November 2021-Vol.7, No.11

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Plants with Prickly Personalities

By Patsy Chadwick | November 2021-Vol.7, No.11

As a long-time avid gardener, I take pride in being able to identify most ornamental plants on sight. But weeds are another matter. Identifying the usual cast of weedy characters, like chickweed, henbit, and crabgrass, is no problem. As for more exotic or less common weed species, I confess my knowledge is somewhat limited. This shortcoming became apparent this summer when I failed to recognize a weed with small yellow flowers that popped up in my perennial garden. It looked harmless enough, so I chose to ignore it.

As the days started to grow cooler, the yellow flowers on this interloper gave way to clusters of spiky-looking seeds with tiny barbs on one end. I discovered the seeds when I accidentally brushed against the plant. To my annoyance, dozens of those little barbs latched onto my shoes, socks, and jeans.

Barbed beggarticks seed heads.
Photo: Pat Chadwick

My curiosity about the barbs on those seeds kicked into high gear as I contemplated their form and function. Lots of plant species worldwide are armed with sharp, pointed outgrowths. But why? What purpose do they serve? Clearly, this called for a little sleuthing to find some answers.

Delving into the subject, I learned that these outgrowths vary depending on which part of the plant they occur. I'll leave it up to the botanists and forensics experts to figure out **how** and **when** these structures evolved. **Why** they evolved seems intuitive. Basically, some of them serve as defense mechanisms to deter nibbling by herbivores, whereas others evolved as seed dispersal mechanisms.

PRICKLY PLANT STRUCTURES DEFINED

There's a tendency to refer to any sharp pokey thing on a plant as a **thorn**, a **spine**, or a **prickle.** While the three terms are used interchangeably in casual conversation, botanically they are not the same. Each is an adaptation of a separate plant part.

THORNS

Thorns occur in the axil of a leaf where a branch would normally develop, but instead, terminate in a sharp, hard, woody point. They grow from a plant's stem tissue and contain internal vascular tissue (phloem and xylem). A number of native tree species, such as Washington hawthorn (*Crataegus*

phaenopyrum), honey locust (*Gleditsia triacanthos*), and black locust (*Robinia pseudoacacia*), evolved with thorns. Many non-native species have thorns as well, such as firethorn (*Pyracantha*) and Japanese flowering quince (*Chaenomeles* spp.).

Sharp woody thorns displayed on Honey Locust tree. Photo: Geneva Wirth-ccbync201

Here's a little known fact: Most citrus trees such as lemons, limes, grapefruits, and oranges have thorns. More surprising, apple, plum, and pear trees also evolved with thorns, although the varieties grown today have been bred to be thornless.

SPINES

Spines are derived from a plant's leaf tissue. They are firm, sharp, slender, pointed structures that represent a modified leaf or stipule (appendage found at the base of a leaf's stalk). Like thorns, spines also have internal vascular tissue.

Spiny structures on cactus. Photo: Manfred Richter from Pixabay

In general, spines are found on most cactus species and on some succulents. A flat, wide leaf can lose a lot of moisture, but when the leaf is transformed into a narrow spine with a restricted surface area, the plant is able to reduce water loss. Spines help provide a little shade to the plant and that is certainly a useful function in hot, parched environments. Spines also appear to have evolved as a defense mechanism against birds and animals that would otherwise eat the plant or attempt to extract water from its cells.

Some plants other than cacti species have evolved with spiny outgrowths that are located on the edges or tips of their leaves. For example:

Spinose leaf margin – Some trees and shrubs such as holly *(Ilex*) species, false holly (*Osmanthus*), and Oregon grape holly (*Mahonia aquifolium*) have spiny edges along the margins of their leaves. These marginal spines are extensions of the leaf's major veins.

Spinose apical processes – Yet other plants, such as Agave, Sansevieria, and Yucca species, have sharp tips (terminal spines) on the ends of their leaves.

PRICKLES

Prickles are short, sharp, woody projections that are derived from a plant's skin (epidermis) tissue, which is the single layer of cells covering the leaves, flowers, stems, and roots of certain plants. Think of it this way: If you encounter a sharp, pointed outgrowth anywhere on a plant where a branch or a leaf **would NOT normally be**, then it's very likely to be a prickle. Unlike thorns and spines, prickles don't have any vascular tissues connecting them to the main body of the plant.

Some plants, like rose bushes, have prickles on the **stems only**. Oh, by the way, the "thorns" on rose bushes are not really thorns at all. Because they grow at random spots along the stems of the plant, that technically makes them prickles.

Greenbrier (*Smilax*) is an example of a plant armed with **prickles on its stems**. Despite its weediness and unfriendly prickles, this low-growing woody vine is native throughout North American and is not without merit. The fruits are a food source for many bird species. They eat the fruits and then pass them randomly throughout our landscape, which explains why the plants seem to appear out of nowhere.

Sharp prickle display on Greenbrier stems. Photo: Jan Haerer from Pixabay

Other plants, like **horsenettle** (*Solanum carolinense*), have **prickles on both stems and leaves**. Horsenettle is a bothersome weed that occurs both in pasture fields and in home landscapes. All parts of this plant — stems, petioles, leaf veins, and even the flower stalks — are covered with prickles. Because the plant is so prickly, animals are deterred from grazing. As it turns out, this is a good thing because the plants and their fruits are capable of poisoning livestock.

Prickles on horsenettle stems and leaves. Photo: Pat Chadwick

For yet other plant species, the **prickles are attached at the base of the leaves only**. **Spiny amaranth** (*Amaranthus spinosus*) is one such example. The very sharp, stiff prickles on this plant can be as long as a quarter of an inch. As an aside, a mature spiny amaranth plant can produce about 235,000 seeds, making it a formidable weed to deal with.

A few plants have **reflexed or recurved prickles**, meaning that the tips point downward. This design hinders small animals from climbing stems to reach leaves on some plants. On other plants, particularly ones with long stems, the prickle design allows the plant to hook onto other branches or plants for support. **Mile-a-minute vine** (*Persicaria perfoliata*), which is highly invasive and difficult to eradicate, is an example of a plant with reflexed prickles.

MORE PRICKLY PLANT STRUCTURES

The world of plants with prickly personalities is filled with many that don't fit neatly into the three categories described above. A few variations on a theme include the following.

Prickly protrusions on flower heads, seeds, or fruits — From an evolutionary standpoint, such structures make a lot of sense. To ensure the continued survival of their species, plants need to disperse their seeds to new areas where they will have less competition for light, water, and nutrients. One highly effective dispersal method involves the use of special barb-like mechanisms designed to equip seeds to stick or hitchhike elsewhere. According to *Botany for Gardeners* by Brian Capon, "The presence of hooks and barbs is a reliable indication that a seed or fruit is waiting to hitch a ride on a passing animal."

Here are a few examples of weeds equipped for hitchhiking:

- **Beggarticks (*Bidens bipinnata*)** – The dark brown, elongated seeds are equipped with tiny barbs designed to latch onto animal fur and clothing. This is the weed that I eventually identified as the culprit in my perennial garden.
- **Cleavers or Catchweed bedstraw (*Galium aparine*)** – Tiny, round fruits are covered with very short, curved hooks and are dispersed by latching onto animals or floating in water.

- **Prickly Sida or Spiny Sida (*Sida Spinosa*)** – This weed has very small prickles at the base of each leaf and branch. The circular seedpods have five segments that break apart. Each segment has two spikes or beak-like protrusions on the tip.
- **Sticktights or Seed Tick (Desmodium species)** – As its common name of sticktight suggests, the flat triangular-shaped seeds latch onto animal fur or clothing via small, barbed hairs that give the seeds a fuzzy appearance.

Fine hairs or bristles — A great many plants are covered in fine hairs or bristles that serve a variety of purposes, including protection from heat or cold and protection from herbivores. **Prickly lettuce (*Latuca serriola*)** is such a plant. The leaves on this weed have prickly edges accompanied by a row of stiff, prickly bristles on the lower midvein. Between the prickly leaves and milky sap, this is not a pleasant plant. It is also quite prolific. According to *Weeds of North America*, a large, mature plant can produce up to 87,000 seeds!

Stiff bristles on Prickly Lettuce. Photo: Pat Chadwick

Burs – A bur (also spelled burr) is a seed or dry fruit with hooks or teeth that are designed to repel herbivores and to disperse seeds by latching onto fur or clothing. Depending on the plant species, burs can be a mild annoyance or a serious hazard. On the annoying side, they can snag or tear one's clothing. On the serious hazardous side, some burs can puncture tires, hook onto the legs or feet of animals causing injuries, and damage agricultural harvesting equipment.

Some plants with burs include the following:

- **Common Burdock (*Arctium*)** –On the positive side, the flowers on this large, coarse looking biennial weed provide pollen and nectar for bees and some Lepidoptera species in late summer. Another plus is that this plant inspired the invention of the hook and loop fastener known as Velcro. On the negative side, the plant produces lots of burs that catch on fur or clothing and can be painful to extract.
- **Common Cocklebur (*Xanthium strumarium*)** – The hard woody burs on this plant are covered in hooked prickles and have two long beaks that project from the tip of the bur. The burs can float in water as well as latch onto animal fur or clothing.
- **Jimson Weed (*Datura stramonium*)** – The funnel-shaped blossoms on this large weedy plant usually open at night and provide pollen for nocturnal moths. The leaves are spiny looking and the large seed pods have a spiky appearance. All plant parts are poisonous.
- **Teasel (*Dipsacus fullonum*)** – This non-native plant is aggressively competitive with other plant species for space and nutrients and is considered to be invasive. The wicked-looking oval-shaped spiny seed heads develop on long prickly stalks. Often found in disturbed sites, pastures and along interstate highways, teasel produces about 2,000 seeds per plant.

ET TU, VEGGIES?

Yes, even vegetables have their share of prickly personalities. S**ome varieties of eggplant**, for example, have small prickles on their stems and on the calyx where the fruit joins the stem. Grasping the stem at that point with bare hands can be painful. **Yellow squash** plants have prickly stems and leaves that can be uncomfortable to the touch when handled with bare hands. Even the fruits are covered with fine, nearly

transparent hair-like bristles. Some, but not all, **cucumber** varieties have slightly spiny fruits as well as prickly stems. **Artichokes** have prickly leaves and beautiful violet-purple thistle-like flowers that attract pollinating insects. The edible flower bud is made up of scale-like leaves with short inedible needle-like thorns on the tips, which must be snipped off.

PREVENTION/CONTROL OF PRICKLY PLANTS

Except for the vegetables, many of the prickly plants described herein are opportunists. They appear most often in disturbed soil, such as alongside roadways, construction sites, or garden beds. In addition to being blown about on the wind or carried by water, seeds may also be dispersed by wild animals, birds, humans, and our pets. Regardless of how they are dispersed, it's important to remove the plants at the seedling stage for several reasons:

- A seedling is less prickly to handle when just emerging from the soil than when the plant has reached maturity.
- Many of these plants have tap roots that are easier to pull from the soil when they are very small.
- Many of these plants produce prodigious quantities of seeds and should be eliminated before the seeds mature.

THE TAKEAWAY….

A thorn is a modified short branch, a spine is a modified leaf or leaf part, and a prickle is an outgrowth from the epidermal tissue of stems, leaves and some fruits. Knowing the distinctions among the three is not essential unless you want to use that knowledge to help identify plant species. Keep in mind that not all plants with sharp or prickly outgrowths are weeds or even undesirable. Many of these plant species are valuable sources of pollen, nectar or shelter for pollinators and other wildlife. However, it is important to identify those undesirable plant species that should be eliminated before they become a nuisance. Preventing them from setting seed in the first place or eliminating them at the seedling stage are your best options.

As I contemplate the beggarticks weed that started me on this path to discovery, I now understand and even admire its survival strategy. The plant is rooted in the soil and cannot move. So, many millennia ago, its ancient ancestors figured out how to use mobile creatures to disperse their seeds for them. There's even a term for this strategy: zoochory. Pretty clever, don't you think?

Featured photo: Common thistle armed with formidable prickles on stems, leaves and flowers. Photo: Pat Chadwick

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Virginia Weed Identification, Virginia Tech website Start – Weed Identification (vt.edu)

University of Missouri Weed ID guide, https://weedid.missouri.edu/

"Seed Dispersal," ivycreekfoundation.org/docs/9.Seed_Dispersal

"Identification of Virginia's Noxious Weeds," Virginia Cooperative Extension Publication SPES-244NP https://www.vdacs.virginia.gov/pdf/va_noxious_weeds.pdf

Botany 115 Vegetative Terminology, Modified Roots, Stems and Leaves

Of Thorns, Spines and Prickles, University of Missouri Integrated Pest Management article by David Trinklein, published January 3, 2013.

November in the Ornamental Garden

By Cathy Caldwell | November 2021-Vol.7, No.11

Start your To-Do List by reviewing the November Tips you'll find under Gardening Resources elsewhere on this website.

Make good use of those falling leaves under your trees. Add them to your compost bin or spread them into beds that could use a nutritional boost.

Planting Trees and Shrubs

You can keep **planting new deciduous trees and shrubs** this month, at least until the ground freezes. When might that happen? There is no way to be certain, but generally the ground feezes after the first hard frost. It's reasonable to expect warmer-than-normal temperatures this November. Climate Prediction Center/NWS (you may want to bookmark this handy source). As long as the soil temperature is above 40°F, roots will continue to grow, and that root growth enables the tree to thrive and survive.

Bare-root trees can be planted in the late fall, winter, or early spring **when they are dormant**. Do not buy or plant a bare-root tree which shows more than 2 or 3 inches of new growth.

Container-grown trees and shrubs and those that are balled-and-burlapped may be planted at **any time the ground is not frozen**. How do you determine if the ground is frozen? Your shovel will be unable to penetrate the soil if it is frozen. Avoid transplanting shrubs and trees on sunny or windy days, which can expose the roots to light and drying winds, stressing the plant. If you find yourself having to plant very late in the fall, be sure to mulch the area heavily to keep the ground thawed so roots can become established.

Tree Planting Video,
Charlottesville Tree Stewards,

Before you bring a tree or shrub home from the nursery, do some advance thinking and planning, and here's a good place to start: Planting a New Tree, The Garden Shed, Nov 2015 (note that the links to Va.Coop.Ext. articles are inactive due to updating). If you wish to plant on very compacted soil, you'll need to amend a large area (not just the planting hole), as directed in Planting a Tree or Shrub/Univ.Md.Ext. There you'll also learn about the benefits and methods for creating "tree islands" for multiple trees. Be sure to plan for the deer that will want to browse on your new tree and have a protective device ready to go. You can look at some options at Deer, Deer, Deer! Garden Shed.

Before you start digging a hole, **consult some expert tree-planting instructions,** such as:

- Planting a Tree or Shrub/Univ.of Maryland Ext
- Tree Planting Guide, C'ville Tree Stewards: The **Charlottesville Tree Stewards** recommend turning your tree into a "bare root" tree before planting, and they have produced a video to show you how, which you'll find here: Tree Planting Video/C'ville Tree Stewards.
- In addition to the Tree Stewards video, you'll find tree-planting videos at
    - Planting a Container Grown Tree Video Univ.Md.Ext. and
    - How to Plant a Tree in Your Landscape Univ.N.H.Ext.

If you purchase a **balled and burlapped tree**, **find planting instructions** for it here: Univ.of Ky. Planting Balled and Burlapped Trees and Shrubs in your Landscape.

As these publications and videos explain, it's very important to **dig a hole that is wider than the root ball** — most experts prescribe a hole that is at least **two to five times wider** than the diameter of the root ball but **no deeper than the height of the root ball.** Remove any wires, ropes, and non-biodegradable material from the root ball before back filling the hole, and if you've got a containerized plant, you may need to **deal with any circling roots.**

- The received wisdom on **circling roots** has involved cutting them, but some authorities now suggest simply breaking a few and loosening them from the soil of the root ball, as demonstrated in the video mentioned above, How to Plant a Container Grown Tree.

Do NOT add any soil amendments such as compost or peat moss to the planting hole because this

will encourage the roots to stay in the planting hole instead of growing outward. After you finish backfilling, **apply about 1-2 inches of mulch** over the site but don't let the mulch touch the trunk of the plant. Leave a 2" to 3" gap between the mulch and the trunk or stem.

Water the plant well but not to the point that the soil becomes soggy. You'll need to keep watering regularly for a year or more to get your tree established. For lots of good detail on how often to water and on how much to water based on trunk size, I highly recommend Watering Newly Planted Trees and Shrubs.

Before the first hard freeze, be sure to **water newly-planted trees and shrubs deeply** so that they are better prepared to withstand winter weather.

Transplanting an existing tree or shrub is a different ball of wax from planting a containerized or balled-and-burlap tree. That's because it inevitably does some damage to the all-important feeder roots. You can reduce that damage by **root pruning** in advance — several months or even a year in advance. If you're thinking about transplanting a tree or shrub**,** start by reviewing the basics at The Garden Shed Nov. 2020. For detailed directions, see Transplanting or Moving Trees and Shrubs in the Landscape/Penn State Ext" or Transplanting Established Trees and Shrubs/Clemson Ext.

Deer protection Photo: Susan Martin

Weeding

Henbit seedling. Photo: Steve Dewey, Utah State Univ., Bugwood.org, CC BY 3.0

Now is the time to remove chickweed and other winter annual broadleaf weeds that emerge in the fall; chickweeds, henbit/deadnettle, Carolina geranium, and buttercup are the winter annual broadleaf weeds you're likely to see in your gardens now. Get them now before they disperse seed next spring. Other weeds — the annuals — are about to die anyway, so don't waste your energy on them; among these are crabgrass, foxtail, and spurge. If you're having trouble identifying a weed — or are worried that it might be a wonderful native plant — try using Virginia Tech's Weed Identification site, Weed Identification/ VT.edu.

Common chickweed (Stellaria pallida). Photo: John D. Byrd, Miss.St.Univ., Bugwood.org, CC BY 3.0

Be on the Lookout for Spotted Lanternfly

Spotted Lanternfly has been found in Albemarle County. It feeds on grapes and fruit trees as well as many of our favorite native trees. If you see a spotted lanternfly in your yard, what should you do? First, report it to Virginia Tech. If you can easily eliminate it with mechanical means, doing so may reduce the local population and help out local fruit-growers. Between August and November, spotted lanternflies tend to leave their favored *Ailanthus* trees (the invasive tree-of-heaven) and move to common landscape trees like maple, river birch, and willow. What if you see them on one of your trees? So far, research indicates that you probably needn't worry about just a few so long as your tree is healthy. But at this time of year, the adults feed heavily on tree sap for weeks, and research has

shown that this can stress trees by reducing their energy storage for winter. If it looks like an insecticide is needed, get details on which pesticide and how and when to use it in this new article from Virginia Cooperative Extension: Best Management Practices for Spotted Lanternfly in Yards & Landscapes.

Adult spotted lanternflies start laying eggs in mid-September, so **now** (and until April) **is a good time to scout for and destroy their egg masses** on branches and trunks of shrubs and trees. You can scrape off the egg masses or treat them with dormant oil. You can eliminate a lot of spotted lanterflies by destroying their eggs over the winter months (smash or scrape them into alcohol.) Local farmers and orchardists will thank you.

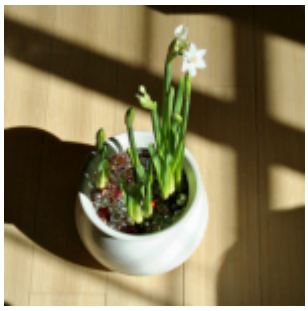
Spotted lanternfly egg masses are 1-1.5″ long and ½-¾” wide, shiny and grayish-brown in color when fresh. They weather to a flat gray-brown color with age. Photo courtesy of Va.Coop.Ext.

There’s still time to remove woody invasives like autumn olive using one of these methods that apply a small amount of herbicide to a cut in the stem or trunk —

- the “hack and squirt” injection method
- the “cut stump” method

Late fall is actually a good time for these methods because water and nutrients (plus any herbicides) are moving down into the roots at this time of year. For detailed directions for these methods, see CONTROLLING INVASIVE PLANTS Effectively & Safely with Herbicides/Blue Ridge PRISM.

If you’d like to enjoy **paperwhite narcissus** or **amaryllis** over the holidays — or give them as holiday gifts — now’s the time to get started. Plant paperwhite bulbs, pointy side up, in soil or in water. In just a few days, roots will sprout, and in about 4 to 5 weeks, blooms will emerge. Plant around Thanksgiving for bloom at the holidays. Amaryllis is another bulb that can be started in November for holiday season bloom. On average, amaryllis will bloom about 6 to 8 weeks after planting. For detailed planting and care information, read The Garden Shed/Amaryllis .



Paperwhite narcissus starting to bloom in time for the holidays.
Photo: Brianna Privett, CC BY 2.0

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Best Management Practices for Spotted Lanternfly in Yards and Landscapes and Va.Coop.Ext ENTO-344NP

Residential Control for Spotted Lanternfly (Va.Coop.Ext)

“Deciding If and When to Treat for Spotted Lanternfly on Ornamentals,” Penn State Extension

Tasty Journeys with Winter Squash

By mking | November 2021-Vol.7, No.11

Autumn joys are here! For me, walking through a pumpkin patch to select colorful fall decor and handling oddly-shaped gourds are seasonal highlights that make me happy from top to bottom. A close relative of those curious plants in the cucumber family (*Cucurbitaceae*) are winter squash. Pumpkins, gourds, and winter squash are all members of the genus *Cucurbita* (Latin term for gourd). Winter squash, also known as *Cucurbita maxima*, *Cucurbita moschata*, and *Cucurbita pepo*, are warm-season annual vines that climb up fences or grow along the ground.

Native to South America, winter squash plants were first domesticated in Argentina, Bolivia, and Uruguay. Although you can find them in grocery stores throughout the year, you typically see piles of these striking *Cucurbita* in local markets during October and November. These plants grow and produce fruit in the summer season, but they can be stored during fall and winter, which explains their common name: winter squash.

Pumpkins come in varied shapes, colors, and sizes; Photo: Melissa King

Pile of gourds; Photo: Pixabay

You are probably familiar with some colorful varieties of winter squash, often used for decorative fall arrangements. Their simple leaves are rounded and unlobed, but the actual shape will vary among species. Squash leaves tend to be large to shield developing fruit from overexposure to sunlight. The stems have vining habits and are usually thick and textured.

Cucurbita are monecious, with separate male and female flowers on different parts of the same plant. The beautiful flowers are yellow, with deep cups composed of five petals. Male flowers, which appear first, have long, thin stems with a single protruding stalk inside that's full of pollen. Female flowers have shorter stems with a bulging base and three thick stalks inside. Small insects crawling around in these flowers are a common sight, and their job is to transfer pollen from male to female flowers. This ensures pollination and subsequent fertilization to produce seeds. Without those processes, squash plants would not bear fruit.

Blossom on pumpkin plant; Photo: Pixabay

Winter Squash Varieties

The bright colors and diverse shapes of winter squash are intriguing. In fact, you might never guess that some of these varied specimens are even related. This article describes five distinct types that are easy to prepare for use in cooking and baking.

Hubbard squash; Photo Pixabay

Pumpkins and winter squash; Photo: Pixabay

Hubbard squash has several names, including buttercup and green pumpkin. It can grow to be rather large – up to 50 (22.7 kg) pounds. The gray to greenish-blue skin is very tough and hard to cut, so this squash is sometimes sold in pre-cut pieces. The deep orange flesh inside is noticeably sweet and highly nutritious. Hubbard squash can be boiled, roasted, steamed, sauteed, or pureed for consumption.

Acorn squash is dark green with splashes of yellow or orange on its tough outer skin. This squash has the same shape as an acorn (minus the top hat) with a slightly pointed end and smooth ridges that run longitudinally from top to bottom. Acorn squash weighs from one to three pounds, and its flesh is golden in color. This squash can be baked, stuffed, steamed, or microwaved and is an excellent substitute for pumpkin in favorite pie recipes.

Acorn squash with flesh and seeds; Photo: Melissa King

Acorn squash growing in garden; Photo: Melissa King

Delicata squash with distinctive stripes; Photo: Melissa King

Delicata squash, sometimes called peanut squash, is oblong in shape and approximately six inches long (15 cm) and three inches across (75 cm). The outer skin is creamy colored with green stipes, and the flesh is light yellow and pleasantly sweet. Delicata skin is tender and can be eaten, but this thin exterior shell decreases the length of time that this squash can be stored.

Tan-colored **butternut squash** is shaped like a bottle with an elongated neck and bulbous end. The inner flesh is bright orange and rather dense with a buttery, nutty flavor. Butternut squash can be roasted, steamed, or cut into smaller pieces to be sauteed and pureed for use in soups or as a delicious filling in pasta recipes.

Finally, there's **spaghetti squash,** which could easily win first prize for being unique. Its thin yellow skin contains a delightful surprise inside. After cooking this *Cucurbita*, remove the yellow flesh with the tines of a fork, and what comes out is a stringy set of thin strands that resemble spaghetti. Use this savory-tasting squash in a vegetable medley or simply add tomatoes, basil, and grated cheese for a fresh, yummy look-alike of angel hair pasta with sauce.

That's just the beginning! Have fun exploring more varieties of winter squash, such as Banana, Turban, Cushaw, Calabasa, or Kabocha. Or try tasty new adventures by roasting smaller squash with thin, edible skins, such as Sweet Dumpling and Carnival. The common denominator for the firm flesh of every type of winter squash is versatility and nutritional value. Whatever cooking method you choose, the rich flavor of *Cucurbita* will prevail. Winter squash are rich sources of beta carotene, vitamin C and B6, and fiber, and all are packed with protein, magnesium, and potassium.

Butternut squash on top of spaghetti squash; Photo: Melissa King

Colorful pile of winter squash; Photo: Melissa King

Cultivating Winter Squash

Most winter squash species have similar seeds: thin beige teardrops about ½ inch in length. Sow *Cucurbita* seeds in late spring when the soil has warmed up to a temperature of at least 60° F and after the last frost date. Plant seeds at a depth of one inch in fertile, well-drained soil. Mound the soil first and then plant seeds at the center of the "hill top" where the soil is warmer.

Squash thrive in full sun and need sufficient area for their sprawling vines to spread out. If there's limited space for planting, place squash near the edges of a garden and let vines grow outward into the lawn. Mulch areas around the seeds to retain moisture, prevent weed growth, and protect the shallow roots that develop on squash plants. *Cucurbita* need plenty of water, and because they are heavy feeders, organic fertilizer should be added to the soil periodically.

A potential problem for *Cucurbita* is the presence of squash bugs, which are notorious for ruining squash crops. Look for tiny egg clusters on the underside of leaves and scrape them off right away. Or, spray neem oil on the eggs and the young squash bugs before they inflict damage on the plants.

Harvesting and Curing Winter Squash

It's generally best to wait until late September or early October to harvest winter squash, but some may be ripe and ready to go in August. Harvest the fruit when it's fully mature. Look for firm, shiny skin and vines that are starting to dry out. Cut the stem with a sharp knife or pruners (avoid tearing) and leave at least one

inch on the fruit.

Cure winter squash to dry off any extra moisture and harden the skin; this keeps bacteria and fungi out. Place squash in a warm, dry area indoors, such as on a sunny windowsill. After that, dip the *Cucurbita* into a rinse of low-concentration bleach solution (5 cups water plus ½ cup bleach) to sanitize the outer covering. Next, the squash is ready for storage in a dark room with good air circulation. It can be stored for a month or more, but be sure to check every few days for any indication of decay.

Young spaghetti squash on vine; Photo: Melissa King

Enjoy the fruits of your labor and superb health with tasty recipes that call for winter squash!

References in Print

Philips, Roger and Rix, Martyn (1993). *The Random House Book of Vegetables.* New York: Random House.

Online Resources

Cucurbita maxima (Autumn Squash, Buttercup Squash, Hubbard Squash, Marrow, Pumpkin, Squash, Turban Gourd, Winter Squash) | North Carolina Extension Gardener Plant Toolbox (ncsu.edu)

Cucurbita moschata (Butternut Squash, Calabasa, Calabaza, Crookneck Squash, Pumpkin, Squash, Winter Squash) | North Carolina Extension Gardener Plant Toolbox (ncsu.edu)

Winter Squash in the Home Garden (Penn State Ext.2020)

Cucurbita maxima (winter squash): Go Botany (nativeplanttrust.org)

Cucurbita maxima – Plant Finder (missouribotanicalgarden.org)

Yard and Garden: Harvesting and Storing Winter Squash | News (iastate.edu)

Pumpkin (Cucurbita pepo; C. maxima; C. moschata; C. mixta)-Hort Answers – University of Illinois Extension

Winter Squash | The Nutrition Source | Harvard T.H. Chan School of Public Health

The Edible Garden in November

By Ralph Morini | November 2021-Vol.7, No.11

If the extended forecast is correct, we are not likely to see a frost until at least early November. The average first frost date for our hardiness zone 7a is October 15-25, but our warmer than normal weather is continuing. Nevertheless, it is time to clean up the garden, prepare for winter and take steps that will be of benefit next spring. Here are a few recommendations.

Cleaning and protecting your beds

Beds that no longer have a growing crop and will be idle this winter should be cleaned. Remove plants and plant debris. It can be composted if clean, but if it shows evidence of disease or pest infestation, it should be bagged for disposal or burned. It is too late now to establish a cover crop so covering soil with an organic mulch is the next best choice. Mulched leaves are a good and generally available option. Use the bagger on your mulching mower to collect chopped leaves, or mulch and rake them. Use them as a mulch to protect soil or mix them with grass clippings and kitchen scraps to start new compost batches. Chopping them up is important to allow water infiltration and reduce wind dispersal. They also break down faster, providing needed organic matter for the soil while reducing carbon loss, erosion and moderating soil temperature. Other mulch options include straw, wood chips and aged saw dust.

Cover Crops

Winter cover crop, Cultivate Charlottesville CATEC garden: Photo: Ralph Morini

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

When cut before setting seed in the spring, the vegetative material can be tilled in as a green manure, composted or used to mulch transplants. The roots are left in the soil to decompose, adding more organic matter.

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

Extending the Growing Season for Cool Weather Crops

DIY Row Cover: Photo: Ralph Morini

Winter hardy crops including many greens like lettuces, spinach, kale and other brassicas planted in September or early October, should be harvestable now. Mulching around the plants will help reduce cooling and keep them productive into the winter. Using row covers maintains a temperature beneath the spun polyester fabric up to 5 or 6° F higher than ambient, while still allowing rainfall and sunlight to reach the plants. For more information on row cover options including a simple DIY system like the one in the photo, see the article Row Covers: A Gardening Season Extender With Benefits from the November 2019 *Garden Shed*.

Adding Compost

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

To habitual tillers, this seems counterintuitive. However, research and the experience of organic market farmers demonstrate that tilling destroys soil structure, reduces soil organism activity, and releases stored

carbon to the atmosphere. Varying the crops grown in specific garden locations, using diverse cover crops, adding organic matter, and amending as soil tests indicate, are the best way to improve and regenerate soils.

Start a New Compost Batch

Grass and leaves in compost bin. Photo: R Morini

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

Prepare a New Bed

Sheet mulch plot at CATEC garden. Photo: R Morini

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

Other tips for the month include:

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

practices reduce insect and disease infestation next year.

- **Mulch strawberries** with straw or leaves. This should be done after several nights near 20ºF but before the temperature drops into the teens. Apply the straw or leaves loosely but thickly enough to hide plants from view.
- **Now is a good time to collect soil samples** to test pH and nutrient levels. Organic amendments are slow-acting, so fall application improves soil for spring planting. Soil test kits are available at your local Extension Office. The Charlottesville-Albemarle Extension Office is located in the County Office Building on 5th Street Extended, 460 Stagecoach Road, Charlottesville. Kits and instructions are available in a box on a bench outside the front entrance.
- **Disconnect, drain and roll up garden hoses.** Best to do it before it gets cold and they get stiff and hard to handle.
- **Drain rain barrels, outdoor water pipes and irrigation systems** that may freeze during the cold weather.
- **Rhubarb** plants that are four years old or more can be **divided and transplanted**. Prepare the site by digging deeply and incorporating compost.
- **Cut off the tops of asparagus plants to about 3-4″ above the soil level**. Weed, and add a winter dressing of compost or aged manure to the bed.
- If you have been thinking about installing a **deer fence** around your vegetable garden, the fall and winter months are a good time to build it.

I hope you find this information helpful and that you will check in again next month. Comments are welcome.

Sources:

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"Monthly Gardening Tips: November," Piedmont Master Gardeners website, Gardening Resources.

Trees That Can Handle Heat and Drought

By Cathy Caldwell | November 2021-Vol.7, No.11

The original concept for this article was simply to identify the tree species that can handle the heat and drought in our future so that readers who are planting trees this fall could use the information to guide their purchases. I soon discovered that this was not a simple task.

First of all, drought tolerance is not easily determined, and it can vary even among the same species based on local adaptations. Perhaps this explains the conflicting information in lists of drought-tolerant plants. Second, until recently, there appears to have been relatively little research on the subject of heat or thermal tolerance. Finally, recent research suggests that trees that have been drought tolerant in the past may not be up to the challenges presented by the higher levels of heat and drought we can expect in the next decades — unless and until we reduce the greenhouse gases we are emitting. In light of this research, I began exploring this subject and looking with a new perspective at all lists and labels for drought and heat tolerance.

The traditional method of identifying drought tolerance has focused on features like leaf size and crown characteristics. Once expert summed it up this way: "An ideal tree for a drought-resistant landscape is a native, early to mid-successional, upland hardwood species with a multi-layered canopy, small and/or deeply lobed leaves, and a conical to cylindrical crown shape." University of Georgia School of Forestry (2012). But newer approaches focus on climate adaptations and the hidden hydrology of tree functions.

Some scientists have used the "climate envelope" of a tree species to predict its resilience in a changed climate. For example, a 2009 study compared the climate envelope of each tree species then growing in Philadelphia to the predicted future climate in Philadelphia. Basically, a tree's climate envelope is the climate niche it occupies, based on "annual mean temperature, minimum temperature of the coldest month, maximum temperature in the warmest month, annual precipitation, precipitation in the warmest quarter, and precipitation in the coldest quarter." Also factored in was the predicted increase in diseases and pests due to climate change. The study concluded that the future climate of Philadelphia would become "less optimal" for 10 species, but would be more optimal for 2 species (American holly and sweetgum).

The climate envelope approach has been subject to criticism: "There is little evidence that the climate envelope of a plant species directly relates to the drought and thermal tolerance of that species, at least not at the resolution required to identify or rank species vulnerability." Hanley et al, Sci.Total Environ. 2021 In addition, some scientists have argued that while "the mechanisms of how trees die are becoming clear, the environmental conditions under which trees can persist under very high temperatures associated with heat waves have not been documented," Overwhelming Heat Waves: Climate Envelope Development for Pinus edulis Seedlings.

A flurry of research is underway on the **mechanisms within a tree that make drought or heat tolerance possible**. One of the first things I learned is that trees do not sit by quietly through periods of drought; most alter their functioning in order to conserve water. As I explored this phenomena, I began to slog through sentences like this one:

> *Leaf water potential at wilting or turgor loss point (πtip) is a determinant of the tolerance of leaves to drought stress and contributes to plant-level physiological drought tolerance. Recently, it has been demonstrated that leaf osmotic water potential at full hydration (πo) is tightly correlated with πtip.*
>
> British Ecological Society Journals/wiley.com

Having no idea what that meant, I decided I better learn a few **basics about tree hydrology.** Thankfully, I

came upon an interview with a leading researcher in the field, Dr. Craig Brodersen, and soon I had better understanding of tree functioning. You've probably heard the term *xylem*, which are the "hollow, pipe-like vessels that transport water and nutrients" from the roots up to the shoots and leaves. The xylem sap is under negative pressure, which means that basically "**the evaporation of water out of the leaves pulls the water up the trunk**." One tactic that many plants employ during drought is to close their stomata, the tiny openings on the surface of leaves, thereby **preventing the loss of water into the atmosphere.** Dr. Brodersen explains the process as follows:

> *We're finding that as a tree enters a drought, the first thing to happen is that it closes its stomata in order to conserve water. But that puts the tree in a dilemma; if it closes its stomata to conserve water that means it can't pull CO2 out of the atmosphere in order to do photosynthesis. It then must rely on its internal storage to get by during times of drought. Ultimately, the tree's ability to survive drought is a function of how much carbon it has currently stored and available to keep itself alive.*
>
> *In terms of a tree's ability to recover, we are now finding that if a tree loses a certain percentage of its total conductivity — how much water it can transport — there's a tipping point after which it can't come back. It needs to be able to have enough water stored in its trunk, and then have enough of its vascular system functioning in order to grow more xylem the next year, in order to replace any of the wood that was lost to the hydraulic disfunction. When trees get pushed beyond that tipping point of not having enough water and not having enough stored carbohydrates, they become very susceptible to pests and disease because their defense systems are significantly reduced. And if the tree gets pushed too far there's the possibility that they go beyond that tipping point, if the insects don't get it first.*
>
> *–Dr. Craig Brodersen, Yale School of the Environment (Interview, Yale.edu)*

Drought tends to exacerbate the effect of heat stress. Plants typically handle heat through the cooling of leaves and tissues via transpiration. But since most trees' response to drought stress is to close stomata to reduce water loss, the heat stress can be much more severe because transpirational cooling is reduced. Teskey et al, Plant, Cell & Environment. In addition, the whole tree hydraulic system can be damaged when heat is accompanied by drought:

> "During exceptionally warm conditions, if a particular tree's soil becomes really dry, bubbles form in these tubes. When that happens to a particular xylem tube, it is unusable forever. If most or all of a tree's xylem gets emptied out — or cavitated — the tree dies." "How Plants Adapt to Climate Change,"news.harvard.edu.

Sadly, **drought and heat have contributed to an increase in tree deaths worldwide.** I think of myself as a well-informed person, but this was news to me. In our own country, the West has suffered the most, with California losing almost 150 million trees during the drought that began in 2011, Smithsonian Magazine (July 2019), and in Colorado, tree mortality has increased dramatically. University of Colorado Boulder News (July 2021).

Although the research was depressing and highlighted the number of questions that remain to be answered, I was unwilling to let it stand in the way of a tree list that might be both reasonably accurate and helpful. Speaking of accurate, it was clear that the experts differ on the drought tolerance of a number of trees. I started by compiling a list of trees that have been identified as drought tolerant by several authorities and then concentrated on trees that fit our local conditions and hardiness zone. The list is not exhaustive by any

means, and it may very well be subject to change, but there seems to be a consensus to support it.

Drought Tolerant Trees (* denotes heat tolerant also)

*American Holly (*Ilex opaca*)

Black Gum (*Nyssa sylvatica*) (also known as black tupelo) (can adapt to both very wet and to relatively dry conditions)

Black Locust (*Robinia pseudoacacia)*

Catalpa (*Catalpa speciosa* and *Catalpa bignonioides*)

*Crape Myrtle (*Lagostroemia indica)*

Eastern Red Cedar (*Juniperus virginiana)*

∗Ginkgo (*Ginkgo biloba*)

*Golden Raintree (*Koelreuteria paniculata)*

∗Hackberry (*Celtis occidentalis*) and Dwarf Hackberry (*Celtis tenuifolia*)

*Honeylocust (*Gleditsia triacanthos* or var. *inermis* (thornless))

Hop Hornbeam (*Ostrya virginiana*) (somewhat drought tolerant but not flood-tolerant)

Japanese Pagoda tree (*Styphnolobium japonicum, Sophora japonica*) (**not** heat tolerant)

∗Kentucky Coffee tree (*Gymnocladus dioicus*)

Oaks (*quercus*): White oak, Bur oak, Black oak, Northern red oak, Pin oak, Swamp White oak, Chinkapin oak, Willow oak (not all experts agree on Willow oak)

Persimmon (*Diospyros virginiana)*

Redbud (*Cersis canadensis*) (moderately drought tolerant)

Sassafras (*Sassafras albidem*) (could be threatened by new disease, laurel wilt)

Shagbark Hickory (*Carya ovata*)

Trident Maple (*Acer buergeranum*) (native to China and Japan)

***Also heat-tolerant**

I've looked at quite a few lists of drought tolerant trees from states as far-flung as Minnesota and Alabama, and certain trees show up repeatedly. These "drought winners" are hackberry, honeylocust, ginkgo, bur oak, Kentucky coffeetree, and golden raintree — and they are not all natives. Nor are they even familiar specimens in local gardens. But I plan to learn more about the natives, especially the hackberries, the bur oak, and the Kentucky coffeetree.

Bur oak. Photo: Vern Wilkins, Indiana University, budwood.org, CC-BY-NC.

The search for drought and heat tolerant trees could conflict with the goal of planting more natives. Although several natives are among the "drought" winners, I was impressed by the fact that golden raintree — a native of Asia — seems to be a leading contender for a climate change resilience award! Golden raintree has been described as "one of the most drought and heat tolerant trees and grows well all over the United States except where the winter temperature drops below -20°F." Urban Horticulture Institute/City of Ithaca. But it has also been "reported as becoming weedy in the eastern portion of Virginia," according to the Va. Cooperative Ext. You may have spotted this weediness yourself along the north side of Ivy Road in the vicinity of Ednam and Farmington. Another non-native that scores well on drought and heat resistance is crape myrtle.

If at all possible, you'll want to choose natives. We gardeners will probably no longer be planting all of our old favorites — like beech and some maples — at least not unless we are sure we can provide the type of site and amount of water that they will need to survive. Plants are not the only ones that are going to have to adapt! Choosing a tree that is highly adaptable to a variety of situations is another way to give it a head start. Trees that are adaptable are noted as such under the category of Growing Conditions on the Tree Stewards' Right Tree/Right Place List,

Whatever trees we choose to plant, we gardeners can help to **equip them for the challenges of climate change.** We can choose sites that provide plenty of room for root growth and avoid siting trees near heat-islands like sidewalks and tarmac. For excellent advice on site selection and its impact, see Site Assessment and Tree Selection for Stress Tolerance. And we can be sure to water our new trees adequately and regularly for the critical first three years. Only after it's established does a tree begin to exhibit its tolerance for drought or heat. For detailed guidance on watering new trees, review Watering newly planted trees and shrubs/Minn.Ext.


Dwarf hackberry. Photo: courtesy of Missouri Dept. of Conservation

There's some good news emanating from all the recent research. As one scientist explained, "Genetic variation in the response of processes to heat has received limited study in trees, but variation exists within species and could be exploited to **improve heat stress tolerance** in economically important species." Teskey et al, Wiley Online Library Breeding and genetic engineering for heat and drought tolerance is on the horizon. Trees are not the only plants threatened by climate change; similar research is ongoing with respect to crops like corn and soybeans. For example, see "Research aims to increase crop drought tolerance using biotechnology," Nevada Today/University of Nevada, Reno (9/27/21).

SOURCES:

Featured Photo: Kentucky coffee tree. Photo courtesy of Missouri Botanical Garden PlantFinder

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"Plants That Tolerate Drought," Clemson Coop.Ext. (2019)

"Water Wisely," University of Minnesota Ext.

"Drought-Tolerant Landscapes for Alabama," Alabama Ext (2019)

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Recommended Urban Trees: Site Assessment and Tree Selection for Stress Tolerance," Cornell University Dept. of Horticulture (2009)

"Drought and Landscape Trees: Effects, Signs, and Watering Guidelines," Alabama Ext

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"Celtis tenuifolia," Wildflower.org/Plant Database

"Celtis occidentalis," Wildflower.org/Plant Database

"Catalpa," Univ. of Florida Environmental Horticulture Dept.

"Catalpa speciosa," Missouri Botanical Garden Plant Finder

"Catalpa bignonioides," Missouri Botanical Garden Plant Finder

"Sassafras albidum," Missouri Botanical Garden Plant Finder

"Acer buergerianum," Missouri Botanical Garden Plant Finder

"Diospyros virginiana," University of Florida Horticulture (Gilman & Watson 1993)

"Black Locust and Drought," USDA Southern Research Station (2020) (Although black locust is relatively drought tolerant, drought can slow the rate of its symbiotic nitrogen fixing, impacting other plants that depend on the nitrogen it shares)

"Responses of tree species to heat waves and extreme heat events," Plant, Cell & Environment. (Teskey et al, July 2014)

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"Northern forest tree populations are physiologically maladapted to drought," Nature Communications/Nature.com (2018)

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The Great American Dessert

By Bernice Thieblot | November 2021-Vol.7, No.11

…is as “American as apple pie.”

It starts with the apples. Search the web for “best apple for pie” and you’ll find lists of many apple varieties and very little agreement. It’s a matter of preference, whether sweeter or tarter, but there is general agreement that the apple chosen should be one that holds up to baking and doesn’t make applesauce pie.

Among some 2,500 varieties of apples grown in the U.S., heirloom apples—those passed down over generations—offer a greater diversity of tastes and textures than the few varieties commonly found in grocery stores. Locally, farmer’s markets and orchards offer hundreds of varieties of just-picked apples, many of them heirlooms—along with advice on good choices for pie. Among the larger orchards growing apples locally are Carter Mountain, Charlottesville; Chiles Family Farm, Crozet; Henley Orchard, Crozet; Critzer Farm & Nursery, Afton; Dickie Brothers Orchard, Roseland; Drumheller Orchard, Lovingston; Fruit

Hill, Palmyra; Saunders Brothers, Piney River; Vintage Virginia Apples, North Garden.

A few varieties often mentioned as favorites for pies may be found in local grocery stores. These include:

- Cortland, which has topped many lists of pie favorites for its sweet-tart balance since it was developed at Cornell University in 1898. A distinctive feature is its slow-to-oxidize white flesh.
- Ginger Gold, which has made its way around the country after being found as a chance seedling following 1969's Hurricane Camille in Nelson County, VA. Highly rated as an early season (August-September) choice.
- Granny Smith, which is an old favorite. Its tartness may be balanced by pairing it with a milder variety such as Golden Delicious.
- Jazz, which is a modern apple developed in New Zealand in the 1980's. It has the pronounced sweet-sharp flavor we associate with heirlooms.
- Jonagold, which is a mix of Jonathan and Golden Delicious, giving it a sweet-sour taste. Not a great keeper, it is excellent in the early fall.
- Winesap, which is intensely flavored, with cidery notes. It dates to colonial times.

Albemarle Pippin apples *Photo courtesy of Bernice Thieblot*

I have a personal favorite—Albemarle Pippin—an heirloom and favorite of Thomas Jefferson, which I buy in quantity each November and keep for months.

I learned this way of making pies from a young man whose pies won prizes away from New England grandmothers. (He was willing to share only because I lived far away.) The method is more important than the measurements, which will vary according to your taste. This recipe calls for pre-cooking the apples, which offers these advantages:

- The pie can contain much more fruit.
- No thickening agent is needed to hold the filling together.
- The cook can taste the mixture before it goes into the crust and adjust the seasonings—e.g., more sugar, spice, or lemon—as needed.

The filling can be made ahead—even frozen—and the pie quickly assembled and baked later. I use a store-bought crust. (The prize-winning pies likely had homemade crusts.)

Apple Pie

Serves: 6-8

Note: Use a dark pan or unglazed ceramic pie dish. By dusting the bottom crust with flour, and baking on the bottom rack, you should achieve a crisp, browned bottom crust—most desirable in a pie.

Ingredients

6-8 large apples, peeled and thinly sliced

½ cup light brown sugar

1½ tsp. cinnamon

¼ tsp. mace

1/8 tsp. ground cloves

Juice of half a lemon

2 Tbsp. butter

Pinch salt

1 tsp. vanilla

Double pie crust

Large pinch Demerara sugar (NOTE: Demerara sugar is a type of brown sugar with a slightly larger, crunchier grain)

Steps

1. Heat oven to 375º.
2. Place apples and seasonings, except vanilla, in large, wide saucepan. Stir and cook just until juices are released and apples begin to soften; add vanilla and stir. Remove the apples with a slotted spoon and set aside. Cook the juices until reduced to about 1/3 cup or less of syrup; remove from heat.
3. Place bottom crust into pie dish and dust with a little flour. Fill crust with apples and drizzle syrup over. Moisten the edge with water. Add top crust, trim, crimp. Poke vent holes in top and sprinkle with Demerara sugar.
4. Place on preheated oven’s bottom rack and bake for about 45 minutes, or until well browned.

Featured photo courtesy of Bernice Thieblot

Upcoming Events – November 2021

By Sara Albrecht | November 2021-Vol.7, No.11

Learn How to Become an Extension Master Gardener

November 3 @ 1:00 pm – 2:00 pm
Gordon Avenue Library Meeting Room, 1500 Gordon Avenue
Charlottesville, VA 22901 United States + Google Map

This free informational meeting provides an overview of how to take part in the 2022 training class for Extension Master Gardeners serving the Charlottesville-Albemarle County area. It will be at the Gordon Avenue Library, 1500 Gordon Avenue, Charlottesville.

Find out more »

PIEDMONT MASTER GARDENERS ONLINE PRESENTATION:

Why and How to Reduce Chemical Use in Your Yard and Garden

— Monday, November 15, 3 p.m., Via Zoom and hosted by The Center at Belvedere

Participants will learn how to keep their landscapes safe and healthy using Integrated Pest Management, a practical and ecological approach to controlling pests and diseases that minimizes the use of pesticides and other chemicals. Find the link to the Zoom session at thecentercville.org/event.

Piedmont Master Gardeners – Garden Basics Class: How to Plan for Sequence of Bloom in the Ornamental Garden

November 20 @ 2:00 pm – 3:30 pm
Zoom session

Most ornamental gardens look their best in the spring when everything is fresh and new. Keeping the garden looking interesting for the rest of the year can be more of a challenge. In this presentation, you will learn:

- Methods for developing a sequence of color for visual appeal all season long;
- Tips and techniques for manipulating bloom time; and
- Strategies for coping with the summer blahs in the ornamental garden.

Find out more »

CHARLOTTESVILLE AREA TREE STEWARDS

Tree Basics Classes

The fall 2021 lineup of Tree Basics Classes includes:

- **Winter Invasive Plant Identification and Treatment** (in three parts) Tuesday **November 2,** 7-9 p.m.; Thursday **November 4,** 7:00-9:00 p.m.; Saturday **November 6**: Field trip, Azalea Park

The Fall Tree ID and Winter Invasive Plant classes will each have a field element. You will have the option of joining the Tree Stewards at a woodland location for walks that will illustrate the material provided in the webinars. Check here for more information: Charlottesville Area Tree Stewards/Tree Basics Classes and Tree Walks.

THE NATURE FOUNDATION AT WINTERGREEN
3421 Wintergreen Drive
Roseland, VA 22967

–November Guided Hikes and Events

For information on guided hikes, difficulty ratings, other events, and to register, please see this LINK to the Events page.

BOTANICAL GARDEN OF THE PIEDMONT
Tour the Garden Site
950 Melbourne Road
Charlottesville, VA 22902
Saturday, November 6 & Saturday, November 20
9:00 AM – 9:45 AM

Tours will bring you up to date on all happenings and all that is being planned for our exciting public garden.
Tours are approximately 45 minutes.
For social distancing, tours will be limited to 16 people, be sure to RSVP to reserve your space.
To RSVP, email rsvp@piedmontgarden.org or call (434) 953 0060. Visit this LINK for more information.

LEWIS GINTER BOTANICAL GARDEN

Grow Native: Landscaping with Virginia Natives
Zoom Webinar Series

Tuesday, November 9
6:30 – 8 p.m.
Conservation Landscaping with Natives
with Carol Heiser

If you've heard that using native plants in your yard helps improve the environment for everyone, but are not sure why or how to do that, this series of webinars brings you up to speed on ways to turn your home and garden into a native-friendly, sustainable, and resilient habitat for birds and other wildlife. For more information and to register, see this LINK.

DOLLY MADISON GARDEN CLUB
Lecture and Brunch
Marianne Willburn, "Big Dreams, Small Garden"
THE BARN at THE INN at WILLOW GROVE, ORANGE, VA
Wednesday, November 10
10:00 AM – 12:00 PM

See this **LINK** for more information and to register. Space is limited.

VIRGINIA NATIVE PLANT SOCIETY
Update on the Botanical Garden of the Piedmont
Ivy Creek Natural Area – Education Building
1780 Earlysville Road
Charlottesville, VA 22901
Wednesday, November 10
7:00 PM – 9:00 PM

Jill Trischman-Marks, Executive Director of the Botanical Garden of the Piedmont, will briefly outline what has already been achieved in the process toward building the garden, give insight into the road ahead, and provide information about how the Garden is responding to needs in the community.

So far, Botanical Garden of the Piedmont (BGP) has been driven by the community's input, aspirations, insights, and desire to be a place of healing, unity, education, and beauty. The design and construction of Botanical Garden of the Piedmont is a very ambitious project. For more information about the Garden visit this LINK.

MONTICELLO'S TUFTON FARM

Wreath Workshop
Meets at Monticello's David M. Rubenstein Visitor Center
Dates in November and December (starting Nov. 27)
Times vary
$80 per reservation

These fan favorite events will once again be led by Monticello Guide and Floral Designer, Lou Hatch, Monticello Curator of Plants, Peggy Cornett, and a talented team of workshop instructors. Attendees will create a beautiful door decoration that will last throughout the season.

Workshop attendees receive guided instruction on different styles of wreaths, including traditional, natural, and modern.

Participants must bring their own hand pruners, sharp floral snips, and garden gloves.

For the safety of all, appropriate face masks are required at all in-person workshops. Light snacks and beverages will be offered for consumption outdoors.

For more information and to register, see this LINK.

WILDROCK

Creepy, Crawly, and Cute Trail Adventure
6600 Blackwells Hollow Road
Crozet, VA, 22932
Dates in November from 10:00 AM to 3:00 PM
$20 per reservation

Uncover the haunts of the season on Wildrock's Creepy, Crawly, and Cute Trail! Along the way find spooky spider webs, festive installations, and ghoulish décor. To learn more about this and other trail adventures, see Wildrock Visitor Reservations and Nature Play & Discovery Center. Wildrock Walks are self-guided and timed to promote social distancing. $20 per reservation, scholarships available upon request.
Please note: The trail is moderate difficulty and is not stroller friendly.

Visit this LINK for dates and to register!

THE BOAR'S HEAD RESORT

Winter Wander
200 Ednam Drive
Charlottesville, VA, 22903
November 26, 2021 – January 30, 2022

"The beauty of light and the whimsy of nature intertwine harmoniously in The Winter Wander at Boar's Head Resort. Experience the nature of Boar's Head during this illuminated lakeside stroll, as an extraordinary palette of colorful illuminations blankets the natural surroundings for a magical show of lights like no other."

For more information and to reserve a space, see this LINK.

MONARCH JOINT VENTURE
2021 Monarch Conservation Webinar Series
4th Tuesday of the Month *
2:00 PM EST

The Monarch Joint Venture is partnering with the U.S. Fish and Wildlife Service National Conservation Training Center to put on another year full of informative and inspiring webinars on all things monarch. Webinars will be held live on the 4th Tuesday of the month at 2 PM EST. Each webinar will be recorded for later viewing as well. Check on the session title to register.

Future Webinar Titles:

- **November 16th** – The Monarch Butterfly Fund – Supporting Monarch Conservation in Mexico
- **December 21st** – Eco-literacy and Conservation: The Convergence of Research, Policy and Education

* The November and December dates have been moved to avoid conflicting with major holidays. Please note this list is subject to change. Their EVENTS PAGE will have the most up-to-date information on the webinar series, as well as a calendar of additional monarch-related events, and information on recordings of past webinars.

VIRGINIA COOPERATIVE EXTENSION (VCE) VIDEO LIBRARY

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

Planning Your Fall Garden
Rose Rosette Disease, Parts 1 and 2
Plant Disease Clinic: IDs and Diagnoses
Weed Identification: IDs and Diagnoses
Soil Testing Lab: IDs and Diagnoses

For these and many more videos that address specific topics or those of more general interest, see this **LINK**.