March 2016-Vol.2 No.3

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Saving the Rain

By Cleve Campbell | March 2016-Vol.2 No.3

Saving rainwater for gardening may be an idea whose time has come. Whether you think California's endemic droughts are an anomaly or the harbinger of things to come, even a short-term lack of water for residential gardeners can be serious. It makes the difference between flowers with colors that pop, vegetables with natural sweetness, green lawns that spring under your feet versus a brown, droopy landscape canceling out all your hard work. Water is indeed the elixir of life.

Although many plants can endure dry periods, there are critical stages in development that require water. The germination of seeds begins with a steady supply of moisture, not too much and not too little, in order to break down the seed coat and feed the delicate embryo. If bedding plants are set out in the garden, daily watering for the first few days helps roots take hold. Some vegetables have specific needs as they near fruiting. Diane Relf points out that "corn needs water at two crucial times: when the tassels at the top are beginning to show, and when the silk is beginning to show on the ear. If weather is dry at these times, water." "June Tips: Vegetables" ext.vt.edu/tip-sheets. It's water that swells the fruit and aids the color in our blossoms. Availability of water at these particular times is necessary for good results.

Storing and making use of rainwater not only saves money and helps the environment by reducing wasted runoff, it also offers significant benefit to plants with a supply of relatively clean, soft water. Saving the water than comes from the sky begins with conservation in the broadest sense and adds value to the effort we put into making things grow. In order to set up your own rainwater harvest, you need to consider collection, storage and delivery systems.

Collection. Our gardens suffer when rain is either stingy or overly generous. A downpour can cause erosion that removes valuable topsoil. Run-off in urban areas washes pollutants into streams and overtaxes storm water drains. On the other hand, extended dry spells starve plants and may result in wells going dry or restrictions on the use of public water supplies. The **easiest collection method** for most of us involves capturing the rainwater that comes off your roof. Depending on the size of your roof, even a gentle shower can produce hundreds of gallons. Instead of going into the neighborhood drains and ditches, the water you save can be gradually added in the garden, also supplementing groundwater.

Before going further with collection schemes, consider these practical questions:

First, how much water do you want or need to have available for the growing season? This will depend on the size of your garden and the average rainfall in your area.

Second, how much can you conveniently store? The storage options range from a modest barrel tastefully tucked into a corner and extend all the way to an underground cistern.

Third, are there legal restrictions, zoning regulations, or courtesies to be considered? While I'm not aware of municipalities in central Virginia restricting rainwater-harvesting — as we find happening in some western states — neighborhood covenants about appearance may apply to your situation.

The simplest system places a barrel directly under a downspout. If you line up several barrels, PVC pipes can connect one or several downspouts into a central supply line to collect water and carry it to the first barrel. Pieces of hose will take overflow from the first barrel to a second and so on. Calculating the footprint of your house in square feet will give a rough estimate of the amount of water coming through your system. **Use the following rule: one inch of rainfall on a 1000 square foot house** produces approximately 600 gallons. That's a lot of H2O.

Roofing materials make a difference. In fact, some roofing materials are toxic. Wooden shingles treated with **chromated copper arsenate** render rainwater from those roofs **unusable** for the garden. **Zinc antimoss strips** have the same deleterious effect. bbg.org/gardeningwithrainwater.

Water from the gutters goes underground to a 2400 gallon cistern. Photo: David Garth

Asphalt shingles tend to accumulate bird droppings and particulate matter, but those pollutants are usually washed away with the initial runoff. You'll want some sort of screen to catch larger trash such as leaves. In addition, if you want to control that initial runoff pollution, you may want to look at a couple devices on the market that allow diversion of that "first flush." A list of products is located at the end of the article by the Brooklyn Botanic Garden at bbg.org/gardeningwithrainwater. Or you might want to simply create your own "first flush diverter" using a standpipe. If you're handy, you might be inspired by the detailed photos and drawings of such diverters at oregonstate/rainwaterharvesting.

Metal roofing will have fewer pollutants than asphalt shingles, and these more limited pollutants can be diverted with the same "first flush" devices described above.

The article "Rainwater Harvesting for Gardening Use" is actually a spiffy slideshow well worth a look. ~~It's worth a detailed look.~~ extension.oregonstate.edu/rainwaterharvesting.pdf.

Except for the prohibition on rainwater from chemically treated roofing, scientific tests of rain barrel water in New Jersey indicate that "**overall the water quality of the rain barrel water [is] very good.**" Still the researchers at Rutgers concluded that —

> *[e]ven though a low percentage of samples exceeded the irrigation limits, caution is still warranted when using harvested water to water a vegetable/herb garden to reduce the risk of exposure to a harmful contaminant like E. coli.*

Rutgers.edu/pubs.

The Rutgers scientists suggest that homeowners who do not have a "first flush" diverter, should clean and treat their rain barrels with small amounts of bleach — about 1 oz. of household bleach per month. For more details on these recommendations and the research upon which they are based, see "Rain Barrels Part IV: Testing and Applying Harvested Water to Irrigate a Vegetable Garden," at Rutgers.edu/pubs.

Storage. It turns out that large food-grade barrels, usually made of a plastic material and holding 40-80 gallons, are often available to the public for little or no cost. Similar commercial barrels can be purchased for appearance and convenience. My barrels ~~pictured~~ once held soft drink components. A brown barrel is produced commercially for gardeners. Remember that water is heavy. At 8 pounds per gallon, a 50 gallon barrel weighs 400 pounds; so plan the foundation and placement of these items carefully. Do not attempt to use containers that once held petroleum products or harsh chemicals since they are too difficult to clean.

One advantage of plastic is that holes can be drilled easily to securely fit a piece of hose near the top to carry the overflow and to attach a spigot near the bottom. Remember to leave enough space and height to fill a watering can or bucket. Locating the storage container just a foot or two higher than the garden allows you to utilize gravity to carry water to your plants by means of a hose.

A plastic tank collects water from a downspout for use in a courtyard. Photo: David Garth

Periodic maintenance for your system can be lessened if the containers are *opaque*, in order to discourage algae growth, *vented but screened*, to reduce odors and mosquitoes, and *cleanable* since some dirt will find a way inside.

A larger and more elaborate storage facility utilizing a tank would service a larger garden and prepare for longer dry spells. Such tanks can be made from concrete and buried in the ground much like a septic system, or fabricated from metal or fiberglass. A simple pump and hydrant system will deliver water under pressure.

Delivery. As the previous section implies, bringing water to your plants can be as straightforward as turning on the spigot to fill a watering can or as complicated as setting a timer to start pumping water through an irrigation system. Every situation is a little different and every gardener will have to think about his or her own preferences within the limits of their situation. The following quotation sums up the value of careful planning for a useful system:

Cistern water is pumped to a hydrant beside the garden. Photo: David Garth

> *It isn't easy to come up with "one size fits all" instructions for building rainwater harvesting systems because of variations in styles of roofs, downspouts, storage tanks, and garden layouts. You have to use a combination of research, common sense, ingenuity, and dumb luck to design and build your system.*

Lenny Librizzi, "Gardening with Rainwater" bbg.org

Maintenance. In addition to keeping your gutters running clear of leaves and branches, the screens that keep out smaller particulate matter need to be cleaned. Annual inspection of storage units will insure efficient use of vents and overflow outlets as well as preventing mosquito breeding. The advantages for our pocketbooks and our environment as well as our gardens make the effort worthwhile.

SOURCES:

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"Plant Propagation from Seed," Diane Relf, http://pubs.ext.vt.edu/426/426-001/426-001.html

"Rainwater Harvesting," David J. Sample, https://pubs.ext.vt.edu/426/426-125/426-125_pdf.pdf, (this article has a useful bibliography).

Serviceberry

By Patsy Chadwick | March 2016-Vol.2 No.3

The bees buzzing around my back yard know a good thing when they see it! They know that the little tree planted just outside my breakfast room is something special. But the bees are not there to admire the tree with its pretty five-petaled, star-shaped blossoms. They're there along with the butterflies to feed on the plentiful nectar and pollen. Later on, around June, the blossoms will give way to sweet juicy berries. Then, the mockingbirds, bluebirds, finches, and other avian species will join the party.

So what's so special about this tree? It's a serviceberry – a native plant noted for its merits as a landscape plant and as a valuable host to a broad range of wildlife species. In the wild, serviceberries may be found growing in moist woodland sites and along streams. Their white to pinkish-white flowers are some of the first to appear in spring. Their berries, edible by humans and wildlife alike, resemble blueberries in size and color but taste sweeter. Delicious raw, the fruit is also used for jams, jellies, and pies.

Amelanchier Canadensis (Serviceberry) Fall Foliage

The autumn foliage, which is characteristically orange to deep red with some shades of yellow or purple, is quite beautiful.

The botanical name for this lovely little tree is *Amelanchier* (pronounced Am-uh-LAN-kee-er). The *Amelanchier* genus consists of more than two dozen species of deciduous trees and shrubs, all but two of which are native to North America. Members of this genus can be found in every state except Hawaii.

Amelanchier has a variety of common names, which can be confusing. In the northern part of the United States and in Canada, it is known as Saskatoon — its native American name. In the eastern part of the United States, it is primarily known as serviceberry. According to legend, the tree was given that name in 19th century New England because it bloomed in April, when the spring thaw allowed roads to become passable and rural residents could once again attend religious services. For people who preferred to skip services and go fishing instead, the flowers appeared coincidentally when the shad migrated upstream from the ocean to spawn. So the name "shadbush" stuck. The plant was also dubbed "Juneberry" because June is when the fruit ripens. Regardless of what you call it, it's a splendid little tree that deserves to be more widely planted than it is in the ornamental garden.

SERVICEBERRY SPECIES NATIVE TO VIRGINIA

Seven native species of serviceberry may be found in Virginia, according to *Flora of Virginia*. The most common species found in Albemarle County include:

- ***A. arborea* (downy serviceberry)**. It's called downy serviceberry because of the fine hairs that appear on the leaves and twigs in the spring. This species has a rounded habit, is sometimes multi-stemmed and shrubby, and has ovate leaves that are gray and hairy when young and yellow to red in autumn. Fragrant white flowers open in mid-spring, followed by red-purple fruit. The tree averages 25 feet in height and 30 feet in width. The ample flowers and pollen resources attract pollinators in the spring. The early summer berries are edible by both humans and wildlife.

Amelanchier arborea (Downy Serviceberry)
Photo Credit: University of Maryland Arboretum

- ***A. laevis* (Allegheny serviceberry)**. This species is closely related to *A. arborea*. To tell the two species apart, the unfolding foliage of *A. laevis* is a bronze color and the young leaves lack hair (the Latin name "laevis" means hairless). A spreading, sometimes shrubby tree, its ovate leaves turn from bronze in spring to mid-green in summer, then to orange or red in autumn. The white flowers in midspring are followed by sweet, blue-black fruit in early summer. A mature specimen averages 25 feet in both height and width.
- ***A. Canadensis* (shadblow or shadbush).** Whereas *A. arborea* and *A. laevis* look very similar in size and shape, *A. Canadensis* tends to be smaller (20 feet tall and 10 feet wide) and has a more upright, suckering, tightly multi-stemmed growth habit. This species occurs naturally in wet sites, bogs, and swamps and is more tolerant of clay soil than the other species. The oblong-elliptic to obovate leaves are white-hairy when young, becoming almost hairless when mature, and mid-green in summer, yellow to orange and red in autumn. The white flowers in spring are followed by sweet, black fruit.
- ***A.* x grandiflora (apple serviceberry).** In addition to a number of cultivated hybrids, many naturally occurring hybrids exist in the wild between Alleghany serviceberry (*A. laevis*) and downy serviceberry (*A. arborea*). Commonly known as apple serviceberries, the botanical name for the plants grouped under this cross is *A. x grandiflora*. As a group, these hybrids have the largest flowers of all the serviceberry species and do well in shadier growing conditions than the species as a whole. Most importantly, the hybrids in this group are widely sold because of their glorious orange and red fall foliage. A few examples of the hybrids available commercially include:
    - '**Autumn Brilliance'** – A vigorous and reliable grower. Faster growing and more resistant to leaf spot and fire blight than the species. Noted for its brilliant red autumn color.
    - **'Ballerina'** – An upright grower with spreading branches. Foliage turns red and purple in autumn. Highly resistant to fire blight.
    - **'Cole Select'** – One of the most colorful of the apple serviceberries, it has consistent brick red and orange autumn coloration.
    - **'Princess Diana'** – Relatively slow-growing with outstanding red autumn color. Often available as either a single trunk specimen or as a multi-stemmed specimen.
    - **'Robin Hill'** – Pink-tinged buds, which fade to white blossoms, differentiate this cultivar from other serviceberries.
    - **'Rubescens'** – A pink-flowered form. The dark pink buds fade to pale pink flowers.
    - **'Strata'** – Good horizontal branching potentially makes this selection a good alternative to dogwood in the landscape.

HOW TO GROW SERVICEBERRY IN THE ORNAMENTAL GARDEN

Serviceberry is an easy plant to grow. Plant in autumn if possible. Specimens planted in spring take longer to become established in the landscape and require more water initially.

- ***Soil*** — Plant in acidic, fertile, moist but well-drained soil with a pH between 5.5 and 7.0. This plant will tolerate a wide range of soil conditions, including clay and sandy sites.
- ***Light Exposure*** – Plant in full sun to light shade. Flower and fruit production will be better in full sun.
- ***Water*** – Keep root ball moist until the plant is well established. This is most critical during the first year of growth. Once the tree is well established, it should be reasonably drought tolerant. However, during a prolonged dry period, provide water occasionally to keep the tree from becoming stressed.
- ***Mulch*** — Spread a 3-inch layer of mulch over the root zone to regulate soil temperature and

hold moisture.

- ***Pruning*** — Prune for a good branch structure when the tree is young. This tree typically grows as a multi-stemmed specimen but a single trunk can be maintained with some training while the tree is young. To maintain a tree form, prune the root suckers as they appear each year. Otherwise, the plant will revert to a shrubby growth habit. Per VCE publication on Pruning Schedule, to keep the overall size of the tree in check, prune the tree immediately after flowering (April through June). Prune before July because that's when the plant sets next year's buds.

SERVICEBERRY PESTS AND DISEASES

Serviceberries are closely related to apples and pears, all of which are members of the rose family (Rosaceae). They are therefore susceptible to many diseases affecting other species within this family, including fire blight and fungal diseases. Fungal diseases, such as powdery mildew and leaf spot, are generally not a serious problem for serviceberries and may be prevented by selecting resistant cultivars. Planting trees in full sun as opposed to shade may also make the trees less susceptible to disease. Depending on the severity, fungal diseases may generally be ignored, but prompt and thorough fall cleanup of diseased leaves will prevent the overwintering of fungal spores.

A number of insects, such as aphids, borers, Japanese beetles, scale and spider mites, may be pests of serviceberry. However, damage from these insects is generally not a serious problem. To help prevent pest damage, provide plenty of moisture to newly planted serviceberries while they are becoming established. Keep in mind that stressed plants tend to succumb to pests and diseases more than well-maintained, healthy plantings.

Serviceberry is seldom bothered by deer.

USES FOR SERVICEBERRY IN THE LANDSCAPE

Serviceberry is very versatile and plays many useful roles in the landscape. Depending on the natural tendencies of the plant and your preferences, grow it either as a large shrub or prune into a tree form with either single or multiple trunks. Some suggested uses for serviceberry in the landscape include the following:

- Plant the tree form as a single specimen and dress it with a simple mulch to allow the tree to take center stage.
- Under plant with low growing annuals, perennials, bulbs, or ground covers. Serviceberries cast light shade and their roots are not invasive. As a result, plants that prefer partial shade generally do well planted under them.
- Plant as an accent or anchor in a foundation planting, keeping the mature size in mind when judging how far away from other plants and building foundations to site the plant.
- Group several of them together to form a small grove. They look best planted in odd-numbered clusters.
- Incorporate into a mixed border with other small trees and shrubs. Again, keep in mind the mature size of all the plantings.
- Plant against a backdrop of evergreens. The heavier "weight" of the evergreens will provide a striking contrast with the serviceberries' open, airy form, flowers, and foliage.
- Plant as a border or along property lines, paths or walkways.
- Plant as a windbreak. It is wind resistant and can help protect other plantings on windy sites.
- Use as a privacy screening around a deck or patio.
- Plant in a rain garden to help slow storm runoff. The roots will withstand soggy soil for a short

while as long as the soil does drain.
- Plant along a stream as a buffer plant.
- Plant as a host plant for Lepidoptera, songbirds, pollinators, and as habitat for wildlife.
- Use in a naturalized setting, such as at the edge of a wooded area.
- Plant near black walnut trees if you are looking for small trees or large shrubs that can tolerate the alleopathic effects of juglone.
- Plant under or near power lines, where the tree's small size will not be a hindrance.

SUMMARY

This small but graceful native tree offers year-round interest to the landscape – white blossoms in spring, attractive medium-textured foliage and edible fruits in summer, colorful foliage in autumn, and handsome smooth gray bark in winter. Whether pruned into a small tree or grown as a large shrub, serviceberry is easy to care for, drought tolerant once established, and a versatile choice for the ornamental garden. Furthermore, as host to 58 wildlife and 35 bird species in Virginia, this plant clearly surpasses most other common landscape plants in terms of ecological benefits. What more can you ask of a plant?

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The Ornamental Garden in March

By Patsy Chadwick | March 2016-Vol.2 No.3

Hallelujah! March has arrived and with it, the first stirrings of spring! Although you may see buds swelling and spring bulbs emerging, don't rush out to your flower beds with garden tools and seed packets in hand just yet. March is a fickle month. The weather can be cold and blustery one day and warm and pleasant the next. Until the weather becomes consistently milder, use this time to get organized. Make a list of all the tasks you want to accomplish in the garden this month. Perhaps the following suggestions will provide inspiration.

Tidy flower beds. Avoid walking in your flower beds if the soil is wet. Instead, reach into them to remove matted leaves, twigs, dead limbs, and other debris that accumulated over the winter.

Remove any weeds that have overwintered. It's amazing how quickly weeds can get out of control in the early spring. Tackle them now (again, avoid walking on wet soil) before they take over.

Redefine bed edges. The soft soil will make it easier to edge. Tip: You can use a weed whacker for this task but it's better to use a sharp straight-edged shovel or a half-moon edger to cut an edge about 2 in. straight down on the grass side. This will keep the grass from growing into the bed. As you redefine the bed edge, scoop loosened soil in toward the flower bed.

Neat edge enhances this garden's curve

Half-moon edging tool

The result should be a neat straight edge with soil gently mounded away from the trench.

Prepare a soil sample to have it tested for pH and nutrient content. On average, a soil test should be conducted about once every 3 years. Contact the Virginia Cooperative Extension (email albemarlevcehelpdesk@vt.edu or call 434-872-4583) for instructions on how to get a soil test done or check their publication 452-129, "Soil Sampling for the Home Gardener" (pubs.ext.vt.edu/452/452-129).

Cut back perennials that were left standing over winter. Wait until the latter part of March or even early April to complete this chore.

Finish any pruning tasks that were not completed in February. This includes cutting back ornamental grasses before new growth emerges. Tip: You can use a lawn mower set at 2 to 3 in. to cut back Liriope. Don't cut it any lower than that or you may damage the crown of the plant.

When performing late winter or early spring pruning tasks, don't forget to **cut back subshrubs.** These perennial, generally low-growing, shrubs have woody stems except for the new growth's terminal part, which dies back annually. Examples of subshrubs include:

- **Butterfly bush (*Buddleia*)** — Prune back all stems to about 1 to 2 ft. from the ground.
- **Blue mist shrub (*Caryopteris*)** — To neaten the shrub or encourage new growth, cut back by about a third. To rejuvenate the shrub, cut back to about 6 in. from the ground.
- **Russian sage (*Perovskia atriplicifolia*)** – Russian sage foliage is generally best left standing in the fall to provide winter interest and to help protect the crown. In early spring, cut back the old foliage to within 6 in. of the crown.
- **Lavender cotton (*Santolina chamaecyparissus*)** – Cut back to within 6 in. of the crown every 2 to 3 years.
- **Heather (*Calluna vulgaris*)** – Prune flower stems back to the base of old flowers. Snip the green part only. Don't cut down to the brown woody portion.

Cut back to green wood any tree or shrub twigs that were affected by winter kill. On smaller twigs, scratch the bark with your fingernail to determine whether it is alive.

Plant bare-root (dormant) roses after the ground thaws but is still cool and moist without being overly wet. Generally, this means planting from 6 weeks before until 2 weeks after the last frost. Check the canes to make sure they are green and healthy and not dried up. Tip: For best results, buy No. 1 grade roses with at least 3 to 5 well-developed canes that have not yet leafed out. If you're not sure how to plant bare-root roses, here are a few pointers:

- **Before planting bare-root roses,** unwrap them from their packing and soak the roots in a bucket of water for about 8 to 12 hours to rehydrate the roots. The entire plant may be immersed to rehydrate the canes. After soaking, prune any roots that are damaged, diseased, or too long.
- **Dig the planting hole wide enough and deep enough to comfortably accommodate the roots.** Set the plant in the hole and spread the roots evenly around it. For grafted roses, position the plant so that the bud union (the swelling at the base of a grafted plant where the new plant was grown on the rootstock) is slightly below the soil surface. This will protect it from freezing in the winter.
- **Backfill the planting hole until it is two-thirds full** with soil that has been amended with well-rotted manure or compost. Gently firm the soil to ensure good contact between it and the roots. Add water to settle the soil and eliminate air pockets. After the water drains, add more amended soil to fill the hole and water again. Don't tamp the soil because that compacts it.
- **Spread 2 to 3 in. of mulch** over the root zone to help keep the soil cool and to retain moisture.
- **Water the plant about once a week after growth commences.** While moisture is important, don't go overboard. Too much water may rot the roots.

Although you probably yearn to be outside working in the soil, **don't lose sight of the continuing needs of your houseplants.** Monitor moisture and humidity levels, check for pests, and continue giving each pot a quarter turn every so often so that they don't learn toward the light.

Start feeding houseplants with a diluted solution of soluble houseplant food.

Pinch back houseplants that have grown leggy over the winter. Pinching causes the plant to fill out and grow fuller looking. Wait until the end of March or early April to complete this task.

Refresh the bark-growing medium for orchids. Bark tends to break down over time, which may affect aeration at the root zone. Depending on the type of orchid you have and its specific requirements, replace the bark about every 18 to 24 months.

Check to see if houseplants need to be re-potted. Spring is a good time to repot houseplants before the

active growing season begins. If you can see roots on the surface of the soil or emerging from the drainage hole in the bottom of the pot, the plant is root-bound and needs to be re-potted into a larger container. Here are a few tips on how to re-pot a houseplant:

- First, choose a pot that is about 1 to 2 in. wider and deeper than the current pot. If you select too large a pot, the visible part of the plant won't grow until the roots begin to fill up the pot. IMPORTANT: If you're re-using a pot, scrub it first to remove any traces of old potting soil or other debris that might harbor plant diseases. Rinse the pot well (particularly if you disinfect it) and allow it to dry.
- Turn the houseplant on its side and gently work it out of the current pot. If it won't budge, tap the pot on a hard surface to see if that will free the plant. If it doesn't, you may need to slide a knife or trowel around the inside of the pot to work the root ball free. Just be careful not to damage the root ball.
- Examine the roots once they are freed from the current pot. If you see a lot of roots coiled around the bottom of the root ball, loosen them, stretch them out, and snip them off. That will stimulate the plant to develop new roots.
- Partially fill the new pot with potting soil. Position the plant so that it is centered on top of the soil. Finish filling the pot with the potting soil, leaving about an inch gap between the top of the soil and the top edge of the pot.
- Slowly add water to moisten the roots and to help settle the potting mix. Add more potting mix if necessary.
- Keep the soil evenly moist, but not soggy, while it is adjusting to the new pot.
- Wait about a month to allow new roots to develop before fertilizing the plant.

Finally, here's one more item to add to your "to do" list. If you plan to grow annuals and perennials from seed this spring, **buy the seeds SOON** before the choice selections are all gone.

Starting Seeds Indoors

By Cleve Campbell | March 2016-Vol.2 No.3

Starting seeds indoors is the perfect “fix” for the gardener with cabin fever and a need to get their hands in the soil or simply a desire to get a head start on spring. Despite the frigid temperatures, March is the time to make a seed-planting schedule, to make those final seed purchases, to collect transplant containers and to start seeds indoors for the upcoming gardening season. With a small investment, and a bit of space and care, you can grow healthy transplants that are already to go into the ground outdoors when the proper time arrives.

Why start seeds indoors?

- Growing transplants from seed gives the gardener more choices than are normally available in gardening centers or other retail outlets.
- By growing your own transplants, you can control when you plant them outside. There’s no need to wait until they are available in a retail outlet or to wait for a mail order supplier to ship on a predetermined date.
- Indoor seed starting definitely saves you money. You might not reap these savings at first — if you have some first-year-set up costs.
- Growing your own transplants increases your garden’s output. How? Well, you get a 2- to 8-week head start by starting seeds indoors rather than sowing seeds directly into the garden,

which allows you to get an earlier harvest and makes for a long harvest season. Besides, sowing seeds directly in the garden is not always practical for some crops. For example, tomatoes and peppers cannot be planted until the last frost and after the soil is warmed. If seeded in the garden at that time, tomatoes and peppers need more than a 100 days (including germination time) to produce the first fruit, In addition, newly emerged seedlings are very tender and easily killed by insects or disease or shaded by quicker-growing weeds. Starting your seedlings indoors allows an earlier start in the garden, resulting in earlier yields of certain crops, and allowing for better use of limited garden space.

- You control the environment. If you want organic plants, you have control over the soil, compost, and inputs like fertilizer.

What seeds should you start indoors?

The chart below was adopted from the Virginia Cooperative Extension Publication 426-316 and provides a list of plants recommended for starting indoors.

Plant Production Chart

Crop	Days to Emergence	Optimum Germination Growth Range (º F)	Number of Weeks to Transplant
Broccoli	3-10	65-85 º	5-7
Cabbage	4-10	50-85 º	5-7
Cauliflower	4-10	50-85 º	5-7
Celery	9-21	50-65 º	10-12
Cucumber	6-10	65-85 º	4 (peat pots)
Eggplant	6-10	65-85 º	6-9
Lettuce	6-8	50-65 º	3-5
Melons	6-10	65-85 º	3-4 (peat pots)
Onion	7-10	65-85 º	8
Parsley	15-21	50-85 º	8
Pepper	9-14	65-85 º	6-8
Squash	4-6	65-85 º	3-4 (peat pots)
Tomato	6-12	65-85 º	5-7

Seeds

The first general rule is to start with good seed. Buying seeds from a reputable supplier will help to ensure good germination. If you buy at your at your favorite garden store, check the date on the seed package to ensure that the seeds are fresh. As seeds get older, the germination rates decrease.

Factors Affecting Germination

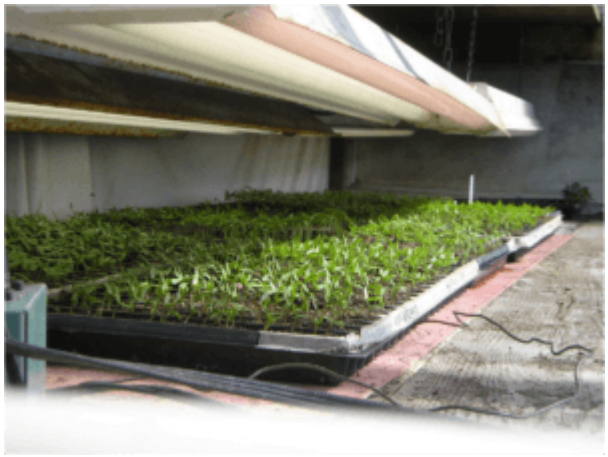
The factors that affect germination and seedling growth are moisture, temperature, oxygen, and light.

Moisture (water): The first step in the germination process is the seed's absorption of water. A continuous

supply of moisture without fluctuation in the growing medium is important to ensure germination.

Temperature (heat): Some seeds will germinate over a wide range of temperatures, whereas others require a narrow range. Many seeds have minimum, maximum, and optimum temperatures for germination. For example tomato seeds have a minimum germination temperature of 50º F and a maximum germination temperature of 95 degrees F, but an optimum temperature of above 80 degrees F. How fast seeds germinate is affected greatly by soil temperature. For example sweet pepper seeds will germinate in 9-14 days when the soil temperature is in the optimal range of 65-80º F. At 55-65º the time to emergence is 21-28 days.

When germination temperatures are listed on the seed packets or in seed catalogs, they are usually the optimum temperatures unless otherwise specified. Generally, a range of 65ºF to 75ºF is best for most plants. This often means that your germination flats may have to be placed in a heated area or on heating mats to maintain that optimum temperature. Remember this is **soil temperature**, not ambient or air temperature.



Seedling trays with heat mats
Source: University of Vermont

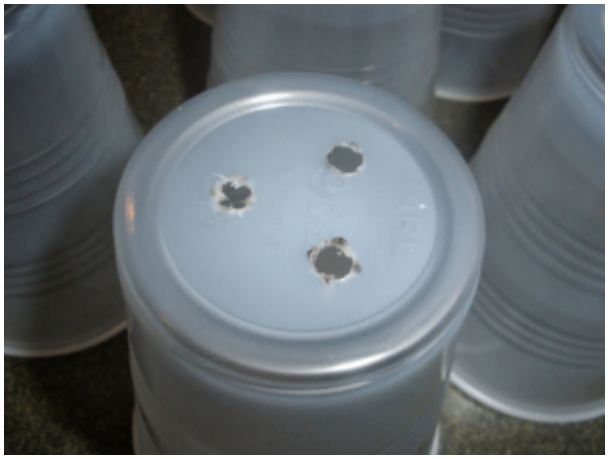
Oxygen: All viable seeds breathe. Their respiration rate increases dramatically during germination; therefore, the growing medium must be loose and well-aerated. If the soil is too wet or compacted, the oxygen supply during germination is reduced, and germination can be severely retarded or inhibited.

Light: Light can either stimulate or inhibit germination, depending on the plant. Although most seeds germinate in the darkness, a few plants, such as lettuce and parsley, require light, whereas others, such as tomato and peppers, germinate best in the dark. Seed catalogs and seed packets generally indicate light requirements. I always take a minute to read the seed packet or seed catalog to determine the light requirements for germination.

Transplant Containers: You can use any type of container which will hold a soil mix and are about 3 inches in depth, and capable of holding a minimum of 3 tablespoon of soil. The container must have holes in the bottom for drainage. There are lots of possibilities for containers — recycled yogurt cups, cottage cheese containers, cut off milk cartons, discarded aluminum trays, and recycled cell packs. New cell packs, peat pots, or peat pellets can be purchased at garden centers, farm supply stores or hardware stores, and are usually (in season) available in large box stores or online sources. I have a gardening friend that creates his own transplant containers from strips of newspaper. Peat or paper pots that break down in the soil are particularly good for raising seedlings that do not transplant easily — such as cucumbers, squash and watermelon.

I**f you are recycling containers that have been previously used for growing plants, be sure to sterilize them before reuse.** Wash them thoroughly with hot water and soap and then soak for 10 minutes in a solution of 1 part household bleach and 9 parts water. After sterilizing them, rinse well and let dry before use.

If you are using recycled non-plant containers such as plastic cups, remember to punch or drill a hole in the bottom of the container for drainage.



Holes punched in plastic cups for drainage.

Growing Medium

A good germinating medium should be fine and uniform, well aerated and loose. The medium should be free of insects, disease organisms and weed seeds. It should also be of low fertility and capable of holding and moving moisture.

Artificial soil-less mixes offer all these desired qualities. The basic ingredients of such mixes are usually shredded sphagnum peat and fine grade vermiculite, both of which are generally free of weed seeds and insects. Avoid using plain garden soil or regular potting soil, as it tends to crust and harden, making it difficult for delicate seeding to "break through." In addition, ordinary garden soil may contain weed seeds and diseases that may contribute to damping off.

Once the seedlings have emerged and developed one or two sets of true leaves, you can transplant them into a slightly larger container with a coarser seedling-growth mix.

When to sow your seeds

You have rounded up all your material: containers, soil and seed. The next thing to be determined is when to plant your seeds. The most critical date to keep in mind is the **last average frost date** in your area. In our area **in central Virginia, it is May 10th – 15th.** For most crops, that date is used in calculating your indoor seed-starting date.

Let's look at tomatoes, for example. Tomatoes cannot be set outside until the **last average frost, May 15th**. Tomato seedlings require about 5-7 weeks after sowing to be ready for transplanting, so counting back 6 weeks from our average frost date of May 15th, I arrive at my targeted date for indoor sowing — around April 2nd.

It's a different story with certain so-called "cold weather" crops, such as cabbage and broccoli. For example,

in our area we can start to transplant into the garden cold weather crops such cabbage around the second week of April, i.e., April 15. If I know that cabbage seedlings require an average of 5 to 7 weeks to be ready for the garden, I assume about 6 weeks indoor growing time. Then I **count backwards** 6 weeks from April 15th and come up with **March 10 as my targeted date for sowing cabbage seeds indoors**.

The varying timings required by different crops could give you a headache. For this reason, I have found that making a schedule for different crops can be a very useful tool.

There are many online sources that provide information on temperature and time requirements for growing transplants. Remember, these are only guidelines. In general, the length of time is based on **optimum germination temperature.** You may need to adjust the time requirement to fit your specific growing environment. Also, the charts are guidelines, and there are always exceptions. For example most charts suggest 6-8 weeks to grow pepper transplants, and I have found that works well for most peppers; however, if you are into growing hot peppers, 6-8 weeks usually is not enough, especially for capsicum chinense pepper types. Chinense varieties include super hot peppers such as Habanero, Scotch bonnet and Bhut Jolokia (Ghost). These super hot varieties, because of their long germination periods and slower growth rates, can take anywhere from 8-15 weeks to grow transplants, again depending on the various environmental conditions. Over the years I have learned to read the seed packets for instructions on growing times. **The information on the seed packets is a must-read.**

Steps in Planting Seeds Indoors

Now that you've figured out when to plant your seeds, you can start sowing seeds. Remember that the containers for starting seeds should be sterile and free of harmful chemicals.

- Pour the germination medium into a clean bucket or small tub. Add water to the germination medium so that it is saturated like a sponge. If you squeeze a handful of the medium and water runs out it is too wet, so add more medium.
- Fill the container to within ¾ inch of the top with the growing medium. Make sure the container has adequate drainage.
- Add two to three seeds per pot or cell, unless the seed is old or has a low germination rate. In that case, add a few more seeds.
- Cover the seeds with the germination medium or horticultural vermiculite. How much to add? Follow the depth instructions on the seed packet.
- Label the containers. It's useful to note when you planted the seeds and how long they took to sprout. Keep a journal of what you did and when you did it. Your observations will be critical in fine-tuning your planting strategies and schedule in the years ahead. That's the way to achieve success in producing vigorous, sturdy, short, dark green transplants.
- Water each container very lightly to ensure the seeds have made contact with the soil. A misting bottle works well.
- Cover the container(s) with plastic or cling wrap and then place in a warm area or on a heat mat. This keeps the seeds warm and moist to increase germination rates.

Plastic cover over planting container

- Each day check for germination. Once the seeds have sprouted, immediately remove the plastic wrap or plastic dome and move into strong light. A south window sill is a good place, but remember to give the pots/containers a turn each day so the plants grow straight instead of bending towards the light. The use of fluorescent lighting is recommended to avoid spindly plants. **If you are using fluorescent lighting, position the lights 3 to 6 inches above the seedings.** Closely monitor the plants, and adjust the light up as the seedlings increase their height. The lights should be kept on 12 to 16 hours per day. Regular light bulbs or incandescent bulbs are not recommended because they produce too much heat in relation to the light given off. They also lack the blue spectrum light that keeps seedlings stocky and dark green. Keep the soil moist and maintain air temperature of 65-70º F.

Watering and Damping Off

Keep the soil moist while the seeds are germinating. I recommend a a spray bottle, which allows you to mist the surface gently without washing away the potting mix. If the containers are sitting in a tray, you can simply add water to the tray, where it will move upwards into the growing medium. Be sure to drain excess water that remains or accumulates in the tray to keep the roots healthy. **The planting medium should be kept moist, <u>not</u> wet.** If the soil is too wet you run the risk of retarded root growth that often leads to disease problems, such as damping off.

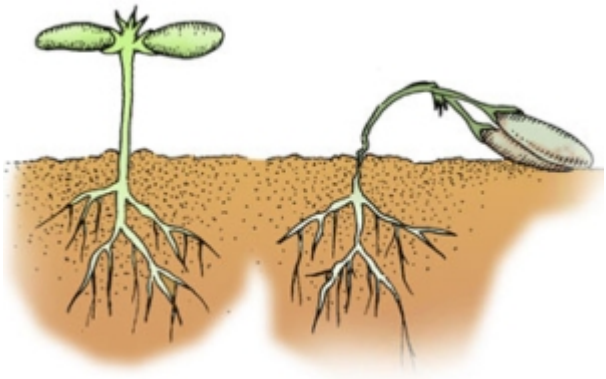
Damping Off is a plant disease caused by several fungi, including molds such as *Phtophthora, Pythium, Fusarium* and others. These fungi occur in all soils and are water-loving organisms that thrive in wet, cold, or poorly drained soils.

Size does matter — seedlings should not be started in large pots, because large containers hold more water, more than the small seedling can use, making an ideal environment for damping-off. It's recommended to start your seeds in small containers first, and transplant them into larger containers once the seedlings have germinated and developed.

A fungus in the soil can attack seeds and seedlings as they begin to germinate and grow. **Pre-emergence damping-off** occurs when the seed or seedling dies before it reaches the soil's surface, whereas post-

emergence damping-off occurs after the seedling emerges and grows to a height of an inch or two, causing it to wilt, fall over and die. Plants that are attacked by these fungi but do not damp-off are often stunted. A constricted stem at or just below the soil line is a sign that the plant underwent a fungus attack.

Damping-off is controlled primarily through good sanitation, high quality planting material, and proper cultural and environmental controls. Damping-off is worse when soil is wet or compacted.



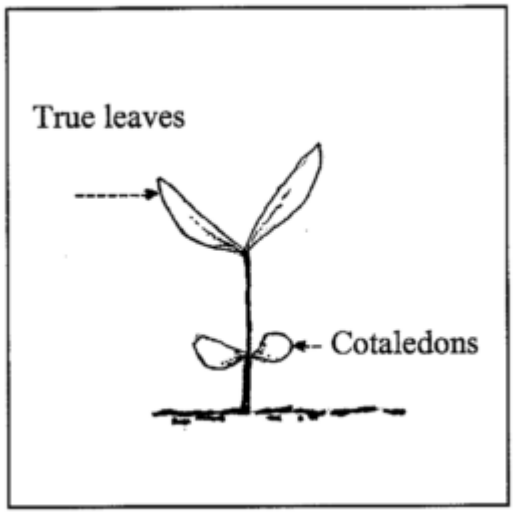
Damping-Off (Rhizoctonia) is a fungal disease of seedlings that girdles the plant stem where it enters the growing medium, causing it to topple over.
Source: USDA

Thinning Out

As soon as your seedlings have developed at least one set of leaves, you need to provide them more room. If you have planted them in individual pots or cell packs you can take a pair of sharp scissors and simply snip the smaller plants, leaving only one plant, the strongest and healthiest plant. A second option is to gently separate the small plants with a clean knife or plant label. My favorite tool for separating seedlings is a small cocktail fork. Gently ease the seedlings apart, being careful to avoid tearing the roots in the process. Then repot the seedlings in a slightly larger pot. **Handle small seedlings by their leaves**; those small, thin stems break easily. Failure to thin or transplant crowed plants can result in spindly seedlings that may not develop properly,

Fertilizing

The seed will provide sufficient nutrients until the seedling develops its first set of true leaves. The true leaves are a sign that the seedling has used up its store of nutrients in the seed and will require outside fertilization. Once the first true leaves appear, water with a half-solution of fertilizer; you can use a water-soluble all purpose plant food or organic fertilizer such as fish emulsion. Fertilize only once a week. Water as needed the rest of the week. As the seedlings grow, gently **brush them to and fro** with your hand to “mimic a gentle breeze.” This will help strengthen the stems and prevent excessive stem elongation (leggy plants).



Depiction of true leaves
Source:USDA

Hardening-off

Before transplanting seedlings into the garden, it's important to condition the plants for outdoor conditions. This conditioning is achieved by hardening the plants. Hardening is the process of gradually acclimating tender plants to the outside environment. Harden the plants two weeks before transplanting by moving them into a shaded area outdoors such as a porch or under a shrub. Then, move them gradually to sunlight for a short time during the day. Slowly increase the length of exposure time. Do not expose the seedlings to freezing temperatures or strong winds. Reduce watering, but do not let the plants wilt. After proper hardening, carefully transplant the plants into the garden.

Seeds have their individual needs. Always follow the instructions on the seed packets, as that is your recipe for success. Thanks for joining us in the Garden Shed. We hope to see you again next month.

Resources:

USDA, Community Gardening Guide, "Season Extension," nrcs.usda.gov/publications9781.pdf

"Plant Propagation From Seed," Va.Coop.Ext. Publication Number 426-001,
http://pubs.ext.vt.edu/426/426-001/426-001.html

"Seed for the Garden," Va. Coop. Ext. Publication Number 426-316
https://pubs.ext.vt.edu/426/426-316/426-316.html

"Capsicum Chinense Pepper Species," grow-organic-vegetables/capsicum-chinense-pepper-species

Cornell University, Planting Options
http://www.gardening.cornell.edu/homegardening/scene5bb9.html

"Damping Off Diseases in the Garden," University of California Agriculture & Natural Resources,
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74132.html

Seed Savers Exchange, Habanero Pepper (Capsicum Chinense)

http://www.seedsavers.org/mustard-habanero-pepper

“Back to Basics: How to Start Seeds indoors,” Texas Coop.Ext., aggie-horticulture/2002/may02

“A Practical Guide to Using Mechanical Stimulation to Prevent Stretching in Tomato and Cucumber Transplants,” Cornell University, hort.cornell.edu/tomato/tomatobrush

In The Vegetable Garden-March

By Cleve Campbell | March 2016-Vol.2 No.3

March has finally arrived, garden centers and nurseries are open for spring business with racks of irresistible seed packets on display, awaiting the eager gardener. And, after a cold, wet and snowy winter, the vegetable gardener has spring fever and is craving a bit of a dig in the dirt. The following list of cool weather crops were compiled from the VCE publication "Vegetable Planting Guide and Recommended Planting Dates" and indicates **which vegetables may be planted in our area after the middle of March:**

Asparagus (crowns)

Collards

Leeks

Mustard

Kale

Onion (sets)

Peas

Spinach

Radish

Turnips

Potatoes

In a hurry to get those tomato and pepper seeds started indoors? The general rule of thumb is to start tomato and pepper seeds indoors about 6-8 weeks before the final frost, which in our area is around May 15th (VCE Publication 426-331), which means we need to hold off until around the end of March. Peppers, however, I have found need about an additional 2 weeks head start and can be started around the middle of March.

It's not too late! It never fails — whenever I contact the local extension office about a problem in the garden or orchard, their first response is "when was the last time you did a soil test and what were the results?" So now before I ask, I test! A soil test is a valuable tool for not only identifying problems but preventing problems as well. A soil test is a tool that allows you to keep your soil at optimum fertility levels and pH levels. To keep your garden fine-tuned you need to perform a soil test every 2-3 years. A soil sampling kit complete with instructions is available for free at your local Virginia Cooperative Extension Office. For additional information on soil testing look at the VCE Publication VCE PUBLICATION 452-129.

Lettuce is very sensitive to low (acid) pH levels, so lime should be applied to your lettuce bed if the pH is below 6.0. YES, you will need a soil test to determine the pH level and the need for lime.

Don't throw away that **leaky old garden hose**! You can use it to protect yourself and the blades of your pruning saw during storage. **Make a cover for the saw blade** with a piece of old gardening hose. Cut a section of the gardening hose to the same length as the blade. Cut the hose lengthwise on one side and place it over the saw blade.

If your garden **soil crusts after a rain**, this may result in poor germination, because young seedings are too fragile to break though the crust. This problem may be caused by over-tilling the soil. Also, cover the seeds with ¼ inch of compost or fine mulch matter, which will keep the soil moist and help prevent crusting.

If you are planning a **backyard orchard**, start by **mapping out the site,** giving particular attention to air and water drainage. Remember, just like water, cold air flows down hill. Avoid frost pockets — areas where cold air gathers — or you may be disappointed year after year when flower buds freeze and drop, resulting in little or no fruit.

Often seed catalogs and seed packets indicate a planting time, sometimes using the phrase, "**as soon as the soil can be worked**." One simple test to determine if the soil can be worked is to squeeze a hand-full of soil into a ball. If the soil holds together in a wet or sticky ball, it's too wet to work. One of my favorite tools to take the guesswork out of knowing when to plant is a soil thermometer. Soil temperature is the best indicator that the time is right for planting. As **a general rule,** cool season crops — collards, leeks, peas, radish, and spinach — can be planted when the soil reaches a temperature of 45-50ºF while warm season crops — cucumbers, squash, corn, beans and melons — require a soil temperature above 70º F.

March is a good time to begin **a compost pile i**f you have not done so already. Most garden centers or nurseries sell composting bins. For help in planning your compost pile see our February feature article on compost in The Garden Shed, or view the VCE Publication 442-005, "Composting Your Organic Kitchen Waste with Worms."

Not sure what vegetables or specific varieties of vegetables to plant? Check out VCE Publication No. 246-480 "Vegetables Recommended for Virginia," which provides a comprehensive listing of recommended varieties.

Spring fertilization of **fruit trees** should occur about 3-4 weeks before active growth begins. Scatter fertilizer evenly under the tree, starting about 2 feet from the trunk and extending just beyond the drip line or end of the furthest branches. A soil test should be performed prior to applying fertilizer. For additional information of fruit trees visit VCE Publication 426-841, "Tree Fruit in the Garden."

The optimum time to **prune fruit trees** is just before they bloom. Pruning allows the tree to direct nutrients to branches that will bear high quality fruit. The object is to remove dead, diseased or damaged wood. Also, remove shoots that are growing straight up or straight down as neither provides for good fruit development. Growth crisscrossing the center of tree should be removed as well. A more open tree allows greater light penetration and air circulation, thereby increasing fruit quality and reduced disease and insect pressure. For addition pruning information visit VCE Publication 422-025, "Physiology of Pruning Fruit Trees."

Bramble fruits such as **raspberries and blackberries** may be planted in mid- to late March. Plant in moist, well-drained soil containing large amounts of humus or organic matter. For weed control, mulch around newly planted brambles with a hardwood or softwood mulch. For additional information on how to grow bramble fruit, visit VCE Publication 426-840, "Small Fruit in the Home Garden."

Thanks for stopping by The Garden Shed. We hope to see you again next month.

Resources:

"Vegetable Planting Guide and Recommended Planting Dates." Va. Coop. Ext. Publication 426-331, http://pubs.ext.vt.edu/426/426-331/426-331.html

"Vegetables Recommended For Virginia," Va.Coop. Ext. Publication 426-480, https://pubs.ext.vt.edu/426/426-480/426-480.html

"Is it time to plant vegetables? Ask your soil thermometer,"Oregon State University Extension, http://extension.oregonstate.edu/gardening/it-time-plant-vegetables-ask-your-soil-thermometer

Local Sources for Native Plants

By Susan Hall | March 2016-Vol.2 No.3

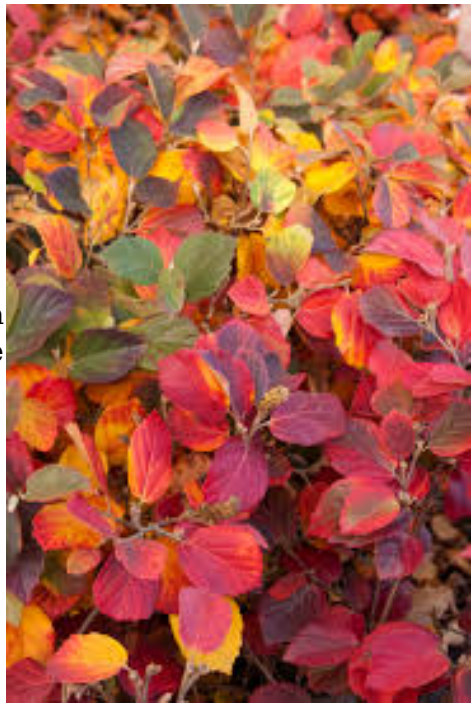
Native plants are increasingly available in the nursery trade, but the selection is limited. The more popular wildflowers like *echinacea* (coneflower) and small native trees like *Cornus florida* (dogwood) are easy to find, but if you have your heart set on something a bit more exotic, you will need to hunt it down.

I'm currently on a quest for *Fothergilla gardenii* (dwarf fothergilla). It is a small shrub topping out at around 5 feet. It has Fuller Brush type white flowers in the spring and traffic-stopping fall color — yellow, orange and red.

Fothergilla gardenii in bloom

The flowers attract various bees in the spring. The seed pods are quite tough, and I was unable to find references to any animal using them for food. Strictly speaking, *F. gardenii* isn't native to the Piedmont area but grows along the coast from North Carolina south to Georgia. Those wishing to stick to a strict interpretation of what is native will probably skip it because it does not inhabit any local ecosystem. On the other hand, it is easily grown in moist, acid soil in part shade to sun along with *Kalmia latifolia* (mountain laurel) and the native rhododendrons. It will bloom more prolifically in full sun. But I couldn't find it last year.

Sales run by local chapters of the Virginia Native Plant Society are good sources for native plants. The Alexandria chapter sponsors a sale which includes vendors from native plant nurseries. I have never attended this sale but have high hopes. To view the colorful online brochure, go to N. Alexandria NPS Sale 2015. This plant sale has a Facebook page, so you can stay updated that way, FB/Alex.NativePlantSale.



F. gardenii fall color

Another D.C. area native plant sale is held at Earth Sangha, a D.C. area nonprofit nursery/ecological restoration organization. Their public sale and nursery open house is on May 1st from 10am-2pm. The website is www.earthsangha.org. Click on the "Buy Native" button for sale details. Earth Sangha is very strict about growing only ecotypes local to the D.C. area, so I won't be surprised if they don't have my *F. Gardenii.* I'm sure I'll be able to find something else to fill the void — and my trunk.

The Jefferson Chapter of the Virginia Native Plant Society also holds a spring plant sale. The chapter's website is vnps.org/jefferson. In the "News" section, there is a link to their facebook page where the sale information and date will be listed later in the year. Anyone interested in learning more about native plants would enjoy the monthly meetings held at the Ivy Creek Educational Center. Check the chapter's facebook page for dates and times. FB/JeffersonChap.VirginiaNativePlantSociety

Hill House Native Plants Nursery near Culpepper is another stop I will make this spring. I had hoped to go out this month but weather keeps getting in the way. The nursery is open by appointment and they also sell at local native plant sales. Check their website's calendar at hillhousenativeplants.com for spring sale information. They will be selling at numerous locations including the Alexandria Native Plant Sale. I've

already called them and they have my *F. gardenii* as well as *Oxydendrum arboreum* (sourwood), a small, flowering tree I've been coveting.

Disclaimer Time! I have not attended past sales sponsored by any of these organizations. In the future this column will contain sale reviews, but for now I'm only listing a few that look good to me. If you have suggestions for us native plant hunters, please use our "Comments" section to communicate with us.

Keep in mind that as a matter of policy, the Cooperative Extension Service does not recommend these or any other sales or vendors. Extension provides science-based advice to answer your garden questions, but it avoids recommending specific nurseries, landscapers or any commercial operations.

Happy Shopping! Let me know about your favorite plant sales.

Cauliflower Melts

By Cate Whittington | March 2016-Vol.2 No.3

In January of this year, The Washington Post published an article entitled, “Cauliflower is so hot right now you may not be able to afford it—or find it.” Arguing that cauliflower has usurped kale as the king of vegetables, the Post reported a price surge in this once-lowly crucifer, due to high demand and limited supply. A single head was selling for as much as $8.00 at some local groceries.

Growing to love roasted cauliflower in recent years, I seldom cooked it any other way. But when I read about the craze in our nation’s capital for such dishes as cauliflower steak and cauliflower ice cream, I decided to broaden my horizons.

First, I shopped around for price comparisons. I didn’t find any Charlottesville stores to rival D.C.’s $8 price tag, but I did see organic heads selling for as much as $6.99. In most cases, a small head averaged $4 to $5. I convinced myself that wasn’t too bad if it constituted the main entrée. I have now tried this popular member of the Brassica family mashed into patties, creamed in a soup, chopped in a soufflé, and layered atop pizza. All delicious!

The simple recipe I want to share with you this month is taken from the *epicurious* website. Baked slabs of cauliflower stretch across eight open-faced sandwiches, topped with cheese, nuts, and golden raisins. The combination is irresistible. Add some simple greens or a cup of soup, and you have a satisfying supper without much fuss.

Cauliflower Melts

INGREDIENTS

- 1/4 cup olive oil
- 2 garlic cloves, minced
- 1 teaspoon salt

- 1/2 teaspoon freshly ground pepper
- Medium head of cauliflower, cut into 1/2-inch-thick slabs, possibly halved to make a total of 8 slabs
- 1/2 cup golden raisins
- 1/4 cup white wine (optional)
- 1/4 cup shelled pistachios
- 8 1/2-inch-thick slices sourdough bread
- 4 ounces Comte or Manchego cheese, cut into 8 slices
- 2 tablespoons chopped parsley

PREPARATION

1. Preheat the oven to 350°F and line a baking sheet with parchment paper.
2. In a medium bowl, combine the oil, garlic, salt, and pepper. Add the cauliflower slabs and toss to coat.
3. Arrange the cauliflower on the prepared baking sheet. Bake for 25 minutes, flip the slabs, and bake another 10 to 20 minutes, until softened and roasty. Set aside to cool but keep the oven on.
4. Meanwhile, in a small bowl, soak the raisins in wine or water for 10 minutes. Drain.
5. In a small pan over medium-high heat, toast the pistachios, dry or with a little oil. Let cool on a paper towel, then chop coarsely.
6. Lay the bread on the baking sheet and arrange the cauliflower on the bread, cutting it to fit as needed. Sprinkle with pistachios and raisins and top with the cheese.
7. Bake until the cheese melts, 7 to 10 minutes.
8. Top the toasts with chopped parsley and serve immediately.

Resources:

washingtonpost.com/once-ignored-cauliflower-is-now-as-popular-as-j-law–and-its-799-a-head

www.epicurious.com/cauliflower-melts