



Under the Oaks ARBORETUM NEWSLETTER

VOLUME 27

Learn about American Holly, Growing Trees from Seed, and Rooting in for Winter.



Ilex opaca, American Holly: A Refuge of Beauty and Calm

Article by Linnea West, MBG Tree Team

With graceful, horizontal branching, American Holly grows 30-50' tall, 15-30' wide. This stately evergreen may be grown as a single pyramidal specimen, a grove, or a privacy screen. *Opaca* can be pruned but shows its full beauty if allowed to grow naturally.

Native to eastern and south central United States and west into Texas, *Ilex opaca* prefers loose, moist, well-drained, acid soil but can withstand some drought. Plant in partial shade or sun. It tolerates cold but dislikes drying winds. This hardy evergreen is tolerant of air pollution

and can do well in the city. The roots rarely cause a problem since they are finely branched and shallow.

As with other hollies, American Holly requires male and female trees for fruit set (one male to every two to three females).

Dense with lustrous foliage and ¼” round red drupes, this native evergreen tree provides protective shelter and long-lasting food for wildlife throughout the winter. Many birds and animals enjoy the fruit including cedar waxwings, robins, cardinals, mockingbirds, thrush, mourning dove, bobwhite, quail, woodpeckers, squirrels, chipmunks, voles, turtles, raccoon, and fox.

Creamy white, ⅓”, four-petaled flowers appear in spring and attract native bees and tiny wasps as pollinators. *Ilex opaca* is a larval host for Henry’s Elfin butterfly.



Ilex opaca, American Holly

Leaves of *Ilex opaca* are 2 to 3” long, leathery, dark green above, lighter green below. Arranged alternately on the twig on short petioles, the leaves are oval, slightly domed, with five to eleven short spines around the edge (most commonly seven to nine). Twigs and branches are light gray and smooth. The trunk bark is light gray and mostly smooth with occasional darker scars and lichen patches.

Ilex opaca can be found in the Original Arboretum (#978 on the Arboretum map - available at the front desk) and throughout the Woodland and Botanic Garden grounds.



Ilex cornuta, Chinese Holly

Note: A non-native holly tree (planted ornamentally and now invasive) that causes frequent identification confusion is *Ilex cornuta*, Chinese Holly. *Cornuta*’s growth form is stragglier, and though *cornuta* has similarly sized leaves to *opaca*, with close examination, you will easily be able to tell the difference. The native *Opaca* has Oval leaves. *Cornuta* means ‘horned’ in Latin, and aptly describes the long spines at the end of the *Ilex cornuta* leaf. The center-end horn-spine often curves downward giving the *cornuta* leaf a rectangular outline, in contrast to *opaca*’s Oval.



Growing Trees From Seed Takes Knowledge And Effort

Article by Judi Shellabarger, MBG Tree Team

What does a teacher do after retirement? You can only rest for so long. This teacher began the hobby of learning to scarify and stratify seeds to grow native trees. Not just any native tree seeds. The ones our local nurseries no longer sell.

Stratification and scarification occur naturally when seeds stay outdoors through the winter. Stratification is a means of simulating the chilling and warming that seeds would endure if left outdoors for the winter in their native climate. Some seeds stay dormant until triggered by a certain amount of cold temperature. Gardeners can break the dormancy of these seeds by mimicking the required outdoor conditions indoors using a refrigerator. To stratify seeds, start by placing them in moistened peat, sand, or damp paper towels in a closed container in the refrigerator. I have Laurel Oak (*Quercus hemisphaerica*), Shingle Oak (*Quercus imbricaria*), Kentucky Coffeetree (*Gymnocladus dioicus*), and Franklinia (*Franklinia alatamaha*) in my refrigerator cooling until December. To warm stratify seeds, store them where the temperature remains between 68-85 degrees and keep slightly moist. The length of warm stratification depends on the seed. My Carolina Silverbell and Two-Wing Silverbell seeds must be warm stratified for three months and then cold stratified for three months. It may take two years to germinate if successful.

Scarification is the process of intentionally damaging or cracking the outside of a seed coat, so the seed wakes up and knows it is time to start the germination process. In nature, birds and other animals eat these seeds, digest them, then leave them on the ground to germinate. Freezing and thawing outdoors in winter is enough to scarify some seeds. Gardeners scarify seed by gently rubbing the seed with sandpaper, a file, or making nicks with a knife.

With Kentucky Coffeetree seeds, most nurseries use sulfuric acid to scarify the coat. You cannot nick or cut these seeds. I use my old stained-glass grinder to grind off the hard outer coat in one place. I have a 90% germination rate using this method. Try planting a few seeds you find in your neighborhood; the fun is in the learning process, and watching a new little tree come to life can be very rewarding.





Rooting in for Winter

Article by Bo Kelley, MBG Arborist

In our temperate region of the world, the progression into October naturally brings cooler temperatures. The entire world wobbles, drunk on its axis, and we sway further from the sun and its direct rays of light and warmth. A well-established and largely predictable pattern, many tree species have adapted to the cycling of the seasons. We see this best represented in deciduous trees who shed their entire canopy to begin a period of dormancy during winter, where the ground is frozen, and the days are shorter; conditions which are unfavorable to growth and development. Within these species, a multitude of physiological processes showcase seasonality, all of which are adaptive to their survival. One particular process is the growth and development of the root system, a wonderfully complex mechanism tied intimately to the earth. Understanding and capitalizing on the intricacies of this marvel, we may enhance the survivability of our transplanted trees.

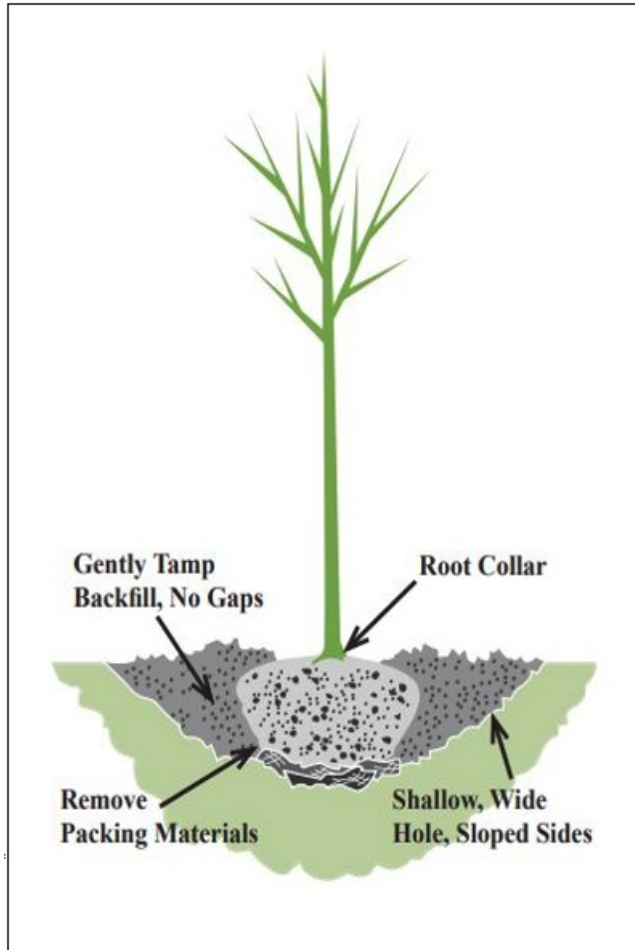
Root growth is a process that allows a tree to establish itself within its habitat. The importance of the root system cannot be understated as it not only secures the tree in place, it serves as the interface between the plant and the soil, creating the opportunity for the development of beneficial, symbiotic relationships with bacteria and fungi, generating an avenue for increased nutrient absorption. Root establishment is critical for the tree's survival, especially in its first year.

Roots, like leaves, stems, flowers, and fruits, do not grow at the same rate throughout the year, although each process is energetically demanding for the tree. In the spring, trees utilize stored carbohydrates in the stem and trunk for new growth. Roots are typically the first to experience an influx of resources and begin growing before anything else. Young, healthy roots ensure maximum water and nutrient uptake going into the growing season. The tree must then shuttle resources towards other phenological processes (the emergence of leaves, the blooming of flowers, the elongation of shoots) that are tied to the progression into warmer months. All these events, that trees are genetically predisposed to perform, take a toll on newly planted trees, which are already under stress from experiencing transplantation. During the fall, however, root growth may continue as other processes are being shut down for the season. We can take advantage of this physiological tendency because the tree is able to focus its energy on root growth, without shuttling resources towards expensive processes of leaf, flower, or fruit growth, as it would during the spring.

Trees planted in the spring can survive, but the energy they have stored in their stems and trunk is split between growth aboveground and establishment of a new root system belowground. They might require extra care, attention, and chemical intervention on the part of the planter. Often, if a tree is planted too late in the spring, the energy stored in the roots is shuttled upwards to produce leaves and elongate shoots, without being replenished through the root system, which hasn't been given ample time to establish.

If planted in the fall, the tree will have a period of focused root development to allow it to survive the winter. The following spring, the tree will be established in the soil (both physically

and symbiotically with bacteria and fungi) and energy expended on root growth will lead to increased nutrient absorption, ensuring a successful spring production of leaves and flowers along with sufficient water absorption to survive our hot summers. Planting trees at this time of the year increases the tree's survivability in its first year, largely because the tree is not focusing its limited energy supply on growing an entire canopy. Check your local nurseries as they should have adequate selections of native trees for you to plant during the fall. Planted trees can live for many years, and we can ensure they do so by giving them the best possible start.



Source: <https://forestry.usu.edu/news/utah-forest-facts/planting-landscape-trees>

Planting a tree requires a few steps to ensure long-term health and survival. Make sure the planting hole is 2-3 times wider than the exposed root ball (remove the container, wire cage, or burlap as appropriate). Additionally, the root collar ('root flare') should be 1-2" above the surrounding soil level when fully seated in the hole. Gently pack the native backfill to set the tree firmly in place. Water the tree in sufficiently to soak the root system and stimulate growth. Mulch may be added if needed.

TUFC Tree Seedling and Sapling Sale



photo by Jan Castillo

Saturday, October 30
10 am - 2:30 pm

Fundraiser for West chapter Tennessee
Urban Forestry Council

Cash or check only
\$5.00 or less

Some native vines, shrubs, and grasses
also available.

Interested in learning more about trees?

Come to the Tennessee Urban Forestry Council meeting on October 21 at 1 pm at the Garden. Jill Maybry, MBG's Pollinator Garden and Delta Garden Curator, will give a short program on Trees and Shrubs to Attract Pollinators.

To read past issues of *Under the Oaks* visit the archive by [clicking here](#).

[Visit the Garden](#) | [Calendar](#) | [Membership](#) | [Give](#) | [Book Your Event](#)

