ecosystem.” A professor in the Department of Entomology and Wildlife Ecology at the University of Delaware, Tallamy will offer simple steps each of us can—and must—take to reverse declining biodiversity. He is author of the widely acclaimed *Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens* and (with co-author Rick Darke) *The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden*. His new book, *Nature’s Best Hope*, will be published by Timber Press in February.
(*Please note the different location for this lecture which will be Lane Auditorium in the Albemarle County Office Building at 401 McIntire Road.)

On March 19, Keith Nevison, manager of farm and nursery operations for the Thomas Jefferson Foundation, will speak on “Year-round Vegetable Gardening.” He will explain the latest approaches to ensuring successive harvests through all four seasons in Central Virginia. He will touch on crop trials underway across the South and the use of historic crops that enhance garden diversity and resiliency.

On March 26, Robyn Puffenbarger, chair of the Department of Biology and Environmental Science at Bridgewater College, will give a lecture on “Robins to Raptors: Observing Birds in Our Backyards.” Drawing on the college’s bird skin collection, she will help participants build their skills for identifying bird species that inhabit Virginia, from woodpeckers to owls to songbirds to raptors. She will also provide insights on their habitats, migration patterns and diets, as well as strategies to attract more birds to our backyards.

Admission is $8 for each lecture and may be paid at the door or online in advance at pmgarchives.com/events. For more information, visit pmgarchives.com/events or call (434) 872-4581.

Northern Shenandoah Valley Master Gardener Association
“Gardening in the Valley Symposium”
Saturday, March 7
8:00 a.m.- 4:00 p.m.
Shenandoah University
Hester Auditorium, Henkel
1460 University Drive, Winchester, VA 22601

Topics include: Origins, definitions and how **organic** are the products you buy; native plants that attract butterflies; medicinal plants; making a living by growing crops and raising livestock; and gardening in small

spaces. Click here for a brochure and to register.

McIntire Botanical Garden
3rd Annual Ian Robertson Legacy Lectureship
Mikyoung Kim,"Reclaiming the City: A Focus on Human Centered Design"
Sunday, March 8
Farmington Country Club
1625 Country Club Cir, Charlottesville, VA 22901

Shop at our market of local vendors and hear from MBG's lead designer, Mikyoung Kim, whose work around the world focuses on the healing properties of public landscapes. Kim and her team, including Waterstreet Studio, have recently won the prestigious *American Society of Landscape Architects'* Honor Award for our Garden design!

Proceeds support the design of the Garden. Seating is limited! See the link for more information including a schedule of events and reserve your place now.

Virginia Native Plant Society State Workshop
"Earth's Climate: Present, Past, and Future"
Saturday, March 14
9:00 a.m. – 3:15 p.m.
V. Earl Dickinson Building, Piedmont Virginia Community College
444 College Drive, Charlottesville Virginia 22902

This workshop will focus on climate changes at different periods of time; how these changes might relate to our current climate; and inform our thoughts about today's changes. **For more information and to register see https://vnps.org/events/vnps-annual-workshop-2020/**

Shenandoah Valley Plant Symposium
"A Gardener's Palette"
Friday, March 20
8:00 a.m. – 4:15 p.m.
Best Western Inn and Conference Center
109 Apple Tree Lane, Waynesboro, VA 22980

Go to this link for a full listing of conference speakers and topics, and to register.

Piedmont Master Gardeners Garden Basics Class
"Grow Your Own Vegetables"
Saturday, March 21
2:00 – 4:00 p.m.
Trinity Episcopal Church
1118 Preston Avenue, Charlottesville, VA 22903

Growing vegetables is easy! Learn how to prepare, plant and tend your vegetable garden. COST: FREE, BUT REGISTRATION IS REQUIRED. HOW TO REGISTER: Send your name and name of class to info@pmgarchives.com

SAVE THE DATE!
2020 Annual Plant Sale
Saturday, May 2
10:00 a.m. – 2:00 p.m.
On the lawn at the Shops at Stonefield

The Piedmont Master Gardeners Association and the Charlottesville Area Tree Stewards will again host their annual plant and tree sale on the lawn at the Shops at Stonefield. To be held rain or shine, the sale will offer more than 5,000 plants, including annuals, perennials, herbs, vegetables, houseplants, shrubs and trees. Among them will be a large selection of native plants and other plants that support pollinators. In addition, a variety of "green elephants" will be available, including pots, garden décor, tools and more. During the sale, Master Gardeners will staff a Horticulture Help Desk and will provide ten-minute tutorials on "Planting and Caring for Tomatoes" (10:30 a.m.), "Why Plant Natives?" (11:30 a.m.) and "Deer-Resistant Plants" (noon). Please join us on May 2nd from 10 am to 2 pm out on the lawn at the Shops at Stonefield.

How to Keep Cut Flowers Fresh

By Susan Martin | February 2020-Vol.6 No. 2

With Valentine's Day approaching, and the gray days of winter persisting, February is the perfect time to review how to keep cut flowers fresh and cheery.

Cut flowers need three main ingredients to preserve freshness:

- **Sugar** to provide nourishment
- **Citric acid** to reduce the water's pH level. This allows the water to travel through the stem quickly, preventing wilting.
- **Antibacterial agent** to keep down the growth of **microflora** (bacteria and microscopic algae and fungi). Plant leaves and stems carry bacteria. As soon as you place cut flowers in a vase, bacteria will begin to feed on the nutrients that are released from the base of the stems. As bacteria multiply, they will completely overgrow the cut portion and clog the stem, making it difficult for the stem to absorb the water and nutrients it needs.

DO HOME PRESERVATIVES WORK?

There are many home-brewed recipes for prolonging the life of cut flowers. Concoctions include ingredients such as vodka, gin, apple cider vinegar, mouthwash, Sprite, 7-Up, aspirin, and copper pennies. Each of these remedies provides sugar, acidity, or antibacterial action. But how much of each ingredient should you use? According to the Chicago Botanic Garden and other sources, a purchased floral preservative remains the best solution for extending flower freshness. The preservative will provide the optimal ingredient combination, as long as you **follow the directions for the amount of water to add.** Most cut flowers are delivered with one small packet, so it is good to keep some floral preservative on hand to use when you change the water. In a pinch, you might just add a couple of drops of bleach to fight bacteria. But a purchased floral preservative is the best option, along with keeping the flowers in cool temperatures.

PRACTICES TO EXTEND FRESHNESS

Several recommendations to preserve cut flowers seem to be broadly accepted. These practices are effective for purchased flowers and for flowers cut fresh from the garden.

- Cut flowers from the garden in the cool of early morning or evening.
- **Bring a bucket of warm water** so that the cut flowers can be placed immediately into water; most flowers take in warm water more efficiently than cold. (There are exceptions such as bulb flowers and lilacs.)
- Use **sharp, clean scissors, pruners, or a knife;** dull instruments might crush the stems and keep water from being absorbed
- **Cut at an angle** to help increase surface area for water absorption and prevent the stems from sitting flush on the bottom of the container.
- Once you take the flowers inside, **re-cut the stems about 1″ at an angle under water**. Recut the stems of purchased flowers, as well. Cutting stems under water reduces the chances of air bubbles forming in the stems, which may interfere with the uptake of water.
- Make sure the **vase is clean and free of any soap residue**; if in doubt, wash the container in a solution of one part bleach and nine parts water. Rinse thoroughly before adding flowers.
- Fill the vase with warm water and **add a commercial preservative** that is specifically formulated for cut flowers; make sure the granules are dissolved.
- Gently **remove all lower leaves or thorns** that would otherwise be submerged in water.
- Place the vase of flowers in a **cool room** away from vents and drafts; avoid placing flower arrangements on windowsills and other areas with full sun where flowers can wilt due to overheating.
- Do not store flowers and fruit together. Fruits, especially apples, release ethylene gas that

shortens flower life.

WATER TEMPERATURE

What water temperature is recommended for keeping cut flowers fresh? Most florists put flowers in water that is between 100-110 degrees, and then place the flowers in a cool area. The idea behind this process is that the warm stems are able to soak up a lot of water while the cool air up top keeps the blooms fresh.

WILTING

Plants continually lose water through their stems, leaves, and flowers. Wilting occurs when the flowers do not take in water as fast as it is used or lost. If you receive a batch of flowers that look somewhat wilted, re-cut the stems, place the flowers in warm water, and then refrigerate for a couple of hours. After that, they should be ready for some room-temperature tap water.

SPECIAL TREATMENTS

Bulb flowers such as hyacinths, iris, daffodils, and tulips have soft stems and should be cut where the green on the stem starts—just above the **white bulb**. Place the **flowers** in **cold water**. Since most bulbs bloom when the air and ground are still at low temperatures, they do better in a vase of cold water.

Roses Photo: Susan Martin

Roses: When cutting roses from the garden, water rose bushes well the night before; then cut roses early in the day before it gets too warm. Roses will last longer if cut just beyond the bud stage with the petals just starting to unfurl. Promptly put the cut roses in a bucket of lukewarm water. Then, re-cut the rose stems **under the water** to eliminate air bubbles. Next, condition roses by letting them drink up the warm water in a cool, dark room for about an hour. Make sure that most of the stem is under water, but don't let the bloom get wet. Then, refrigerate at about 38 degrees for at least two hours or until ready to use.

If healthy cut roses suddenly develop drooping heads, it may be due to air bubbles trapped in their stems. Wilted roses may be revived by re-cutting the stem at an angle under water. Then submerge the entire rose in warm water by laying it in a sink or bathtub. After 20-60 minutes, the rose should have absorbed enough water to reinvigorate it. When the flower head hardens to a straightened position, the rose may be placed back in the vase.

Peonies: Peony blooms are often frequented by ants drawn to the sweet peony nectar. Dunk the blossom end of the stem in cool, clean water for 30 seconds to rid the flower of the ants before bringing it into the house. When cutting peonies, **leave at least two sets of leaves on the stem** so that the plant can continue to thrive. For best vase life, **select buds that have just begun to open** and feel similar to a marshmallow. If you have too many peonies flowering at once, **cut stems can be stored in the refrigerator for two to three weeks, but do not store the stems with fruit.** The ethylene gas emitted by ripening fruit will cause petals to drop, and buds to wilt and fail to open. Refrigerate the peonies upright in water (sometimes tricky to accomplish). The other method is to cut the stems and place them lying down in a plastic bag with a dry paper towel to absorb moisture.

Lilacs Photo: Alisa Anton at upsplash.com

Lilacs: Bring a bucket of fresh, **cool** water as you cut blooms. Pick flowers in the cool of the morning or evening. Lilacs open very little after harvest, so choose stems that have at least three-quarters of the flowers open. **Remove all of the leaves** so that the plant isn't putting its energy into keeping the leaves hydrated. Place stems in the water. Leave the bucket in a cool, dark place and **allow the flowers to take up water for at least an hour.** Using heavy clippers, **re-cut the stem ends, then slice vertically up the stem 1-2 inches**. Grasp one side of the sliced stem and twist backward. Immediately place the cut stems back into the bucket of water. Allow the stems to take up more water in a cool, dark place for another 1-2 hours. The lilacs will then be ready for arranging, and will last 3-4 days.

BEST FLOWERS FOR CUTTING

When considering what flowers to purchase or to grow in our own cutting gardens, it's helpful to consider what works in the trade. The vast majority of cut flowers are imported from overseas. These flowers ship well and make up the bulk of the flowers used in floral arrangements. They include roses, carnations, Gerbera daisies, garden mums, and orchids. Most of the flowers that local growers focus on are those that do not ship well, or have shorter postharvest vase-lives. These flowers have come to be termed "specialty cut flowers." Examples of specialty flowers include sunflowers, zinnia, lisianthus, dahlia, ageratum, and peonies to name but a few on this long list. See the list of common types of cut flowers grown for sale in the United States.

Also see the University of Illinois Extension's seasonal recommendations for Top Perennials for a Cut Flower Garden.

For more ideas, see Penn State Extension's suggestions for Creating a Cutting Garden.

HOW TO CARE FOR FLORAL ARRANGEMENTS

If your flowers came in a basket or other container with *foam*, add fresh water every day. Make sure the stems are seated firmly in the foam (heavier flowers such as hydrangeas sometimes wiggle loose). Immediately remove dead or wilting leaves and stems to prevent bacteria build-up.

SUMMARY

Cut flowers add beauty to our lives, communicate our feelings, and perk up a gray day or a blue mood! Basic steps to preserve freshness are: re-cut the stems at an angle; place in warm water in a clean vase; add purchased flower preservative; and keep in a cool temperature out of direct sunlight. Repeat these steps after a few days or if you see any green build-up in the vase. Enjoy your fresh flowers!

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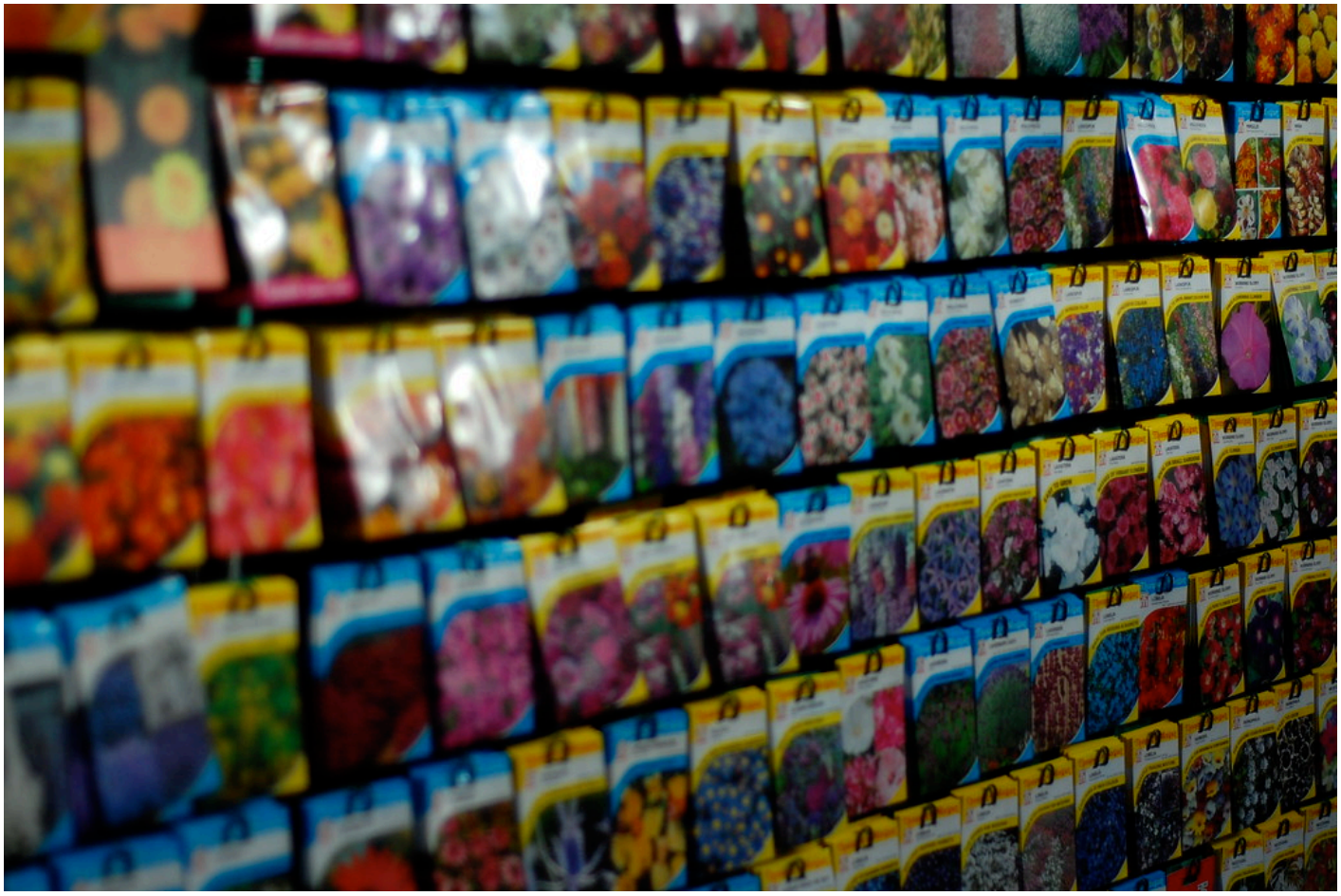
Feature photo at top of page by Valeria Boltneva, pexels.com

Vegetable Gardening in February

By Ralph Morini | February 2020-Vol.6 No. 2



While February is still winter in Virginia, it is a time when vegetable and edible plant gardeners can get moving. Use the wintry days for planning this year's gardens and the nice days for pruning, cleaning pots and equipment and sowing seeds indoors for transplanting in mid to late March.

Some worthwhile February activities include:

- Review your vegetable garden plans. Be sure to rotate crops where possible to minimize pest risks and consider positioning for water, sun and harvesting convenience. Maybe you want to try some intensive gardening techniques to increase yields and use plant positioning to help manage weed growth.
- Checking your seed inventory, doing germination testing, or disposing of older seeds. Guidance on managing your seed cache is found in the January 2019 Garden Shed article "Good Seed, Bad Seed".
- Once you know which seeds you already have, you can review seed catalogs to choose what to purchase this year. Check the new All-American Selection Winners for 2020 to see what's new and interesting.
- This is a good time to clean, sharpen and disinfect equipment. Pots and seed flats should definitely be disinfected before re-use to protect against disease. Ditto for all cutting tools.
- It is also time to tune up any power tools to have them ready for use.

- As an alternative to using power tilling equipment, many organic gardeners are turning to no-till techniques that include:
    - Cover cropping in the fall to keep soil covered during the winter
    - Mowing or cutting the cover crop growth in spring, preferably during flowering, prior to seed setting
    - Covering the beds with a silage tarp or black plastic sheeting for 4-6 weeks to kill weeds
    - Using a broadfork to loosen soil without the loss of organic matter, soil life and structure that results from tilling
    - Adding 4 inches or so of weed free compost to the soil surface as a mulch and planting medium
    - Planting right into the compost and allowing soil life, mainly earthworms, to move decomposed organic matter down into the soil, creating a desirable soil structure
    - Using an inexpensive weed-free mulch, like wheat straw or landscaper wood chips, on garden paths to reduce weed growth.

Many organic market farmers are using these or similar practices now. It takes a certain faith to believe that soil life can actually loosen soil to any depth, but it does, in fact, work. Also, covering beds with a black plastic sheet or tarp (occultation) is gaining acceptance as an effective non-chemical method of weed control, at least for smaller growers and gardeners. If you would like to save the time and cost of tilling while benefiting your soil, you might want to check this option out. I recommend the book The Organic No Till Farming Revolution by Andrew Mefferd, which reveals — through conversations with a number of organic farmers — that this practice is consistent farm to farm, and I found these discussions to be very convincing.

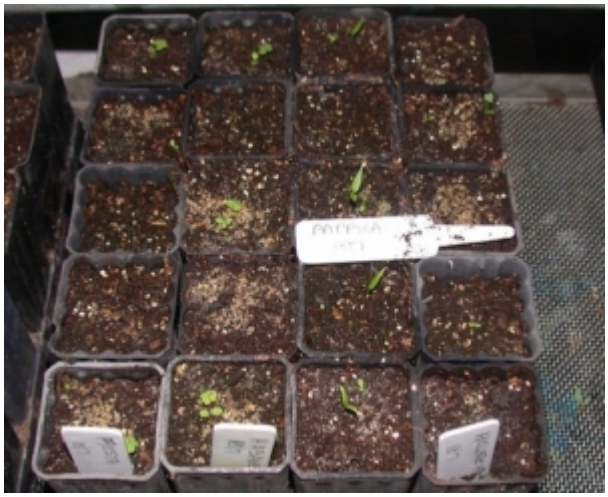


Photo: "FSTa-HABn-PAPk3-HFMx-8687" by Graibeard, licensed under CC BY-SA 2.0

- Mid to late February is a good time to plant seeds indoors for transplanting in late March. These include onion, broccoli, cauliflower, cabbage, Brussels sprouts, and kale. Other leafy greens should be started indoors late February to early March. In any case, it is time to get ready to plant. Clean flats and pots and fresh potting mix are highly recommended.
- February is also a good time to prune fruit-bearing shrubs. Remove dead or damaged parts. Overall pruning timing varies by cultivar and should be investigated, if in doubt. However, removing older canes and thinning the center of shrubs to allow good light penetration will lead to better yield. General pruning guidance can be found in the article "A Pruning Primer: Tools,

Techniques and Timing” in this month’s Garden Shed.

Spring is on its way. Let’s get ready!

Lead photo: *“seeds” by this lyre lark is licensed under CC BY-SA 2.0*

Consider a Hornbeam

By Susan Martin | February 2020-Vol.6 No. 2

Hornbeams are hardwood trees in the family **Betulaceae (birch)** and the flowering plant genus *Carpinus*. The 30–40 species of hornbeam occur across much of the temperate regions of the Northern Hemisphere, with the greatest number of species in East Asia, particularly China. Only one species is native to eastern North America, and two species are native to Europe. This article will focus on the native **American hornbeam**, *Carpinus caroliniana*, and on the **European species, common hornbeam**, *Carpinus betulus*. A third native tree, **American hop hornbeam***, Ostrya virginiana,* will also be described. It too is a member of the Betulaceae family, belonging to the genus *Ostrya*, a genus of eight to ten small deciduous trees.

The **American hop hornbeam** is often confused with the **American hornbeam**. Both trees are commonly called **ironwood**. Both are **understory** trees and can grow in shade to partial-shade, share a similar leaf shape, are known for having very hard wood, distinctive bark, showy catkins, and yellow-to-orange-to-red fall leaf color. The American hornbeam can tolerate wet conditions, prefers shade (although it can grow in sun), and is less drought tolerant; the American hop hornbeam is more drought tolerant, cannot tolerate flooding conditions, and can grow in sunnier sites.

The **European hornbeam,** particularly the cultivar 'Fastigiata', is often found in U.S landscapes. It can be used as a tree, or hard-pruned into a hedge. It shares similar characteristics with the American hornbeam and the American hop hornbeam, such as leaf shape, very hard wood, distinctive trunk, and showy catkins. However, the European hornbeam is larger at maturity than either of the native species. Although it can

grow in partial shade, it likes full sun and is moderately drought tolerant.

Before I discuss the hornbeams in more detail, I will address the benefits of planting a **native** tree when site conditions are favorable, and when the native tree satisfies planting objectives.

BENEFITS OF NATIVE TREES

Let's assume we have decided to add a tree to our landscape, and we feel good about doing something that is beneficial for the environment and for posterity. We've heard about the benefits of planting native trees. Don't all trees offer some benefits and serve different purposes? Perhaps we may simply prefer the ornamental appeal of a nonnative tree.

The landscape can hold many different types of plants, but it's important to be aware of the particular benefits of native trees so that, if we have an appropriate location and planting objective, we might **purposefully** select a native tree. Doug Tallamy, author of *Bringing Nature Home*, describes native trees as an **important pillar in the interactive food web,** a food web of native plants and native insects that supports wildlife and ultimately, supports us. Because plants and insects in a particular region have evolved together, native insects look to those plants for food. When native plants are replaced with nonnative plants, insects don't have food and birds can't feed their young. Wildlife is deprived of native plant food sources, insects, and birds.

There is an impressive chart in the Tallamy book (p. 147) that lists the top 20 native trees and woody plants that support Lepidoptera species (moths and butterflies). Lepidoptera caterpillars are an important food source for birds feeding their young. Hornbeams, the focus of this article, are not included on this top 20 list, but they are nevertheless an important native food source. *Carpinus caroliniana* is included on Tallamy's list of *Native Plants with Wildlife Value and Desirable Landscaping Attributes for the Mid-Atlantic and Middle States* (p. 294).

AMERICAN HORNBEAM (*CARPINUS CAROLINIANA*)

HABITAT

Native to the eastern half of the United States, the American hornbeam is commonly found in wooded areas as an understory tree in USDA hardiness zones 3-9. It prefers deep, fertile, moist, acidic soil and grows best in partial shade, but will grow in full sun. It does not do well in compacted soil. It is typically found along streams, river banks, flood plains and bottomland, and is planted in landscapes and in naturalized areas. It grows with an attractive open habit in total shade, but becomes dense in full sun.

As noted in TreeBaltimore, **Dr. Michael A. Dirr,** expert on woody plants and professor of horticulture at the University of Georgia, says this about the American hornbeam:

> *"I have observed this species in many landscape situations and believe it is much more adaptable than ever given credit. It performs well even in areas inundated with water for several days to a week or two once it is established. Although moderately drought-tolerant, it is probably best to provide even established trees with some irrigation during dry spells in the south."*

American hornbeam Photo: Daderot, own work, Wikimedia Commons

Its chief liabilities in cultivation are a relatively slow growth rate and difficulty in transplantation due to its deep, spreading, lateral roots. American hornbeam is more difficult to transplant than European hornbeam.

CHARACTERISTICS

American hornbeam Photo: treegrow, Creative Commons

Its common name, **musclewood**, comes from its attractive blue-gray bark, fluted with long, sinewy ridges. The extremely hard wood of this tree inspires another common name, **ironwood (a name shared with the American hop hornbeam).** As the name suggests, the wood will take a horn-like polish and was once used by early Americans to make bowls, tool handles, and ox yokes. Commercial use of hornbeam wood is not practicable,

however, due to the limited amount of wood that can be harvested per tree.

The American hornbeam can be grown as a multi-stemmed shrub or as a single-stemmed tree. It is more narrow and upright than the European hornbeam. The American hornbeam grows slowly, about 12” per year, reaching an average height and spread of 20-30′ over a life span of 50-150 years. The largest American hornbeam on record for the Southeast is 75 feet!

American Hornbeam Photo: wlcutler, Creative Commons

The leaves are deciduous, alternate, and simple with a sharp, doubly-serrated margin with larger teeth at the ends of veins. Leaves typically vary from 1-4” in length. Fall color can be beautiful, with yellows, oranges and reds. Although deciduous, hornbeams and hop hornbeams keep their dried leaves in winter. **Marcescence** is the technical term for plant parts that wither but do not fall off. It can refer to leaves, flowers, or fruit. The marcescent leaves of the American and European hornbeams, and the American hop hornbeam, provide a safe and secure habitat for garden wildlife during the cold season.

SEED PRODUCTION

The hornbeam is **monoecious: A plant or plant species producing male and female reproductive structures on the same plant but on separate flowers.** Male and female flowers appear in spring on separate **catkins** (slim cylindrical flower clusters). The flowers are wind pollinated. The female catkins are about four inches in length, a bit longer than male counterparts, giving way to distinctive clusters of winged nutlets (fruit). Typically, there are 10–30 seeds are on each seed catkin. Maturing in October, the nutlet is held in a bract (a modified or specialized leaf) at the end of a stalk, providing forage for song birds and small mammals. In fall, the bracts change from light green to yellow. Although seeds are dispersed by wind, they are mainly dispersed by birds.

The minimum seed-bearing age of American hornbeam is 15 years. Seed production is greatest at 25 to 50 years and probably ceases at about 75 years.

FOOD WEB

Seeds, buds, and catkins are eaten by a number of songbirds, ruffed grouse, ring-necked pheasants, bobwhite, turkey, fox, and gray squirrels. Cottontails, beaver, and white-tailed deer eat the leaves, twigs, and larger stems. American hornbeam is heavily used by beaver, because the tree is readily available in typical beaver habitat.

A multitude of insect species utilize the American hornbeam as a **larval food source.** According to the **Native Plant Finder, for the Charlottesville zip code 22901** the American hornbeam is a host plant for 72 species of butterflies and moths, including the Io moth, eastern tiger swallowtail, walnut sphinx, luna moth, and polyphemus moth, to name a few. This database, based on the work of Doug Tallamy and sponsored by the National Wildlife Federation, will provide caterpillar host plant information on specific native plants according to zip codes!

Io Moth Photo: Andy Reago & Chrissy McClaren, Creative Commons

PESTS AND DISEASES

The American hornbeam exhibits no serious insect or disease problems. It shows resistance to verticillium wilt. Leaf spots, cankers, and twig blight are occasional disease problems. It may be susceptible to scales.

EUROPEAN HORNBEAM (*CARPINUS BETULUS)*

HABITAT

The European hornbeam is native to Western Asia and central, eastern, and southern Europe, including southern England. It grows in USDA hardiness zones 4-8. It requires a warm climate for good growth, and occurs only at elevations up to about 2,000 feet. It can grow in full sun to partial shade, in moist soil, either loamy or clay, and can tolerate highly acidic to neutral soil pH. The European hornbeam is more tolerant of drought than is the American hornbeam.

European hornbeam Photo: flora.cyclam, Creative Commons

CHARACTERISTICS

European hornbeam Photo: wlcutler, Creative Commons

Like the American hornbeam, trunks have smooth gray bark and distinctive muscle-like fluting. Hornbeam wood is the hardest of any European trees. This deciduous, medium-sized tree matures to 40-60’ tall and 30-40’ wide at a growth rate of about 12-24” per year. When young, its shape is somewhat pyramidal or oval, becoming broader and rounder as the tree matures. It needs little pruning when grown as a tree, but responds well to hard pruning if grown as a hedge. Its average life span is 50-150 years.

Nowadays, the wood is mainly used for furniture, flooring, and wood turning, but traditionally the wood was made into ox yokes. The Romans made chariots from hornbeam because of the strength of the wood. A tonic made from hornbeam was said to relieve tiredness and exhaustion, and its leaves were used to stop bleeding and to heal wounds.

Leaves are simple, alternate, oblong, and doubly serrated, with prominent veins. Leaf length is 2-5”; leaf color is dark green changing to an attractive yellow to orange in fall. Foliage is typically dense and becomes denser with more sun. The bark and buds are ornamental in winter.

SEED PRODUCTION

The tree is monoecious, as described in the section on the American hornbeam. The European hornbeam also forms male and female catkins in early spring, with female catkins being somewhat longer than the male and greenish in color; male catkins are yellowish. The female catkins form small, brown, winged nutlets (fruit) held in a bract. The nutlets mature in October. Bracts change from light green to yellow in fall.

FOOD WEB

Common hornbeam is the food plant for caterpillars of many moth species, including the nut tree tussock and the case-bearer moth. Finches, chickadees, and small mammals eat the seeds in autumn.

PESTS AND DISEASES

European hornbeam is largely resistant to pest and diseases, including verticillium wilt (fungal disease). It may be susceptible to armillaria (parasitic fungi), root rot, and scales (insects).

C. BETULUS ‘FASTIGIATA’

The cultivar 'Fastigiata' is much more common in commerce than is the species. Sometimes called **Upright European hornbeam**, it displays a narrow, fastigiate form (branches sloping upward) in youth, but gradually acquires a tear drop or oval-vase shape with age, typically maturing to 40' tall and 30' wide. Ovate, toothed, bright medium green leaves (to 4" long) are clean and attractive throughout the growing season with little susceptibility to foliar diseases. Foliage turns yellow-orange in fall. Trunks have smooth gray bark and distinctive muscle-like fluting.

Carpinus betulus 'Fastigiata' Photo: Andrew Gray, own work, Wikimedia Commons

AMERICAN HOP HORNBEAM (*OSTRYA VIRGINIANA*)

As a member of the birch family, Betulaceae, the American hop hornbeam is related to the alders, birches, hornbeams, and filberts. It is commonly called **ironwood**, a name shared with a number of other plants, including the American hornbeam.

HABITAT

Native to eastern North America and Mexico, the American hop hornbeam grows in USDA hardiness zones 3-9. Appropriate for shady locations, it also does well in sun where it develops a broader crown. It prefers moist, well-drained soil, and is tolerant of both acidic and alkaline soils. It can grow in clay, loam, or sand. Although it can tolerate drought, it will not tolerate flooding. It can tolerate dry, gravelly soils in partial shade once established. The tree is difficult to transplant and is slow to establish.

CHARACTERISTICS

The hop hornbeam is a small- to medium-sized understory tree with a generally rounded crown. The tree matures to a height of 25-45' and a width of 15-40'. It grows about 24" annually, and lives an average 50-150 years. Its dark, yellowish-green leaves (to 5" long) are alternate, elliptical, and doubly serrated, with prominent veins. The lateral leaf veins of *Ostrya* are forked, while those of *Carpinus* are parallel and rarely forked. Leaves, which turn yellow to red-orange in autumn, feel like felt. Leaf size is not uniform, with those near the ends of shaded branches reaching up to 6″ in length; leaves higher in the crown or farther back on the branches are much smaller.

American hop hornbeam Photo: David Stang, Creative Commons

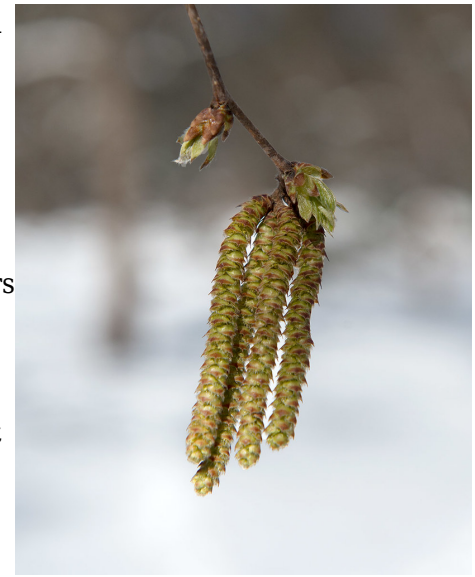
Maturing American hop hornbeam Photo: Ohio Dept. of Natural Resources, Div. of Forestry

Often confused with American hornbeam, the bark offers a point of differentiation. The smooth sinewy blue-gray trunk of American hornbeam easily contrasts with the shreddy, brownish, grooved bark of the American hop hornbeam. As the American hop hornbeam matures, the shreddy bark develops into thin vertical strips, only slightly shredding at the ends. Both young and aged bark are gray-brown in color.

The wood of hop hornbeam is hard and durable. It was once used for runners on sleighs. The bark and inner wood was used to treat toothache, sore muscles, coughs, and many other ailments by Native Americans.

SEED PRODUCTION

Flowers are monoecious (reddish-brown male flowers and greenish female flowers appear in separate catkins on the same tree). Flowers are not particularly showy, although the male catkins are more prominent and are present throughout winter. Female catkins are followed by drooping clusters of sac-like, seed-bearing pods which, as the common name suggests, resemble the true hops that are used in the production of beer. **The large photo at the top of the article shows very showy catkins of the American hop hornbeam.**



American hop hornbeam Photo: Plant Image Library, Creative Commons

FOOD WEB

Several vertebrate animals rely on hop hornbeam as a source of food. These species include the ruffed grouse (buds, catkins), downy woodpecker (seeds), and purple finch (seeds). Among mammals, the fox squirrel, red squirrel, woodland deer mouse, and white-footed mouse eat the seeds and buds, while the white-tailed deer browses sparingly on the twigs and leaves. The caterpillars of several moth species feed on the foliage of hop hornbeam, including ironwood tubemaker moth and ironwood leafminer. Many other moth species are listed in the Moth Table. There were zero results in the Native Plant Finder according to zip codes 22901 and 22903. (Database results are based on native plants that were historically present in a county based on range maps. Specific zip codes may not hold a particular native plant.)

PESTS AND DISEASES

The tree is resistant to many disease and insect problems, although it is susceptible to the gypsy moth. In the woods, it is one of the first trees to be defoliated by that pest. When under stress, the tree is also susceptible to the chestnut borer. It is resistant to wind, ice, and most stresses of urban living, although it is notoriously

sensitive to salt.

SUMMARY

Returning once again to *Bringing Nature Home (*in the *Afterward),* Doug Tallamy calls upon us to make our communities and our own landscapes into spaces he calls, ***The Last Refuge***, a place populated with the plants and animals that evolved there. So although we may not choose to **exclusively** plant native trees, their inclusion in our landscapes is an important step in strengthening, or even reclaiming, biodiversity. To that end, the American hornbeam and the American hop hornbeam are less familiar native trees that might be great additions to your landscape. If you are interested in a larger tree, or in a tree that can be pruned into a hedge, you might consider the European hornbeam. Evaluate your landscape for sun, moisture, and soil type. Consider your tree options for shape, size, and fall color. Determine your objectives for planting a tree. When you're ready to choose, perhaps you should try something new–consider a hornbeam!

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Featured Image, *Ostrya virginiana* catkins, Katja Schultz from Washington, DC, National Botanic Garden, Washington, DC, Creative Commons