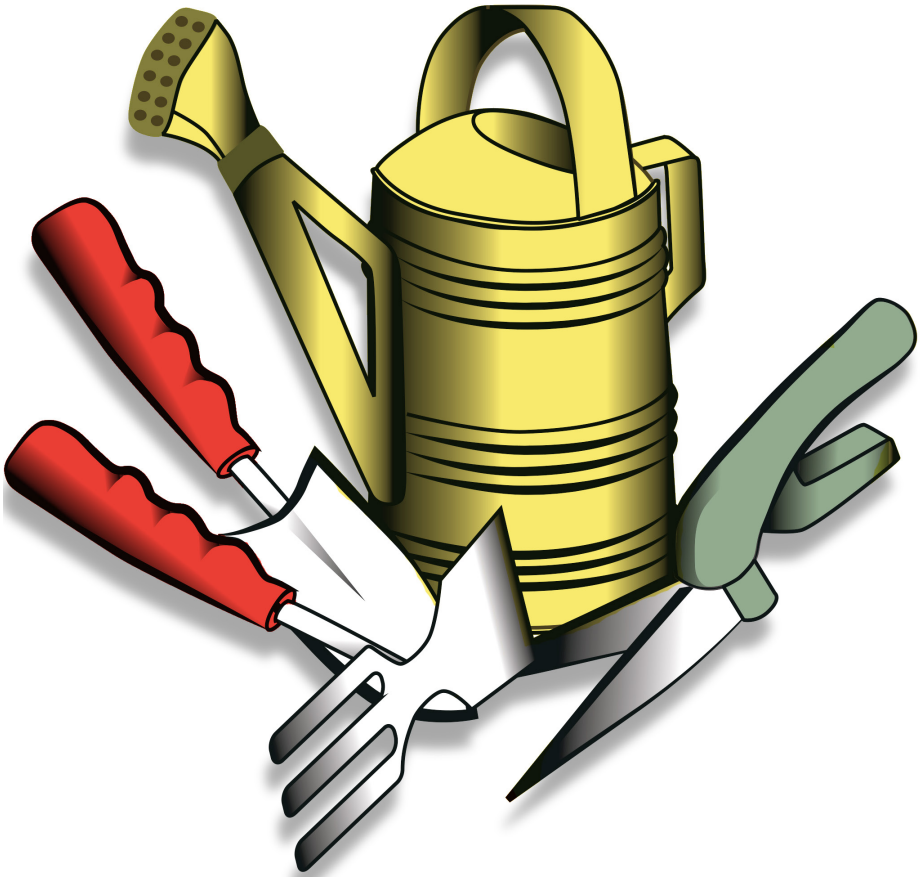
Home Gardening in Gloucester



A Resource Guide for Gardening Success on the Lower Middle Peninsula.

Gloucester Extension Master Gardeners

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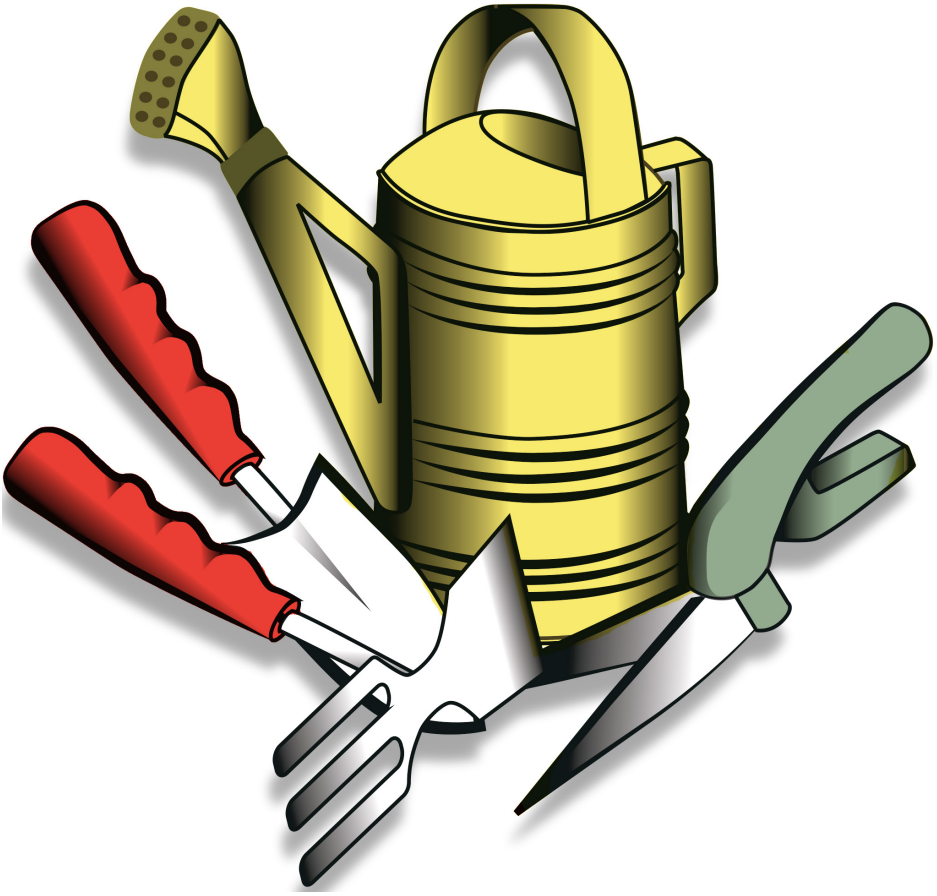

A Resource Guide for Gardening Success on the Lower Middle Peninsula.

Gloucester Extension Master Gardeners

December 2021

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Home Gardening in Gloucester

Originator, Editor and Project Chairperson (2001 – 2014)

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INTRODUCTION

Purpose

This publication is to assist you in planning and developing your garden, lawn, or home orchard. It is not a "how to" guide to gardening but rather attempts to provide you with information on successful gardening in Gloucester.

Gloucester, like all areas of the country, has physical and climatic characteristics that limit what plants can be grown and how they should be grown. As many residents live on or near a waterway, there are specific cultural practices that are best management practices for gardening as well as for preserving our waterways.

The information in this booklet is gleaned from the experiences of the Gloucester Extension Master Gardeners (GEMGs), the horticultural research and experience of Virginia Tech and Virginia State Universities, and by referenced horticultural experts.

We have not attempted to address problems with plants caused by pathogens—fungi, bacteria, viruses, and nematodes—or pests—insects, mites, mollusks, rodents, etc. To do so would produce volumes of text and is not necessary, as the Virginia Cooperative Extension (VCE) has published the 2014 Pest Management Guides, the most complete, research-based resources available for the diagnosis and treatment of disease and insect damage. It is available to you through the Gloucester Cooperative Extension Office or online at https://resources.ext.vt.edu/searchresults?contentname=456-018. In all cases of plant damage, we focus on identifying the problem then treating this problem, whenever possible, with non-chemical or cultural practices as it is our goal to reduce chemical inputs into our many waterways.

What Do You Want To Know?

This publication contains 14 sections which deal with specific areas of gardening: Our Environment, Lawns, Trees, Shrubs, Perennials, Annuals, Fruit Trees and Bushes, Ground Covers and Vines, Native Plants, Invasive Plants, Vegetables, Herbs, Houseplants and Garden Calendar. Pick your point of interest and begin there.

Disclaimer

Commercial products are named in this publication for informational purposes only. Virginia Cooperative Extension does not endorse these products and does not intend discrimination against other products that also may be suitable.

ABOUT THE GLOUCESTER EXTENSION MASTER GARDENERS

The first Master Gardening program was started in Washington State in 1972. Dr. David Gibby, the extension agent for horticulture in King and Pierce Counties, had become overwhelmed by requests for information about gardening. Dr. Gibby thought of recruiting gardeners to answer residents' questions with the idea of trading specialized training in horticulture for a commitment to spend a specified number of hours doing volunteer outreach work. He and other extension agents, specialists, and administrators at the state university developed the training program for volunteers and a format for plant clinics at which they would provide information to the public. Since this inception, Master Gardener programs have spread to 45 states, the District of Columbia, and four Canadian provinces.

A Gloucester Extension Master Gardener (GEMG) is a person who acts on behalf of Virginia Cooperative Extension as a volunteer educator within his or her community after receiving 50 hours of specialized training in environmental horticulture. The volunteer educator serves as a partner with Virginia Cooperative Extension to promote, inform, and work with communities, leaders, industry, and individuals presenting horticulture programs to protect and enhance the environment. The horticulture information that is provided draws on the horticultural research and experience of Virginia Tech and Virginia State Universities

In exchange for this training, the Master Gardeners share their knowledge with the residents of Gloucester by participating in many different horticultural projects.

The development of this publication, *Home Gardening in Gloucester*, is a project that we believe will benefit Gloucester residents as well as residents of other Middle Peninsula communities as it speaks directly to our area's environment rather than to Virginia as a whole. In addition, we want to share with you our joys and experiences in gardening and encourage more of you to garden in a manner that conserves our natural resources. This book is presented to spark your interest; it is by no means complete in itself. There is a wealth of gardening information available to you; we can help you find the information you need.

We hope you enjoy this publication. Happy Gardening!

Gloucester ExtensionMaster Gardeners

For more information about the Gloucester Master Gardener Program, contact the Gloucester County Virginia Cooperative Extension Office at 804-693-2602

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Many of the publications listed in this booklet, as well as many topic-specific informational sheets, may be found online at the following sites:

Gloucester County Master Gardeners: https://www.gloucesterva.info/639/Master-Gardeners

York County Extension Office:
http://www.yorkcounty.gov/Home/VirginiaCooperativeExtension/YCMasterGardeners.aspx

Virginia Cooperative Extension: https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu.

OUR ENVIRONMENT

CHESAPEAKE LIVING

Gloucester residents have both the privilege and the responsibility of living close to our nation's largest estuary, the Chesapeake Bay. The Bay has long provided a living for watermen, aquatic sports for many, a home for blue crabs and oysters and a major spawning ground for menhaden and Atlantic rockfish/ striped bass. However, the Chesapeake Bay is dying, and actions must be taken to preserve and improve the Bay. We and others living in the Bay's watershed must all begin to act as real stewards of the land we live on and the Bay we live near, or the Bay could be lost.

The Bay's watershed has a growing urban and suburban population, while farm land is decreasing. The amount of nitrogen and phosphorus from fertilizers running into the Bay is increasing with the suburban population. The overabundance of these chemicals in the Bay is the main cause of the algae bloom that kill off the underwater plants and microorganisms that are needed to maintain the aquatic wildlife.

If we—Gloucester residents—begin living "Green," we can set an example for others living near the Bay. Living "Green" is easier and cheaper than you might think. You can begin by just leaving your grass clippings where they fall on your lawn instead of collecting them. These clippings will provide nitrogen to green up your lawn and help your lawn remain cool and retain more moisture during the summer months. This will reduce trips to the landfill hauling clippings and reduce clippings in our landfill; everybody wins. While mowing, never take off more than one-third of the grass's height, lawn will recover faster.

We will review other ways to live "Green" in some of the upcoming sections of this chapter including:

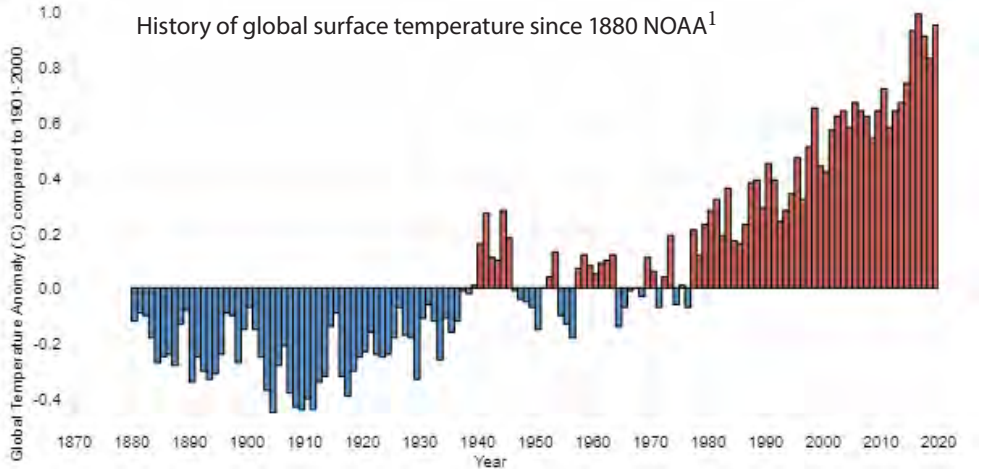
- Landscaping ideas
- Buffers for Improved Water Quality
- Composting

However, first, we will examine some of the basics of the Gloucester environment: climate, soil and water.

CLIMATE

Gloucester County's climate is modified from the normal west to east weather patterns in the U.S. by the diverse landscape of Virginia. The proximity of the Appalachian and Blue Ridge Mountains to the west, the Atlantic Ocean and Chesapeake Bay to the

History of global surface temperature since 1880 NOAA[1]



[1] https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature
NOAA *Climate Change: Global Temperature*; Authors: Rebecca Lindsey and LuAnn Dahlman

east, and rivers and streams in Tidewater all influence precipitation, wind direction and velocity, and temperature.

The Appalachian and Blue Ridge mountain systems tend to break up west to east moving weather fronts into smaller cells that provide localized rainstorms to the east of the mountains. Storms frequently move parallel to the mountains and coastline moving generally toward the northeast. The mountains also help to provide some blocking of the cold mid-western winter temperatures.

The Atlantic Ocean and the Gulf Stream that runs up the Eastern Shore play dominant roles in differentiating Virginia's precipitation and temperature. The ocean water acts as a heat sink and tends to moderate summer and winter temperatures, especially close to the coastline. When storms cross the east coast well to the south of Virginia and move offshore, they turn northeastward to follow the boundary between the cold land and the warm Gulf Stream waters in the winter (and reverse the temperatures in the summer.) The convergence of these different temperature fronts causes storms to grow rapidly as they come up the coast. As the storms continue to move northeastward, moisture-laden air from the storms cross Virginia from eastern North Carolina, and the heaviest rain usually falls in southeastern Virginia.

The state's complex pattern of rivers and streams drain the precipitation that falls and also modifies the pattern of moist airflow. The terrain slopes eastward through the Piedmont and into the Tidewater area. Air flow follows either the river valleys or goes up over the crests of the mountains and down into the valleys, thus affecting rainfall.[2]

Precipitation

Gloucester County's rainfall results from storms associated with warm and cold fronts--localized thunderstorms, coastal storms, Nor'easters, tropical disturbances, or hurricanes. Mostly, in the county we experience wet springs, humid/wet summers, moderate falls, and dry winters. The effects of the mountains and the number of localized thunderstorms produce complex patterns of rainfall, such that areas of heavy rain may be next to areas with little or no rain. Generally, thunderstorms occur most frequently around 4:00 p.m. until about midnight. Until recently, hurricanes and tropical storms that cross Virginia, including those immediately offshore, occurred most frequently in early August and September and rarely appeared before June or after November. Climate change is slowly impacting this pattern. During the month of September, anywhere from 10 to 40 percent of Virginia's rainfall comes from hurricanes and tropical storms. The average winter does not have a major coastal snowstorm, and heavy winter snows usually are confined to the mountainous areas of the state. Our biggest concern is not necessarily heavy snowfall, but rather freezing rain and ice storms. Due to the uneven distribution of precipitation, supplemental irrigation is recommended for steady plant growth. Our average annual rainfall is 47.3 inches. Table 1 shows a monthly breakdown of precipitation for the Gloucester area. Note that the three heaviest rainfalls on average occur July through September. When *Home Gardening in Gloucester* was published in 2003 the average annual rainfall was 42.7 inches. Altering weather patterns have raised that level by nearly 5 inches over the last ten years.[3]

Table 1. Precipitation in Inches for Gloucester Area[4]

*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg.	3.6	3.1	4.1	3.6	4	3.8	5	5	4.8	3.8	3.2	3.5
High	7.7	11.7	9.6	6.2	8.8	9.5	8.0	16.6	13.9	7.7	6.5	6.6
Low	0.8	1.2	0.8	0.5	0.9	0.6	0.5	0.5	0.00	0.7	0.5	0.9

[2] Bruce P. Hayden and Patrick J. Michaels, "Virginia's Climate," https://www.daculaweather.com/climate_reports/ClimateSum_VA.pdf
[3] Ibid
[4] https://www,bestplaces.net/climate/county/Virginia/Gloucester

Temperature

Gloucester County is located in zone 7b on the USDA Plant Hardiness Zone Map. Gardeners can use their zone to determine which plants are most likely to grow well at their location. The map is based on the average annual minimum winter temperature. Our average annual minimum temperature range is 5 to 10 ° F.[5] Depending on your property's proximity to local riverfronts or the Chesapeake Bay, you might experience a milder microclimate than the average temperatures for the county. When selecting plants for your landscape, look for plants indicated for use in zone 7b.

Our average maximum temperature is 68.1°F. The average minimum temperature is 48.2°F. A monthly summary of the average temperature maximums and minimums is shown in Table 2 (below.)

The USDA Plant Hardiness Zone Map was developed under the supervision of Henry T. Skinner, the second director of the U.S. National Arboretum, in cooperation with the American Horticultural Society and published in 1960 and revised in 1965.

- The contiguous United States and southern Canada are divided into ten zones based on a 10° F difference in average annual minimum temperature.
- The plant hardiness zone map indicates a plant's "winter Hardiness" for survival.

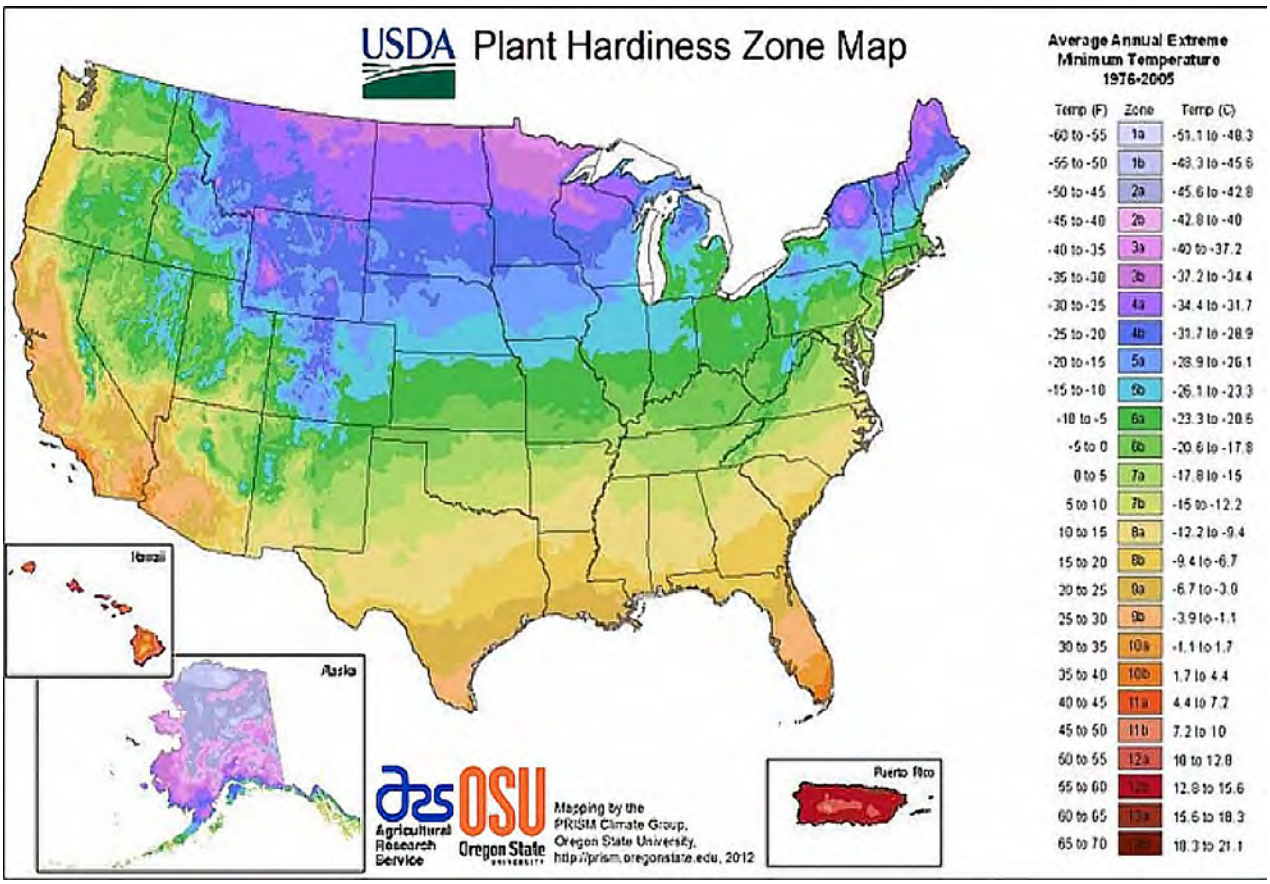


Table 2. Average High and Low Temperature Degrees (F) for Gloucester Area[6]

*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High	47.9	50.9	58.5	68.6	76	83.8	87.4	85.7	80.1	70.5	61.8	51.4
Avg. Low	29	30.7	37.1	45.8	55.2	64.6	69	67.7	61.3	49.8	40.5	32.4

[5] United States Department of Agriculture, USDA Plant Hardiness Zone Map, https://planthardiness.ars.usda.gov/PHZMWeb/.

[6] https://www,bestplaces.net/climate/county/Virginia/Gloucester

Of critical importance to gardeners is the date of the last frost. This is the key to successful planting, particularly in spring, but are also useful in the fall. You can see their importance in the simple instructions on almost every seed packets, plant tags and website: Plant in spring after danger of frost has passed. Or, plant six weeks before the first frost in fall. While the date is approximately April 21 in the Gloucester area, it is very difficult to predict accurately because of all of the factors described above and the existence of microclimates that will shift this date earlier or later.

Microclimates

While the information above provides general guidelines for the entire county, some areas in the county may be consistently different from these averages. These areas are called local or microclimates. For example:

- Areas close to the Chesapeake Bay or the York River will generally be warmer in the winter and cooler in the summer because the waters of the Bay and the York River moderate nearby temperatures.
- Warm air rises and cold air falls; therefore, lower areas of the county can be cooler than the county's overall average and are more susceptible to freezes.
- There are microclimates in your own yard. The north side of a building will generally be cooler and damper than the south side. Open lawn areas will be 5-10°F warmer than areas under shade trees in the summer. Those same trees will provide wind breaks and retain warmth in the winter.

As you learn to gauge the microclimate factors in your particular area and around your home site, you will be better able to predict the last freeze date for your site.

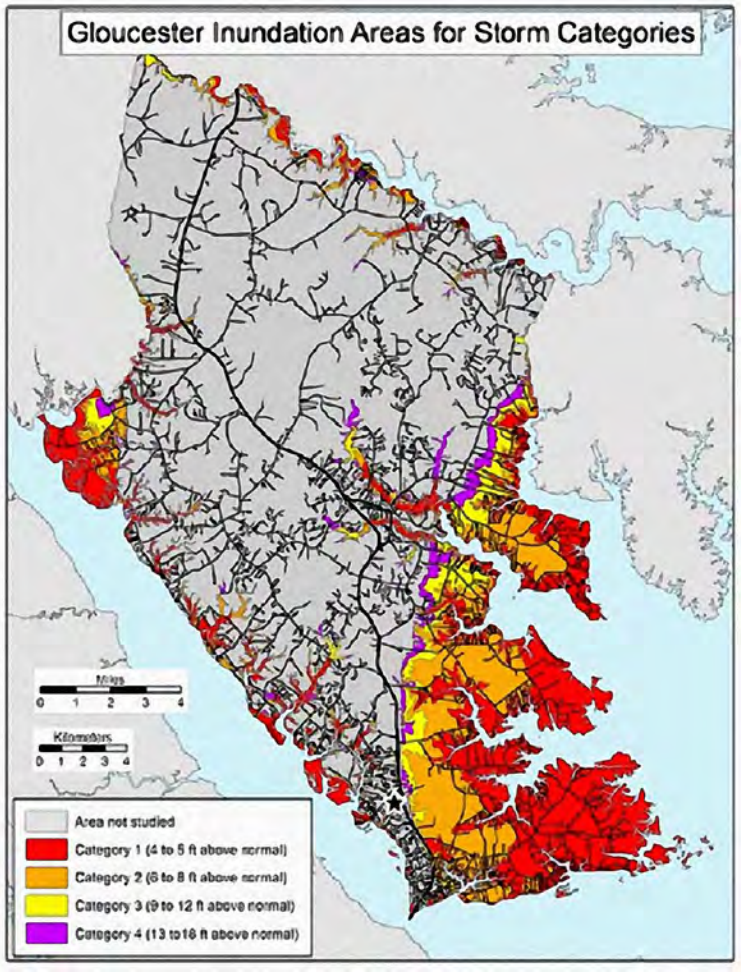
Flooding

"Change your climate by planting a tree! It does sound pretentious, doesn't it? But you really do have an effect on your microclimate when you add wind protection and shade to your property."

– Celeste Dudley, GEMG Emeritus

Saltwater flooding due to sea rise and more frequent tropical storms has led to damage to gardens especially close to the eastern edges of the county along Mobjack Bay, from Guinea to Ware Neck, and to a lesser extent along the York River. The map below from the Virginia Institute of Marine Science and the college of William & Mary identifies the main areas of concern.[7]

While Gloucester gardeners cannot stop sea level rise, they can help prepare their gardens for increased salt-water inundation. Using saltwater tolerant plants in your landscape (sometimes called Coastal or Bayscaping plants) will reduce the impact of intrusions of saltwater (see *Book of Lists* in Resources). For existing plants in your landscape if storm surge is expected and your plants are not already damp then give them a good soaking before the storm. The plants cells will fill with freshwater, and this will reduce the uptake and impact of saltwater intrusion.



[7] www.vims.edu/images/wm_events/recurrrent_flood.jpg

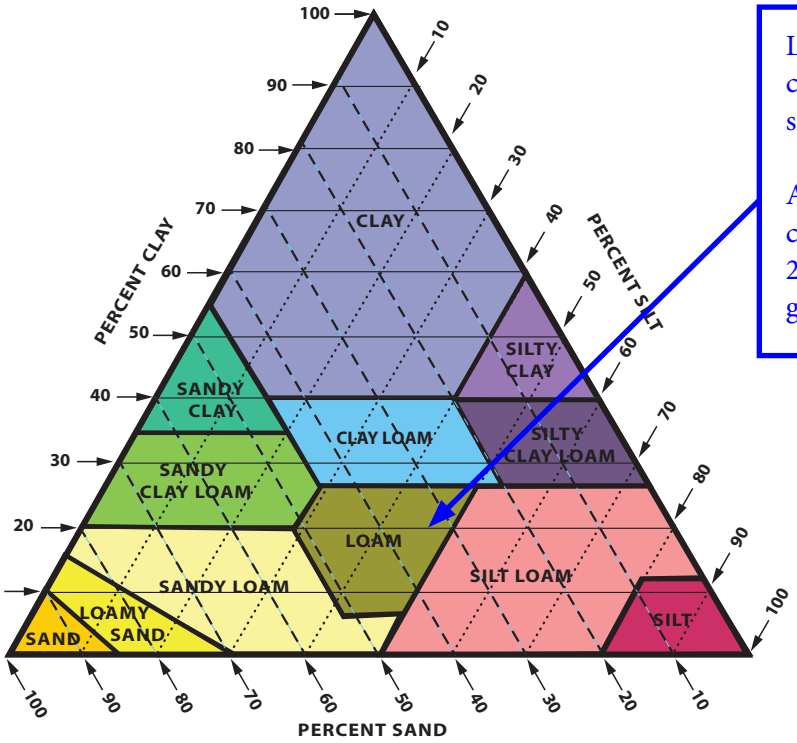
SOIL

Soils of our area, the coastal plain of Virginia, are formed from unconsolidated sediments deposited when the ocean level was much higher than at present. As sea levels fell, many of these deposits were reworked by meandering rivers and streams that originate in the western part of the state and flowed to the east. Soils in the coastal plain are acidic, infertile, highly weathered, and vary from sandy textures (near rivers and streams) to very clayey textures. Some of the soils have thick sandy surfaces which make them susceptible to summer droughts. Most Gloucester landscapes are nearly level to gently sloping; because of this feature the soils are not as susceptible to erosion.

Many people think that soil is composed entirely of organic materials; however, an ideal soil has 50% pore space with no solids and is divided equally between air-filled pores and water-filled pores. This leaves 50% of solids where 45-48% of soil is composed of mineral materials with 2-5% composed of living and dead organic materials. If the soil is compacted by cars or heavier vehicles, then it will retain less pore space, making it harder for water, air and nutrients to penetrate. Construction or driving/parking on a parcel can compact the soil and reduce pore space.

In the USDA textural classification triangle,[8] the only soil that is not predominantly sand, silt, or clay is called "loam." Loam soils generally contain more nutrients, moisture, and humus (organic material) than sandy soils, have better drainage and infiltration of water and air than silty soils, and are easier to till than clay soils. The different types of loam soils each have slightly different characteristics, with some draining liquids more efficiently than others.

Soil resources are always changing. Pore space, water and gas contents, and the electron exchange environment are dynamically changing in a soil every moment. Chemical, biological, and physical soil features are always under change. Within this continuing changing environment, tree/plant roots must develop growth and survival solutions.

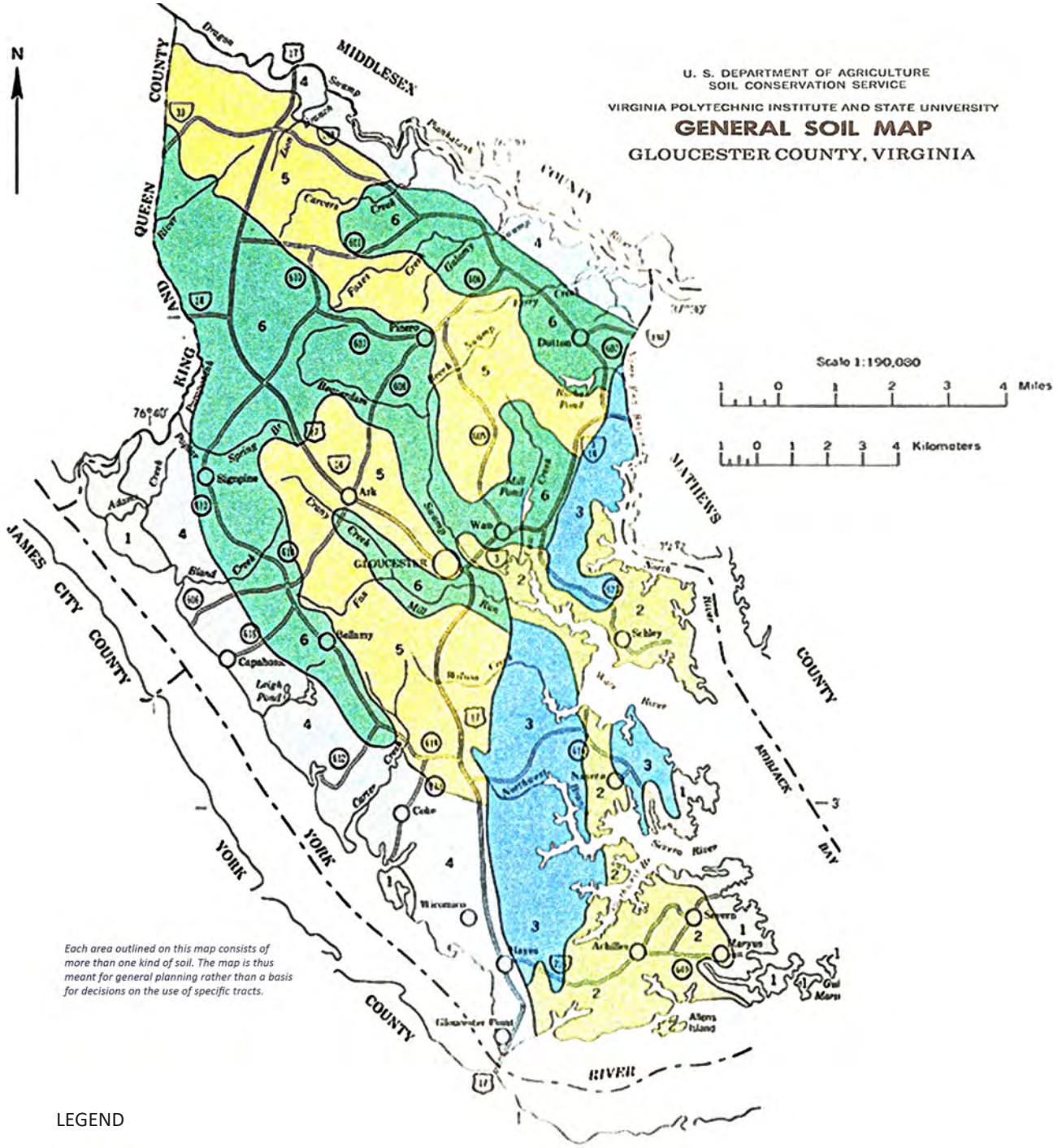


Loam soils have a mineral content consisting of 25-50% sand, 28-50% silt, and 7-28% clay.

A loam soil that has a mineral content of 40% sand, 40% silt and 20% clay is considered ideal for any gardening.[9]

[8] Dr. Kim D. Coder, *Ideal Soil* Publication http://warnell.forestry.uga.edu/service/library/for00-004/node3.html

[9] James C. Baker, Extension Soils and Land Use Specialist, *Agronomy Handbook*, Virginia Cooperative Extension, Part VI



LEGEND

1	Deep, poorly drained and very poorly drained soils that are flooded by tides and have a mixed sandy loamy, and clayey substratum; on saltwater marshes.
2	Deep, poorly drained and well drained soils that have a dominantly loamy subsoil; at elevations of less than 20 feet.
3	Deep, poorly drained and moderately well drained soils that have a dominantly clayey subsoil at elevations of 20 feet.
4	Deep, well drained and moderately well drained soils that have a dominantly loamy subsoil; at elevations of 30 to 50 feet.
5	Deep, well drained and moderately well drained soils that have a dominantly loamy or clayey subsoil; at elevations mainly above 50 feet.
6	Deep well drained and moderately well drained soils that have a dominantly loamy or clayey subsoil; at all elevations.

How much fertilizer and soil amendments do you need to add to your soil? This is when a soil test comes into play to help you make the right decisions on what and how much soil amendments, if any, to add. A soil test from Virginia Tech will provide information on pH, available phosphorus, potassium, calcium, and magnesium. The results of the soil test are mailed to you with recommendations as to what kind of fertilizer or amendment should be applied for economical growth of the desired crop or specific plants. A soil test need not be performed more often than every three to four years. Mail your sample to VA Tech in late summer, so that needed lime or other soil amendments can be changing the pH over the winter. Fertilizers also should be incorporated in the fall or the next spring.

The pH level describes the acidity or alkalinity of soil. The pH scale is from 0 to 14, with low numbers being acidic and high numbers alkaline. A pH of 7 is considered neutral. The scale is logarithmic, which means that a pH of 6 is ten times more acidic than a pH of 7 and a hundred times more acidic than a pH of 8. Soil pH affects the way nutrients are held in the soil. For example, in alkaline soils, iron can be chemically bound so that it is unavailable to many plants. A plant may then develop iron deficiency, even though there is plenty of iron in the soil. In order to make this iron available, the pH must be lowered. Soils can be made more alkaline by the addition of lime or more acidic by using sulfur. Always test your soil before attempting to alter pH. Soil can often be more alkaline than expected due to past liming or other factors. Most landscape plants do well in a neutral to slightly acid soil with a pH of 6.3-6.8. For lawns, you may need to apply lime every few years if your pH is too low. Using amendments to alter pH is only a temporary fix. For areas other than lawns or vegetable gardens, a better solution is to select plants that are adapted to the pH of your soil.

The map on the previous page, provided by Virginia Tech, identifies the various soils in Gloucester County. The soils near the rivers and creeks (4 and 6 in the legend) tend to be sandy or sandy loam. These soils will drain water quickly away from the roots of your turf or plants. If you live on such soil and need to water, then you should water more frequently, but also more lightly. For example, during periods of drought you should apply 1/2 inch of water twice a week to your turf and plants. The same logic applies to fertilizers, if you fertilize do so lightly but more frequently, then your plants will have more chance to take in the nutrients they need and less will be drained off into the neighboring waterways.

On the other hand, if you live further away from the larger creeks and streams, your soil is likely to be dominated by clay. Clay is a heavier soil and water does not penetrate or drain easily from it. If you have such soil, then during periods of drought, you should apply 1 inch of water weekly to your plants and turf. Again, nutrients will be retained in clay soils longer and fewer fertilizer applications will be needed.

Because clay is such a heavy and impenetrable soil, it is harder for new plants to establish roots. When preparing a hole for a new plant in a clay soil, dig a wider hole than normal (3-4 times the width of the plant ball or container), spread the roots as much as possible, and finally backfill only with the soil you dug out of the hole in the first place. If you dig a small hole and put the plant in with compost or potting soil, it will be like putting the plant in a pot with no drain holes and root rot is likely to occur.

Both sandy and clayey soils can be improved structurally over time by applying compost once or twice a year. On turf, topdressing with 1/2 inch of compost

Testing Your Soil

- Contact the Gloucester County Virginia Cooperative Extension Office, 693-2602 to obtain a soil test kit.
- The kit comes with complete instructions on how to take a soil sample and explanation of fees and address of the Lab.
- The soil sample information sheet and a nominal fee is mailed to the Virginia Tech Soil Testing Lab.
- Results of the soil test are mailed to you with recommendation.

"Every penny spent on getting a soil test pays for itself many times over."

– Suzanne Swift, GEMG

each fall will help reduce thatch and provide nutrients to the soil. For plants, place 1-2 inches of compost on your garden beds once a year.

WATER

Although some of Gloucester County's households are served by public water, many must rely on wells. Wells may be shallow, extending only a few feet into the ground, or may be hundreds of feet deep, extending into an aquifer. An aquifer is a layer of sand or porous rock containing water, bounded on the top and bottom by layers of clay, which confine the water. There are nine aquifers that formed over millions of years of rising and falling ocean that extend from the fall line around Richmond through the coastal plain, lying at increasing depths, up to as much as 1,500 feet deep.

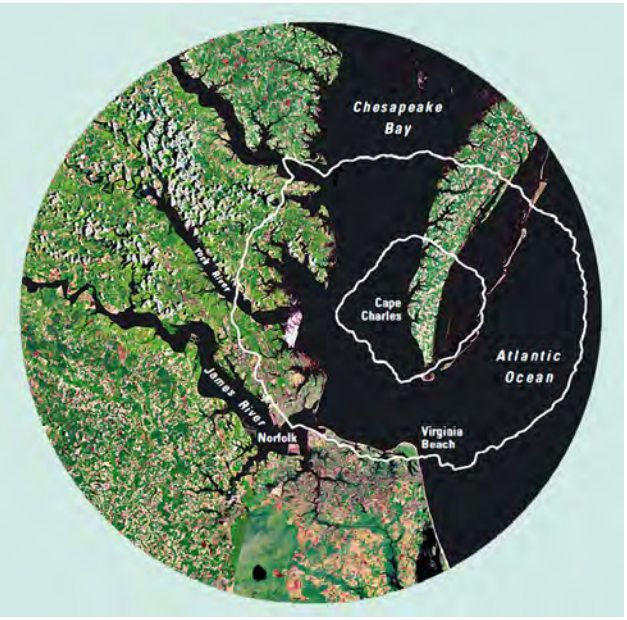
Sounds like there should be plenty of water, right? But 35 million years ago, a meteorite fell near the site where Cape Charles is presently located, on the Eastern Shore. It is estimated that this object was two to three miles wide and went down seven miles through the ocean floor and a mile into the crystalline basement beneath. The crater it formed was about 50 miles wide. The crater was almost immediately filled in with a chaotic mix of ocean water, broken debris, rocks, soil, animals, and plants killed by the blast, and materials washed in by huge waves that may have extended to the tops of the Blue Ridge Mountains.

The outer rim of the impact crater crosses Gloucester County as an arc running from the Rt. 3 bridge across the Piankatank River, to Cow Creek on Rt. 14, and across the York River around Rosewell. Thus, all of Mathews County and much of Gloucester County are on the rim or inside the outer rim of the crater. Since the impact of the meteorite broke up and removed all the original aquifers, all the area within the outer rim is dependent on aquifers formed since that time, and the amount of fresh water in them is limited. A map of the impact of the meteorite is depicted to the right.[10]

Another problem arises because of a large underground area of saltwater that extends inland farther than normal for a coastal area. This saltwater wedge underlies all of Gloucester and Mathews and has a variable degree of saltiness; there is a danger of drilling into it and contaminating freshwater aquifers overlying it.

For all these reasons, gardeners in this area should be especially conservative about planting things that require more water than is available in normal rainfall. If that is not possible, a manual or drip irrigation system is most efficient. You should avoid setting up an automatic watering system that may waste water when it comes on at unnecessary intervals.

- Water is found in the atmosphere, on the surface, and underground. The water cycle is central to life on Earth and connects Earth systems.
- Water is a natural resource that must be managed. The amount of available freshwater is limited (99% of the Earth's water is saline) and must support multiple users. Clean, sustainable water supplies are vital. When supplies fail to meet demands, conflicts arise between states and nations.
- Aquatic environments are subject to much use and abuse by people. Water pollution occurs when chemicals, nutrients, or sediments are placed into water faster than they can be removed by natural processes. Water pollution can often be traced to runoff in the watershed.



[10] Poag, C. Wylie. Chesapeake Invader: *Discovering America's Giant Meteorite Crater.* Princeton University Press, Princeton, New Jersey, 1999.

- While water is useful as a cleaning agent ("the universal solvent") and as a means for disposing of soluble waste, the capacity for water to dilute pollutants is limited.

LANDSCAPING

Many homeowners in Gloucester have mostly grass lawns with minimal landscaping. Such designs provide owners certain benefits, but they also have many drawbacks for both the homeowner and the environment.

Lawns:

- Allow more rainfall runoff and require more irrigation than other plantings, which contribute to pollution of the streams, rivers, and the Chesapeake Bay.
- Tend to be over fertilized by homeowners which further contributes to pollution of the Bay.
- Provide no protection from wind or sun, which contributes to colder days in winter and to hotter days in summer outside (*and* inside) the home.

However, lots that are landscaped with trees and shrubs:

- Capture and retain more rainfall runoff and require less irrigation and fertilizer than lawns.
- Have more shade and are cooler in the summer.
- Provide wind breaks and retain warmth in the winter.
- Are worth 10-15% more when selling according to surveys of realtors.

Landscaping means:

- Creating a plan to make the best use of space available in the most attractive way.
- Shaping the land to make the most of the site's natural features and advantages.
- Building structures or selecting and planting trees and shrubs that best fit the plan.

A good landscape plan reflects the homeowners' needs while allowing for growth and change. As a homeowner you should pay attention to:

- Views you would like to maintain or enhance.
- Views or sounds that you would like to screen out.
- Areas for sports, children to play, or outdoor entertainment.
- Areas for vegetable and/or flower gardens. (Also consider a composting area.)

"You might think of these views or areas as rooms for your outdoor living space. For watering trees and shrubs, I prefer porous hoses, made from recycled tires. These can be buried under mulch so that no water is lost to the air, driveway, or lawn."

– Lance Gardener, GEMG

At the same time, you need to consider the area layout and its soil structure:

- Is it compacted by recent or past construction?
- Is it a particularly wet or dry area?
- Is the area shady or sunny?

Be sure. Conduct a soil test for each of the various garden areas in your plan.

When selecting the individual plants, keep in mind:

- Native plants require less irrigation and other maintenance.
- The color and texture of the foliage is just as important as the flowers.
- Many plants are interesting year-round because of their flowers, berries, change in foliage color, interesting bark, etc. Select those that give the biggest bang for your buck.
- Young plants grow up. What will be their shapes and sizes at maturity?
- Not all plants are specimen plants (plants grown by themselves in a lawn or garden for ornamental effect, rather than being massed with others as are bedding plants or edging plants. Specimen plants serve as focal points in landscape design) that can stand alone. Consider putting like plants in groups of three or five to provide more impact and harmony to the design.

Don't think that you have to complete your landscaping ideas all in one season. Take your time and enjoy the changes over time. You will learn as you go. We have all placed a great plant in the wrong area. Just don't be afraid to move it to a another location, if it does not thrive. Phase your projects over a few years to manage them financially and physically, as well as to see which ideas will work and what does not.

If you have a rain/storm runoff or culvert by your street like many homeowners in Gloucester, it is probably more practical to plant that area than have turf grass there. It is a hard area to mow and you should not fertilize that area because even a moderate rain will wash fertilizer into the streams and eventually the Bay itself. It is a perfect area to put in plants that establish good root systems and help retain rainwater. Native blue flag irises or daffodils and daylilies (hemerocallis), which have strong, dense, fibrous roots, will do well in such an area. Daylilies require little maintenance and can even stand up to an occasional salt water flooding. Plant daylilies on the sides of the rain storm runoff and daffodils above them on the slope (during dormancy daffodils like dry soil) so that the area will have color spring and summer. Although orange and yellow are the most common colors, there are many varieties that range in color from lavender to rose pink and scarlet red. Select from varieties that are rust resistant.[11]

BUFFERS FOR IMPROVED WATER QUALITY

We live in Gloucester County and many of us enjoy boating, fishing, crabbing, or just the aesthetics of rivers, streams, bays, and marshes. We also enjoy observing the wildlife such as ospreys, herons, bald eagles, pelicans and many other birds and animals. Unfortunately, the very popularity of living on the water is causing stress to the aquatic system we enjoy.

Two of the more effective means of protecting water in this area are riparian buffers and rain gardens. These filter rainwater runoff before it reaches streams, rivers, or the Bay.

A **rain garden** is used to manage stormwater around homes and commercial properties. A rain garden stores and filters rainwater. The rain garden slows stormwater runoff, full of pollutants from roofs, sidewalks, roads and parking lots. This water ponds in the depression of the garden. As the water soaks in, chemicals are available to the plant roots and attach to the garden's soil and mulch. The end result is improved water quality and less surface water flow during rain events.[12]

Riparian Buffers are strips of grass, shrubs, and/or trees along the banks of the rivers, streams and bays. These buffers can protect our water resources from erosion, runoff from agricultural operations, forestry operations, and just plain home life.

Buffers trap sediment from land-disturbing activities along with associated pollutants. Fifty to one hundred percent of the sediments and attached nutrients can settle out and be absorbed as buffer plants slow down runoff waters. Buffers also trap pollutants that could otherwise wash into surface or ground water. Phosphorus and nitrogen from fertilizer and animal waste can act as a pollutant if more is available than plants can use. In addition to removing those materials absorbed on sediments, chemical (particularly phosphorus and nitrogen) and biological activity in the soil, particularly in soil covered by "forest" litter (decaying leaves, twigs, and associated microorganisms), can capture and transform nitrogen and other pollutants into less harmful products.

Gloucester County laws require a 100-foot buffer between construction and the water unless an already existing lot (at the time of the law's passage) did not have enough room on which to build. No matter how large your waterfront property, it is possible to establish some kind of riparian buffer.

In addition to riparian buffers, other landscaping techniques can reduce runoff. Remember that the lawn is usually the biggest culprit. Reducing the size of the lawn through the use of more trees and shrubs. Change some areas from lawn to ground cover. Along edges or in remote sections of the property plant some native grasses such as switchgrass, saltmeadow cordgrass, or little bluestem; these also provide wildlife and ornamental value. Decks and/

[11] Hightower, Lynne. "Daylilies in Virginia, Virginia Cooperative Extension Publication 426-03." 2009.

[12] Ibid

or brick on sand patios can provide areas for comfortable outside enjoyment while reducing lawn space and providing a spot for water to percolate to the underlying soil. Rain and water gardens not only take up space that might otherwise be filled by lawn but can also provide water for wildlife, particularly birds.

Buffers are only one aspect of conservation landscaping. In conservation landscaping, the property owner attempts to work with nature to reduce pollution/runoff and enhance wildlife habitat. It encourages low input for yard care: less fertilizer and pesticide use, combined with less lawn area and the use of beneficial plants, primarily native trees, shrubs and flowers. The end result will be less water consumption and less maintenance.

We live in the Chesapeake Bay region which has had population increase from 14 million (1990) to 18 million in 2015 and is expected to continue increasing. This increase in population will result in conversion of more forests and agricultural land to housing. The associated paving and construction will increase the problems associated with non-point source pollution to the Bay and the streams in the watershed. In addition, the large population increase will cause pressure on what in some regions of the watershed are limited water supplies. What we do with our yards in Gloucester may not seem to have much of an impact in the upper regions of Chesapeake Bay, but they will have an impact locally, which will be added to the impacts moving up and downstream from other parts of the Bay.

COMPOSTING

Composting is the natural process of recycling organic matter, such as leaves and food scraps, into a valuable fertilizer that can enrich soil and plants. Anything that grows decomposes. Composting speeds up the process by providing an ideal environment for bacteria, fungi, and other decomposing organisms (such as worms, sowbugs, and nematodes) to do their work. The resulting decomposed matter, is called compost. Adding organic matter to the soil increases water retention and reduces nutrient leaching in sandy soils. It also can improve drainage. Compost reduces the density of soil, making it easier for roots to penetrate. It provides food for micro-organisms that help plants capture nutrients. These same microbes help control diseases and degrade pesticides in the soil. Best all off, composting uses materials that all households generate and keeps them out of landfills, helping reduce waste disposal costs and extend landfill life.

All composting requires three basic ingredients:

- Browns - leaves, sticks, untreated wood shavings, hay/straw, dead plant material.
- Greens - fresh grass clippings and plant materials, coffee grounds, fruit/vegetable kitchen scraps, manure (not from pets), hair
- Water -water to keep everything moist, not wet

Your compost pile should have three to one ratio of browns to greens. You should also alternate layers of organic materials of different-sized particles. Chopping or shredding the materials speeds the composting process. The brown materials provide carbon for your compost, the green materials provide nitrogen, and the water provides moisture to help break down the organic matter. Mix the materials regularly to aerate them.

Composting involves temperatures between 110 and 150°F, a moisture content between 50 and 60%, and adequate oxygen for the microbes. It is complete when pile temperatures decline and remain below approximately 105°F. A period of 2 to 6 months is required for the compost to mature, after which it will not overheat or produce unpleasant odors during storage, and can be beneficially used.[13]

There is not just one right way to compost. There are many types bins and systems available. The most common method for composting is an open pile. This works if you have a lot of land, as open piles tend to be managed less, and pests and foul odors can occur. You can build your own bin from welded wire, wood pallets, chicken wire, cinder blocks, drums and trash cans. You can also purchase a pre-made bin at your local gardening store or online.

[13] Virginia Cooperative Extension. Compost: *What It Is and What's It To You*, 425-231.

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The Weather Channel at http://www.weather.com/weather/wxclimatology/monthly/graph/23061

Virginia Department of Environmental Quality DEQ *Native Plants for Southeast Virginia including Hampton Roads Region*

A good source of information on plants for conservation landscaping: http://www.dcr.virginia.gov/natural_heritage/documents/riparian_nat_plants.pdf

Virginia Cooperative Extension publications: The websites where these can be found are https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

2021 *Pest management guide – Home grounds and animals*, 456-018
Basic Principles of Watershed Restoration and Stormwater Management in the Chesapeake Bay Region SPES-195P
Building healthy soil, 426-711
Compost: What it is and What's it to you 432-231
Conserving energy with landscaping, 426-712
Creating a water-wise landscape, 426-713
Lawn Fertilization in Virginia, 430-011 (CSES-135P)
Leave them alone: Lawn leaf management, 430-521
Soil testing and plant analysis, "Agronomy handbook" 424-100
Sources of lime for acid soils in Virginia, 452-510
The effect of landscape plants on perceived home value, 426-087
The value of landscaping, 426-721
Understanding the Texture of your Soil for Agricultural Productivity, CSES-162P
Using Compost in Your Landscape, 426-704

Additional Resources:

https://www.gloucesterva.info/713/Water-Quality
Gardening to Improve Water Quality (PDF).pdf
Ground Water in Virginia

Notes:

LAWNS

INTRODUCTION

What is a lawn? Random House Webster's College Dictionary says that a lawn is "A stretch of open, grass covered land, especially one closely mowed, as near a house, on an estate or in a park"

For all its simple definition, lawns can stir emotions and generate a multitude of questions.

- *Which is the best grass?*
- *How much do I fertilize?*
- *How much do I water?*
- *Why do I have moss crowding out my grass?*
- *Crabgrass, it's the bane of my existence!*
- *What's the best way to cut my grass?*
- *What do I do about those "!%&#@" moles?*
- *Why can't I grow grass under my trees?*
- *I hate dandelions!*
- *My neighbor wins the lawn of the month contest every month! What's his secret?*

Before starting a lawn, consider water-wise alternatives to large expanses of lawn. Virginia has a constitutional mandate (Art. XI, Sec. 1. VA Constitution) to protect the quality of its natural resources. An important part of the Commonwealth's natural resources that are of particular concern to homeowners in Gloucester County and the rest of the Middle Peninsula are the groundwater; surface water (streams, ponds, reservoirs) and the Chesapeake Bay and its tributaries. Virginia has adopted anti-degradation policies to protect all the waters of the Commonwealth. Excessive use of lawn fertilizers, insecticides, herbicides, and fungicides has the potential to degrade the water resources that the state is required to protect. Excess nutrients and pesticides seldom enter the Commonwealth's waters by direct application. The common route is through surface runoff or percolation through groundwater. The amounts of contaminants entering the state waters are directly related to the amount of application and irrigation, watering, or rainwater runoff.

By landscaping to reduce the need for a lot of watering and preventing what water is used from running directly into streams, homeowners can have a positive effect on the environment and save on nutrient, pesticide, and water costs at the same time.

Lawns make an attractive foreground for other plantings and are necessary for play areas. Many yards have large, essentially unused expanses of high maintenance lawns. By careful planning much of this large lawn expanse can be replaced with low maintenance plantings. In smaller yards, increased use of small flowering trees surrounded or flanked by wide borders of perennial flowers or ground covers other than grass can substantially reduce the lawn area. In very extensive property, wild flower meadows can be very attractive alternatives to large expanses of maintained lawns. Such meadows can survive many years with only an annual mowing and provide the homeowner with ever-changing vistas of colorful flowers throughout the entire growing season.

Once you decide to put in or spruce up a lawn, the following information drawn liberally from the lawn care and other Virginia Cooperative Extension (VCE) documents listed at the end of the chapter will answer many of your questions, calm some of your emotions, and solve some of the problems that you as a Gloucester resident might have with your lawn. It starts with selection of grasses, followed with establishing a lawn and then covers some of the required maintenance such as mowing, watering, fertilizing, and liming needed to maintain a healthy lawn; it also provides some suggestions as to what to do if your lawn is overcome with weeds, disease, insects, or other pests.

SELECTING A GRASS FOR GLOUCESTER

Gloucester is located in a transition zone for turf grasses. Both warm season and cool season grasses can be challenged by the climate in this area. Selecting the proper grass can save a lot of work and worry. Homeowners may face different conditions on their property. It may be necessary to plant more than one type of turf grass in different spots for the best lawn. Whatever grass is selected, "Certified" seed, sod, or plugs should be used. Certified grass or seed is guaranteed to be what it says on the label. Don't waste money on turf grasses that do not grow well in this region. The most common lawn grass used in this region has been a cool season grass called turf-type tall fescue. However, with our current trend of warming climate and extended dry conditions, more and more homeowners are turning to warm season grasses. VCE tests both warm season (Bermudagrass and Zoysia grass) and cool season (Tall fescue grasses) for our region. Many other grasses are tested and VCE recommends specific turfgrass varieties for different parts of the state. Each summer a new report on the previous year's test data is published. (See Referemces at chapter end.)

Questions that the homeowner should be asking are:

Do I have a lot of shade in some parts of the yard and not others?

- *Will the kids (or grandkids) be playing in all or parts of the yard?*
- *If I live on the water, does part of my yard flood at high water?*
- *Do I get wind spray off the water with high winds?*
- *How much will I be able to water the lawn in dry weather? (County water is expensive!)*

Warm Season Grasses

Bermuda grass is a warm season grass which will go dormant (turn brown) with the first hard frost in the fall and green up during April to May, depending on the temperature. It is traditionally established from sod, plugs, or sprigs. Two-inch diameter plugs of bermuda grass planted on 12-inch centers will normally provide 95-100% cover in one growing season. Bermuda grass spreads by rhizomes (a root-like underground stem that usually produces roots below and sends up shoots progressively from the upper surface.) In recent years varieties of Bermuda grass have been developed that are suitable for propagation by seed.

Zoysia is a warm season grass of fine to medium texture. It goes dormant (brown) after the first hard frost. Most varieties of Zoysia are only available as sprigs or plugs. Zoysia is a very wear-tolerant turf grass, but its slow rate of growth gives it a poor

This table compares some of the characteristics of grasses used in Eastern Virginia.

	Shade Tolerant	Traffic Tolerant	Salt Water Tolerant	Drought Tolerant	Winter Color
Warm Season Grasses (Grows best from mid-April through early November)					
Bermuda Grass	No	Yes	Yes	Yes	Brown
Centipede	Yes	No	No	Yes	Brown
St. Augustine	Medium	No	Yes	Yes	Brown
Zoysia	Medium	Yes	Yes	Yes	Brown
Cool Season Grasses (Grows best from mid-September until early June)					
Tall Fescue [1]	Medium	Medium	No	No	Green
Fine Fescue	Yes	Poor	No	No	Green
Kentucky Blue Grass	No	Good	No	No	Green

[1] Virginia Tech only recommends tall fescue when some shade or a dependable irrigation is available.

recuperative potential. Zoysia will also spread by rhizomes. Zoysia will not tolerate poorly drained soil. Zoysia plugs planted on 12-inch centers will usually take two or three growing seasons to provide full cover.

Cool Season Grasses

Tall fescue is the species of cool season turf grass that grows best in this area. Cool season grasses that do well in other parts of Virginia, even the Piedmont, such as fine leaf fescue, red fescue, perennial rye grass, Kentucky bluegrass or bluegrass are not recommended for Gloucester. Tall fescue will remain green year round in Gloucester. Its main disadvantages are that it requires shade or extensive watering during hot dry summers which seem to be the norm in recent years.

ESTABLISHING YOUR LAWN

Before beginning work on your lawn, TEST YOUR SOIL!! The Extension office in the Courthouse has the forms and instructions for taking soil samples and having them tested by Virginia Tech. The test will tell you what nutrients you need, but more importantly the pH of the soil. Most soils in Gloucester are acidic and will require lime, but be sure and check. Bermudagrass and Zoysia grow optimally at a pH between 6.0 and 7.0. Tall fescue grows best at a pH between 6.2 and 6.5.

Also check the depth of your soil. Turf grasses will not be able to establish the deep roots needed to outlast the harsh summer droughts if they don't have enough soil depth. Ensure you have between 4-6 inches of good soil at a minimum (The deeper the better). If you have to bring in topsoil, also bring in some compost. A good mix is 1 part compost to 2 parts topsoil. [Compost is available very reasonably at the Virginia Peninsula's Public Service Authority, Yard Waste Composting Facility on Goodwin Neck Road, just off Route 17 in York County (757) 898-5012.]

"The best time to establish a lawn is in the fall of the year."

– Joann Gallagher, GEMG

Lawns can be started from seed or by installing sod. Although there are now recommended seed for both warm and cool season grasses, some bermudagrass varieties cannot be seeded and must be started with sprigs or sod.

Cool Season Grass

Fall is the best time to establish a cool season grass lawn (tall fescue). Seed is best started during September. Sod can be installed at any time except when the ground is frozen or in extreme drought or heat conditions. If you plan on establishing your cool season grass lawn in the fall, start preparations early. Changing pH takes several months, so you may want to add lime in the spring. In August add any amendments such as compost, additional lime, and about 2/3 of the required fertilizer and till to depth of 4-6 inches. If the yard is full of weeds or has the wrong kind of grass, you may want to use herbicide to kill the existing weeds or lawn prior to tilling. After tilling, grade the yard to establish good surface drainage. Finish the grading by fine raking, apply the remaining fertilizer, and rake 1-inch into the surface.

Seed or sod the area. Seed at the rate of 6 lbs. /1000 sq ft. Sow half the seed in one direction (up or down the lawn) and the other half in the opposite direction (sideways). Cover the seed by raking lightly into the soil with a leaf rake. Roll the area with a moderately heavy roller. Water daily with several shallow waterings to ensure rapid seed germination. Mulch the area with a light mulch such as straw (1/2 to 2 bales of weed-free straw/ 1000 sq. ft.)

When to Plant Cool Season Grasses

Area of Virginia	Seed	Sod
Southern Piedmont and Eastern Virginia	September 1 to October 15 or February and March	Anytime soil is not frozen

Warm Season Grass

Warm season grasses should be sprigged, plugged or sodded during May after the soil is warm. May and June plantings will have the greatest chance of surviving the first winter. These grasses have been successfully planted as late as July, but late summer plantings are not recommended.

When to Plant Warm-Season Grasses				
Area of Virginia	**Seed**	**Sod**	**Springs**	**Plugs**
Southern Piedmont and eastrn Virginia	a) Hulled Bermudagrass May to July 15 b) Unhulled Bermudagrass Late fall or winter prior to growing season	Late May to Aug 15	Late May to July 15	Late May to July 15

Soil preparation is the same as for cool season grasses except that liming should be started in the previous fall. Warm season grasses are available as 1- or 2-inch diameter plugs with about 2 inches of soil attached. The plugs should be fitted tightly into precut holes on 6-12 inch centers. Planting plugs on 6-inch centers requires 4000 plugs/1000 sq. ft. On 12-inch centers, 1000 plugs are needed/1000 sq. ft.

Sprigs can be purchased as sod and then shredded or can be purchased by the bushel. One bushel of sprigs is produced from shredding one sq. yard of sod. Sprigging rates vary from 7-10 bushels/1000 sq. ft. Sprigs can be broadcast over previously disked ground and covered lightly by disking again. Sprigs can also be planted in shallow depressed rows on 6- or 12-inch centers, and then covered with soil. New sprigs require light and frequent watering for at least 30 days after planting. The soil should not be allowed to dry out. Plugs or sod also require frequent, light watering until the plugs or sod is rooted. Once rooted, watering is only needed every second or third day.

MAINTAINING YOUR LAWN

Mowing

> ***"I always thought a yard was three feet untill moved into a house with a lawn."***
>
> **– mrsmegabyte.com, Martha Stewart Parody**

Turfgrass Mowing Heights (inches) for Lawns

Tall Fescue	3
Bermudagrass	1
Zoysia	1

Mowing should be determined by seasonal growth demands such that no more than 1/3 of the existing green blade is removed at one time. If the lawn is mowed too closely, root growth is slowed and the lawn's tolerance to heat and drought is reduced. It is important to use a sharp blade in the mower so that the grass is cut cleanly. Using a dull blade results in excess leaf damage. The open wounds leave the lawn susceptible to fungal damage.

Clippings do not have to be removed from the lawn. They do not cause thatch build-up but do add nitrogen to the soil when they decompose. Three years of leaving clippings on the lawn has been shown to increase the growth rate by 38% over a lawn from which clippings were removed. Earthworm populations increased in lawns where clippings were left, improving aeration and water infiltration.

Leaves in the Fall

Fall is the season for colorful tree foliage. Unfortunately for lawn growth, these colorful leaves eventually fall on top of our lawns and gardens. Now we must quit managing lawns and begin managing leaves. Leaves left on a lawn may cause several problems such as reducing lawn growth by blocking sunlight or trapping moisture in the lawn canopy, thus increasing the potential for lawn diseases. There are two basic approaches to leaf management: removal or mulching in place.

Blowing, raking, or vacuuming (removal) results in an accumulation of leaves. If you have a compost pile you can add these leaves to it. If you do not maintain a compost pile, you can often find a neighbor (par-

Pine Needles

Lawn mulching techniques do not apply to pine needles. Due to their size, shape, and composition, pine needles are highly resistant to microbial breakdown, and even if they are chopped into smaller pieces, they remain physically intact for months. Although pine needle disposal by mulching is not feasible, pine straw is very desirable as landscape bedding mulch. Consider using raked pine needles around your shrubs, especially those that do well in slightly acid soil such as azaleas. Again, if you have no use for the pine straw you rake from your lawn, ask a neighbor or a Master Gardener if they are willing to come and take it off your hands

ticularly if the neighbor is a Master Gardener) who will be happy to take leaves off your hands. Gloucester County also has five Convenience Centers that separate yard waste such as leaves and clippings from trash and other recyclables. (See References at end of chapter.)

Mulching a thin layer of leaves directly into the lawn is a technique that can be less labor intensive (especially if you have a riding mower) than raking, blowing and moving the resulting piles of leaves. Many agricultural research reports show that chopping up deciduous leaves as part of a regular mowing schedule is an effective means of managing these leaves without harming the turf.

While mulching mowers are preferred because they have special deck and/or blade designs to mulch clippings, almost any rotary mower unit will suffice. However, think safety first. Inspect the site and remove sticks and limbs before mulching to reduce the chance that you or someone else will be hurt by flying debris. Wear safety goggles and an air mask over your mouth and nose to protect yourself from debris and dust. Use some common sense regarding how many leaves can be effectively mulched in a single mowing event. Multiple passes with your mower might be required to thoroughly chop leaves. Finally, if you are going to be mulching leaves in the fall, keep your blades sharp and air filters cleaned. This will improve both the mulching process and the life of your mower engine.

Watering (Irrigation)

Deep, infrequent irrigation so that the water penetrates 6 to 8 inches will encourage deep root growth and turfgrass quality. In hot, dry weather, a lawn can use an inch of rain/week. The best time to water a lawn is early morning when evaporation is minimal. Over-watering can lead to excess blade growth and summer fungal disease (not to mention the need for more frequent mowing). Excess watering also wastes water and can increase the risk of fertilizers (nutrients) and pesticides getting into local streams and/or the Chesapeake Bay. To ensure the 1-inch per week, water after a light rain that is of less than the desired inch.

Fertilizing

A soil test will tell you the amount of phosphate and potash in your soil as well as the pH of your soil. The soil test does not tell you the amount of nitrogen you need. Fertilizers are described by a ratio of three numbers, N (nitrogen), P2O5 (phosphate) and K2O (potash) such as 10-10-10. The N content in turf maintenance fertilizers is in a quickly available and slowly available (water insoluble nitrogen—WIN) form. The WIN percentage is listed on the label. VCE recommends lawn fertilizer with a 4-1-2 ratio. The percentage of total nitrogen that is WIN is important for selection of the appropriate program for nitrogen fertilization. Use Programs 1 or 2 for cool season grasses; Program 3 or 4 for warm season grasses.

"Grass lawns have to be the stupidest things we've come up with. We constantly battle dandelions, Queen Anne's lace, thistle, violets, chicory and clover that thrive naturally so we can grow grass that must be nursed through an annual 4-step chemical dependency."

– Lee Stratton, Columbus OH, Dispatch, 11 November 1995

Programs for Fertilization of Cool Season Grasses:

Program 1. Nitrogen Fertilization Using Quickly Available Nitrogen Fertilizers (Less Than 50% Win)				
	Nitrogen Application by Month			
Acceptable Quality	**September**	**October**	**November**	**May 15-June 15**
	lbs. Nitrogen/1000 sq. ft.			
Low	0	1	0	0-1/2
Medium	1	1	0	0-1/2
High	1	1	0	0-1/2

Program 2. Nitrogen Fertilization Using Slowly Available Nitrogen Fertilizers (50% or more WIN)			
	Nitrogen Application by Month		
Acceptable Quality	**August 15 - September 15**	**October 1 – November 1**	**May 15-June 15**
	lbs. Nitrogen/1000 sq. ft.		
Low	1.5	0	0
Medium	1.5	1.5	0
High	1.5 – 2	1.5	0 – 1.5

Programs for Fertilization of Warm Season Grasses:

Program 3. Nitrogen Fertilization Using Quickly Available Nitrogen Fertilizers (less than 50% WIN)				
	Nitrogen Application by Month			
Acceptable Quality	**April**	**May**	**June**	**July/August**
	lbs. Nitrogen/1000 sq. ft.			
Low	1	1	0	0
Medium	1	1	1	0
High	1	1	1	1

Program 4. Nitrogen Fertilization Using Slowly Available Nitrogen Fertilizers (50% or more WIN)		
	Nitrogen Application by Month	
Acceptable Quality	**April/May**	**June/July**
	lbs. Nitrogen/1000 sq. ft.	
Low	2.0	0
Medium	1.5	1.5
High	2.0	2.0

The following table shows the correct amount of fertilizer to apply to obtain desired amount of nitrogen for the four programs using common fertilizer compositions.

Pounds of Nitrogen Desired/1000 Square Feet				
Fertilizer Analysis	0.5	1.0	1.5*	2.0*
	Lbs. fertilizer/ 1000 sq. ft.			
6-2-0	8.3	16.6	25.0	33.0
10-10-10	5.0	10.0	15.0	20.0
12-4-8	4.1	8.3	12.5	17.0
16-8-8	3.1	6.2	9.4	12.0
20-0-16	2.5	5.0	7.5	10.0
23-3-7	2.1	4.3	6.5	8.6
28-0-12	1.8	3.6	5.3	7.2
31-0-0	1.6	3.2	4.8	6.4
33.5-0-0	1.5	3.0	4.5	6.0
38-0-0	1.3	2.6	3.9	5.2
46-0-0	1.1	2.2	3.2	4.4
* These amounts are only recommended for fertilizers with 50% or greater WIN				

pH Adjustment

Before working on a lawn, the soil should be tested. Most soils in Virginia are acid; lime recommendations will be made to raise the soil pH to about 6.2. About 100 lbs. of limestone/ 1000 sq. ft. will raise the pH about one unit (i.e., from pH 5.2 to 6.2) in loamy soils. Sandy soils will take a little less and clayey soils will take a little more. If soil tests indicate low available magnesium levels, dolomitic limestone should be used. Otherwise use ground agricultural limestone. Lime will move down in the soil with rain and watering. Soil should be retested for pH about every 3 years and lime applied as necessary.

For a cool season grass lawn, it is recommended that lime be applied in late winter to allow the lime to react in the soil for fall fertilization. However, lime can be applied anytime. If a spring soil test indicates the need for lime, apply it. Lime is one of the least expensive soil additives available. Don't hesitate to use it. Be aware, though, that too much lime can drive soil pH in the alkaline range which is not good for grasses. Maintaining soil pH about pH 6.5 will provide good conditions for both cool season and warm season grasses.

Moss

Moss in lawns is usually a sign of poor soil, insufficient sunlight and an acid condition. Steps to take to remedy the problem involve trimming lower branches of trees to provide more light, treatment with lime, and addition of nutrients, particularly nitrogen. The first thing that should be done if this condition exists in your yard and it bothers you is to have your soil tested, particularly for pH. This will provide guidance on the amount of lime needed. The moss can usually be raked away before treatment.

An alternative to moss removal is a moss garden. See the References section at the end of this chapter for directions on growing moss.

Moles

A problem that occurs in many lawns is mole tunnels. Moles are insectivores (They eat underground insects, grubs, and worms.). Research tells us that the primary food source of moles is the earthworm. Various methods are suggested for solving the mole problem:

- Harpoon type traps that spear the mole are the recommended method of VCE (traps that "lasso" the mole with a noose are also available.)
- One approach is to dose the affected lawn with milky spore, a fungus that attacks grubs that are a common prey of moles. The problem with this is that moles will eat other things beside grubs such as earthworms which are very desirable.
- Dogs and cats are known to dig up and kill moles. This gets rid of moles but leaves you with a hole or holes to fill.
- A rodenticide bromethalin (trade name talipirin) has been incorporated into "earthworm-like" bait for moles. VCE does not yet recommend this for mole control.

Dethatching

Thatch is a tightly interwoven layer of living and dead stems, leaves, and roots that exist between the green blades of grass and the soil surface. A thin layer of thatch (about 1/2 inch) can actually be good for the lawn by increasing moisture retention in the soil, preventing weed seed germination, insulating crown tissue from frost and traffic damage, and increasing wear tolerance by spreading out the impact of compacting forces such as running and walking. Tall fescue is a low producer of thatch and a good tall fescue lawn will probably not need dethatching. Bermudagrass and Zoysia are high producers of thatch.

Light applications of lime (20-25 lbs./1000 sq. ft.) and top dressing of turfgrass seems to speed up thatch decomposition. If thatch does become built up, dethatching and/or aeration will be helpful. Dethatching should be done during low stress periods. For cool season grasses this would be in the fall after the summer heat and drought conditions have passed and before frosts or early spring after frost danger has passed. For warm season grasses dethatching should be done in June or July.

Aeration

If soil is heavy or compacted, or thatch is a problem, aeration may be needed. Aeration allows oxygen and moisture to reach the root layer. The best aeration is done with a machine that forces hollow metal tubes into the ground and brings up small cores of soil. This is most efficient if the soil is "moist," neither too dry nor too wet. Aeration should be done during the same time periods as dethatching to avoid stressing the lawn. Over seeding and top dressing is most efficient immediately after aeration, before rain or irrigation fills in the small holes. VCE does not recommend aeration with "spike" rollers which may increase soil compaction. Aeration is not necessary every year, and may harm the lawn.

Weed Control

Weed problems can be minimized with good mowing and fertilizer management as this helps grass outcompete weeds. There are two basic groups of lawn weeds: weedy grasses and broadleaf weeds. Examples of weedy grasses are crabgrass, goosegrass, foxtail, nimbleweed, orchard grass and even bermudagrass in some lawns. Some broadleaf weeds are dandelions, chickweed, clover, wild onions, oxalis, plantain, or anything not classified as a grass. There are selective herbicides for broadleaf weeds. These herbicides are most effective when the broadleaf weeds are actively growing or in the seedling stage. Annual weedy grasses such as crabgrass, foxtail, and goosegrass are best controlled by pre-emergent herbicides applied in the spring prior to germination. Spring reseeding of desired grasses cannot be done if the lawn is being treated with pre-emergent herbicides. Pre-emergents only work when seeds are about to germinate. Using pre-emergents for crab grass control in the fall is a waste of money and effort. Crabgrass control should begin when the forsythia are beginning to bloom. Fall use of pre-emergents can be used to control chickweed or other winter 'weeds.'

If weeds are totally out of control and are a mixture of broadleaf weeds and weedy grasses, it may be desirable to kill everything with a non-selective

"I never won the 'Yard of the Month' contest, but I have a lot of 'Weed of the Week' awards."

– Joe Hickman

herbicide and start your lawn again from scratch. Whatever herbicide treatment you select, care should be taken to apply the chemicals at the most appropriate time of the year. Label directions should be carefully followed, and recommended rates should not be exceeded. Improper application of herbicides can result in damages to desirable grasses, ornamental plantings and the environment. *This is a particular concern in Gloucester, where most of the land is very low, and Chesapeake Bay or streams that flow into the Bay are never far away.*

Disease Control

As with weed control, good maintenance practices can prevent or minimize disease. Nearly all lawn diseases are caused by fungus and can be controlled by appropriate fungicides. However the determination of which fungus is the problem is not an easy task. For an accurate diagnosis, a description of the immediate environment where the problem is found, an accurate identification of the host (type of grass), and the identification of the pathogen (disease) are necessary. Particularly important are symptoms on the grass itself. These include symptoms on the grass stand (e.g., does the disease occur in patches, rings, circles or is it essentially without a pattern?) and symptoms on the individual plants such as leaf spots, leaf blight, wilt, stunt, yellowing and root discoloration or rot. If you are not familiar with the specific symptoms of a disease, it is best to prepare an accurate description of the "environment" of the disease and its appearance in the grass stand; collect some of the diseased plants; and bring both the descriptions and the plants to the Gloucester Extension Office for a diagnosis by experts from Virginia Tech.

Once a diagnosis is made and an appropriate fungicide selected, application must be made in accordance with the directions on the label.

Insect Control

Again as with weed and disease control, proper lawn maintenance will prevent most insect problems from occurring. Insects are natural inhabitants of a healthy lawn and, for the most part, do not harm the lawn. The common lawn insect pests in Virginia are shown in the following table:

If you believe you have insect damage, the best thing to do is to bring a specimen of the suspected pest into the Gloucester Extension Office for identification. If it is a pest, then control measures can be recommended. As with herbicides and fungicides, label directions must be followed exactly. Excess insecticides will run into the Chesapeake Bay or adjacent streams.

"Winter is not the favorite time of the year for gardeners, but in terms of lawns, there is one good thing about snow, it makes your lawn look as good as your neighbors."

– Clyde Moore

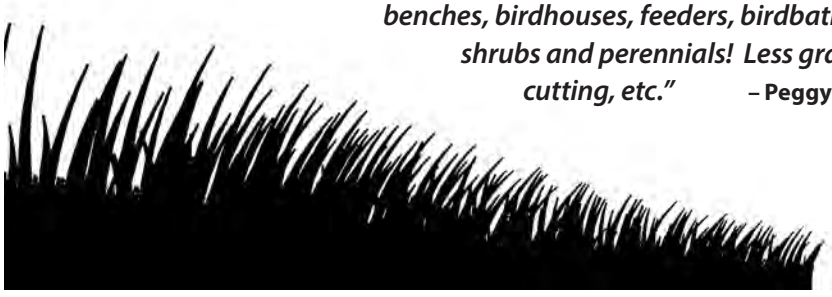
Name	Description	Damage	Signs
Above-ground Pests			
Cinch Bugs	Small black and white insects. To test for these, cut both ends of a large tin can, push one end into the soil, and fill with water. The bugs will float to the top if present	Suck sap from grass	Yellow and then brown patches
Sod Webworms	Larvae or caterpillar stage of several lepidoptera. Adults commonly seen flying in jerky, short flights as you walk through grass	Feed on grass blades at night	Small brown areas in lawn
Below-ground Pests			
White Grubs	Larval or grub stage of several species of beetles. Typically cream colored with a brown head and a dark posterior	Feed on roots	Brown areas on lawn
Billbug and Weevil	Look much like white grubs but are smaller and have no legs	Larvae feed on roots; adults feed on grass blades and stems	Brown stains on lawn

Ground Covers

Alternatives to grass lawns are available and once established may result in less time and expense to maintain as well as being easier on the environment. The table below is a guide to common ground covers.

Quick Guide to Ground Cover Plants				
Ground Cover	**Growth Rate**	**Height**	**Recommended Sites/Conditions**	**Light Preference**
Recommended (Less Vigorous In Terms of Spreading)1				
Creeping Juniper *Juniperus horizontalis*	Fast	1-2 ft.	Slopes and banks Hot, dry soil	Full sun
Moss Pink (Creeping Phlox) *Phlox subulata*	Medium	6 in.	Rock gardens or poor, relatively dry soil	Full sun
Hosta (Plantain Lily) *Hosta spp*	Slow spreading	Dwarf (3-4 in.) Tall (2 ft.)	Add bright spots to shady areas Slightly moist soils	Partially shady Will bleach in full sun
Pachysandra (Japanese Spurge) *Pachysandra terminalis*	Medium	1 ft.	Massed plantings in shady, moist areas Moist, well-drained soil	Full or partial shade
Yucca *Yucca filamentosa*	Slow spreading	2-3 ft. Flower stalk 4-6 ft.	Hot dry situations Any soil condition	Full sun
Lilyturf *Liriope muscara*	Medium	12-18 in.	Under trees and shrubs Border and foundation plants. Mass plantings on slopes Average, well-drained soil	Heavy shade to full sun
Mondo Grass *Ophiopogon spp*	Slow	8-16 in.	Rock gardens, borders Dry-moist soil	Shade to sun
Sedum (Stonecrop) *Sedum spp*	medium	Few inches to 2 ft.	Good on slopes Any dry soil	Full sun to part shade
Ornamental grasses Many species	Varies	1-10 ft.	Specimen or ornamental Dry-wet	Full sun

"Reduce grass by planting/designing 'outside garden rooms.' Walkways, benches, birdhouses, feeders, birdbaths and, of course, bulbs, flowers, shrubs and perennials! Less grass means less fertilizer, less cutting, etc." **– Peggy Cooney, GEMG**



Quick Guide to Ground Cover Plants				
Ground Cover	**Growth Rate**	**Height**	**Recommended Sites/Conditions**	**Light Preference**
Potentially Invasive Common Ground Covers				
Ajuga (Bugleweed) *Ajuga reptans*	Vigorous	1-4 in.	Borders and under trees and shrubs Any soil conditions	Full sun—tolerates some shade
English Ivy *Hedra helix*	Vigorous	6-8 in. mat Will climb trees and walls	Next to buildings and walls; under trees where grass will not grow; north or east facing banks Moist, well-drained soil	Shade or semi-shade. Foliage will 'burn' or discolor in sun or extreme winter conditions
Common Periwinkle (Myrtle or Vinca) *Vinca minor*	Vigorous	6 in.	Under-planting trees and shrubs, on slopes, or north side of buildings Dry yo moist soil	Shade to sun
Creeping Lilyturf *Liriope spicata*	Vigorous	9-15 in.	Mass plantings. Aggressively spreads so is unsuitable as a border plant. Average, well-drained soil	Shade to full sun
Crown vetch *Coronilla varia*	Vigorous	1-2 ft.	Dry steep slopes Average soil	Sun
Adapted from Virginia Cooperative Extension *Selecting Landscape Plants: Ground Covers*, Publication 426-609				

REFERENCES

Open link: *Lawn care: Guidelines for a healthy lawn*

Reicher, Z. & Hardebeck, G. (1999). *Leaf mulching effects on turf performance.* Retrieved from: http://www.agry.purdue.edu/turf/report/1999/page24.htm

York County Master Gardeners, *Guidelines for a healthy lawn on the Virginia Peninsula.* http://www.yorkcounty.gov/Home/VirginiaCooperativeExtension/HorticultureandNaturalResources.aspx

Virginia Cooperative Extension (VCE) Publications:

The VCE web site has extensive information on lawns. Most of the information in this chapter has been drawn from that site. Below is a list of VCE publications that address discussion points in this chapter. The websites where these can be found are https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

Wildlife

Managing wildlife damage: Moles (2009). 420-201

Gardening and the Environment

Creating a water-wise landscape (2009). 426-713
Groundwater quality and the use of lawn and garden chemicals by homeowners (2009). 426-059
Home landscape practices to protect water quality (2009). 426-723

Lawns

A lawn to dye for- How to create a perfect lawn: Aerating your lawn. CSES-38NP
Aerating your lawn, 430-002
Compost: What is it and what's it to you. (2018) 452-231
Establishing lawns (2009.) 426-718
Lawn moss: Friend or foe? (2009). 430-536
"Leave" them alone: Lawn leaf management (2009). 430-521
Maintenance calendar for cool-season turfgrasses in Virginia (2009). 430-523
Maintenance calendar for warm-season turfgrasses in Virginia (2009). 430-522
Making compost from yard waste. (2009). 426-703 (HORT-46P)
Mowing to recycle grass clippings: Let the clips fall where they may! (2009). 430-402
Selecting turfgrass. (2009). 426-719
Spring and summer lawn management considerations for cool-season turfgrasses (2009). 430-532
Spring and summer lawn management considerations for warm-season turfgrasses (2009). 430-533
Summer lawn management: Watering the lawn (2009). 430-010
2021-22 Virginia turfgrass variety recommendations SPES-343NP

Trees, Shrubs, and Groundcovers

Selecting landscape plants: Groundcovers (2012). 426-609 (HORT-31P)

Convenience Centers for Disposal of Lawn and Garden Wastes

The five Waste Management Convenience Centers in Gloucester County operate on the following schedule:

Monday - Friday: 8:00 a.m. to 7:00 p.m.
Saturday: 7:00 a.m. to 7:00 p.m.
Sundays: Closed
New Year's Day, Thanksgiving, and Christmas: Closed .

Other changes to the schedule will be posted at the Centers and in local newspapers.

These centers are located at :

Middle Peninsula Landfill and Recycling Center - 3714 Waste Management Way
(Entrance on Route 17) - 693-5109
Belroi - 5122 Hickory Fork Road
Dutton - 10430 Burke's Pond Road
Court House - 6550 Beehive Drive
Hayes - 7599 Guinea Road

Gloucester County residents may dispose of yard waste such as pine needles, grass clippings, leaves, debris from small pruning jobs, brush, and tree limbs generated within the County as long as the amount does not exceed four cubic yards (approximately a pickup truck load).

Notes:

TREES

DECIDING WHICH TREE TO PLANT

Among the most important contributions trees make to a garden is to lend an air of permanence. While a holly may give up the ghost after a year or two, an oak can live for centuries. A stately tree that forms the centerpiece of your garden may well have been the legacy of a farsighted gardener from many years earlier.

The basic distinction between trees is whether they are deciduous or evergreen. Deciduous trees sprout new leaves in spring and carry them throughout the summer. In fall, the leaves may turn brilliant colors before dropping for the winter. Evergreens, on the other hand, generally retain their foliage year-round, making them ideal for screens, wind breaks, or as points of interest during winter months.[1] Evergreens do drop their old leaves as new leaves come out on the tree.

As you head off to your local nursery to pick out trees for your lawn and garden, you will want to make sure you have considered trees from both of these categories.

Before You Get That Tree

Before selecting the type of trees that will work best in your landscape, here are a few tips:

1. First, do a layout of your landscape and make a preliminary design of the kind of trees you want to plant. For example, you may want trees to:
   - protect your house from summer sun and wind damage
   - provide color and flowering in different seasons of the year
   - provide a backdrop for a garden project
   - serve as habitats for wildlife
2. Next, assess each section of your landscape to determine:
   - how much sun is available in each season?
   - how much sun is available at different hours of the day?
   - which sections are wet and which are dry?
   - what is the direction of the prevailing winds?
3. Next, test the soil to determine which areas need to be improved. (Visit the Gloucester County Virginia Cooperative Extension Office (VCE) for special instructions on soil testing for trees and to obtain test kit.)

Finally, based on your layout and assessment of landscape conditions, make a list of the purposes, i.e., shade an area, serve as a focal point, provide a border or fence, etc., you want the trees to serve.

TREES TO AVOID

Before you finalize your tree selection list, consider trees you may want to avoid. You can avoid years of hard labor by eliminating weak, offensive, or invasive trees that would be a nuisance. Most trees fitting these descriptions are fast growing and have other undesirable features. The following are a few you might want to avoid:

- **Bradford Pear** *Pyrus calleryana* – while beautiful, its weak branching structure makes it fragile and susceptible to breakage during high winds, ice, and snow storms.

[1] Bender, Steve, Editor, *Southern Living Landscape Book*. (Birmingham, Alabama: Oxmoor House, Inc., 2000)

- **Female Ginkgo** *Ginkgo biloba* – has unpleasant smelling fruit.
- **Leyland Cypress** *Cupressocyparis leylandii* – most serious problems are Seridium and Botryosphaeria dieback and canker which can cause branch dieback and, if it gets into the main trunk, can kill the tree. Bagworms and Phytophthora root rot are also common with this overplanted, fast growing but short-lived tree.[2]
- **Mimosa Tree** *Albizia julibrissin* – a small to medium-sized tree with showy, pink fragrant flowers. It can grow in a variety of soils, produce large seed crops, and resprout when damaged. As it is a strong competitor to native trees and shrubs in open areas or forest edges, it is considered invasive. Dense stands of mimosa severely reduce the sunlight and nutrients available for other plants.
- **Princess Tree** *Paulownia tomentosa* – also known as the Empress tree, it is a small- to medium- sized, aggressive ornamental tree that grows rapidly in disturbed natural areas, including forests, stream banks, and steep rocky slopes. It is considered invasive.
- **Russian Olive** *Elaeagnus angustifolia* – a small, usually thorny tree that can grow to 30 feet in height. This tree has been planted extensively for windbreaks, hedgerows and attracting birds but it tends to invade riparian areas. In 2001, the Virginia Department of Transportation removed the Russian Olive plants throughout the interstate system in Virginia.
- **Salt Cedar** *Tamarix ramosissima* – grows as a small tree, usually 5 to 20 feet tall, and can damage valuable cottonwood/willow, seepwillow/ baccharis, and other native plant communities by producing abundant seed, rooting and proliferating from buried stems, and concentrating salt in the leaves.
- **Siberian Elm** *Ulmus pumila* – a fast-growing, small- to medium-sized tree with seeds that blow around like flurries of snow. They germinate readily and grow seedlings rapidly.
- **Sweetgum** *Liquidambar styraciflua* – may cause a litter problem when its fruit—spiny balls—fall to the ground.
- **Tree-of-heaven** *Ailanthus altissima* – a small- to medium-sized tree with smooth gray bark. It is highly invasive. The leaves when crushed produce a distinctive, offensive odor like "the smell of burnt peanut butter." Tree-of-heaven also produces a toxin in its bark and leaves. This toxin is so effective that it is currently being studied as a possible source for a natural herbicide.[3]

Pamela Harper, author of Time-Tested Plants, cautions us about being too logical and practical in our choices. "In choosing among the plethora of trees that flower in early spring, one inevitably makes the occasional poor choice. My mistakes arose mainly from too slow a recognition that trees grow faster and larger in the warm, moist climate of coastal Virginia than they do in England, and that heat fades flowers so quickly that blooms alone seldom justify the space of such popular trees as crab apples. If one omits crab apples and cherries, both problem-prone, the majority of spring blooming trees have white flowers so color plays a part in my assessments."[4]

There are some "givens" when considering which trees to eliminate. Unless you're deliberately using it as a barrier, don't plant a tree with spiny leaves, prickly needles, or sharp thorns near a walkway or building. Trees that are typically thorny include citrus, hawthorn, black locust, honey locust, palo verde, devil's club, prickly ash, and Osage orange.

It is also best to be cautious selecting trees that generate suckers. Suckers are shoots that typically grow faster than ordinary branches or twigs and commonly point straight up. They take a lot of resources from the plant and they also attract sucking insects because they are full of sugars. Apple, crabapple, aspen, cottonwood, black locust, pin cherry, sourwood, and sassafras are all prone to forming suckers around their bases or farther away.[5]

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[2] Scott, J. McLeod, Revisions 2010, *Leyland Cypress Diseases and Insect Pests* http://www.clemson.edu/extension/hgic/pests/plant_pests/trees/hgic2004.html

[3] Schalau, Jeff, County Director, Agent, *Backyard Gardener: Invasive Weed Trees* (Yavapal County: Arizona Cooperative Extension, 2001), https://ag.arizona.edu/yavapai/anr/hort/byg/archive/invasiveweedtrees.html

[4] Harper, Pamela J., *Time-Tested Plants* (Portland, Oregon: Timber Press, 2000)

[5] Buchanan, Rita, *Taylor's Master Guide to Landscaping*, (New York: Houghton Mifflin Company, 2000)

SELECTING THE HEALTHIEST TREES

Knowing the kind of trees you want to plant is one thing; picking trees that are healthy and most likely to flourish is something else. The New American Landscape Gardener offers the following suggestions:

- Pick trees that have good color, without extensive yellowing and without any trace of wilting. The leaves should be clean, free of holes or any other sign of insect damage. The trunk should have no large unhealed scars or holes.
- Beware of trees with crossed limbs, missing leaders, and broken branches.
- Choose a smaller, younger specimen over a larger, older one. The younger plant will be more vigorous than the larger, older tree.
- When you buy container-grown stock, make sure it has a good root ball. It should be large enough to fill the pot but not so large that it is pot bound.
- Talk to the nurseryman about each plant and note his recommendations.
- Unless you have a large vehicle or a small load of plants, have the nursery deliver your new purchases.[6]

Water must be supplied on a regular basis to newly planted trees. Smaller trees will require regular irrigation for several months following planting; larger trees for much longer. If you cannot meet the watering requirements of a given tree, choose it in a smaller size. Site drainage also affects the size of tree to choose. On poorly drained sites, smaller nursery trees with shallower root balls often adapt better than larger nursery trees. A nursery tree is considered large if its trunk is more than 2 inches in diameter.

The shape, depth, and size of a tree's root ball are determined by the way the tree was produced in the nursery. Trees grown directly in the ground are called field-grown. Field-grown trees that have been properly harvested and hardened off are strong and sturdy.

Container-grown trees have smaller root balls and many times more fine roots than similarly sized field-grown trees. For a variety of reasons, container-grown trees dry out more quickly, making them more sensitive to drought injury in the period following planting. To maintain optimum growth after planting, you should water container-grown plants at least as often as they were watered in the nursery. Examine the roots on the surface of the root ball. Do not buy a plant with black roots. Heat stress, freezing temperatures, or over-watering probably killed these roots. Strong trunks are thickest near the ground and taper up. They do not require stakes to support them. Trees that were staked for a long time in the nursery may not develop proper trunk taper and may fall over when stakes are removed. Branches should be distributed along the trunk and not clumped toward the top. Branches in the lower half of the tree help distribute the stress placed on the trunk when the wind blows.

Except in their dormant season, nursery trees should have foliage to the ends of all their branches. Dead tips indicate problems that need further study. If the tree is dormant and has no leaves, scrape several of its twigs with your fingernail. If the tissue revealed is greenish or white, the twig is alive. Dry brown tissue indicates that the twig or branch is dead from that part out to the tip. This condition is known as dieback. As a rule, trees with dieback should not be purchased.

"I had two trees on my property that I thought were dead. In my search for an arborist, I called the Virginia Department of Forestry (Gloucester office) and asked if they could refer me to an arborist. To my surprise, the forester volunteered to come to my home and inspect the trees. He came, identified the trees –a water oak and a deodar cedar, confirmed my fears that the trees cannot be saved, and suggested possible reasons for their demise. No charge!" **– Noel Priseler, GEMG**

[6] Leighton, Phoebe and Simonds, Calvin, *The New American Landscape Gardener*, (Emmaus, Pennsylvania: Rodale Press, 1987)

PLANTING TREES

Current Research on Planting of Trees[7]

The late Dr. Bonnie Appleton, professor of horticulture at the Virginia Polytechnic Institute and State University Hampton Roads Agricultural Research and Extension Center, Virginia Beach, conducted research to solve the problem of "deep structural roots"—having too much soil or substrate atop large woody roots that can lead to tree stress and death. Her research has shown that when planting balled and burlapped (B&B) or container grown trees, the roots should be bared to ensure successful planting or transplanting. Dr. Appleton cited the following problems in the production, harvest, shipping, and planting of trees:

Too deep from the nursery:
Field Production

- Seedlings planted too deep because root flare hard to detect
- Seedling planted too deep to prevent them from blowing over
- Buds/grafts planted too deep to bury the graft union (or seedling cut back "dog leg")
- Seedlings end up too deep due to cultivation for weed control

Too deep from the nursery:
Container Production

- Seedlings planted too deep because root flare hard to detect
- Seedlings planted too deep to prevent them from blowing over
- Seedlings end up too deep due to substrate settling
- Seedlings end up too deep due to the use of long narrow propagation containers
- Buds/grafts planted too deep to bury the graft union (or seedling cut back "dog leg")

Too deep in the landscape:

- Plant initially too deep in the container or field root ball
- Planting hole dug too deep
- Soft soil that eventually settles put underneath root ball in bottom of hole
- Excess hole soil put atop root system
- Excess mulch put atop root system

Appleton and Jim Flott, Arborist, Community Forestry Consultants, Spokane, WA, advocated bare root planting for trees that are container grown or B&B. Flott stressed root washing—soaking the tree roots in a tub to remove the soil. Appleton found success with a quicker method—pressure washing the tree roots to remove the soil. The point of both is to bare root the trees before planting them.
The reasons for bare rooting at planting are the following:

- Exposes entire root system
- Reveals root collar and graft union
- Allows for repair of the root system
- Resolves the soil interface disparity issue (Soil interface disparity occurs where two structurally different soils, for example, clay and sand, meet. Plant roots that are growing in either soil are conditioned to that soil and do not spread out into the soil with the different structure. That is why a good way to plant trees is to bare root them and backfill only with the soil from the hole itself.)
- Packs soil into the roots versus against the root ball
- Virtually eliminates the need for staking (stabilization) at planting
- Lighter weight tree to handle
- Requires less equipment, less labor, and shallower planting hole
- Fewer back injuries
- Root system is kept moist (if using a root washing method)
- Trees can be compressed to fit through smaller spaces if planting in a hard-to-reach area

[7] Appleton, Bonnie L., Flott, James J., Bare Root to Bare Root – Coming Full Circle
http://www.michigan.gov/documents/dnr/BareRootToBareRootAppletonProceedingsPaper_292993_7.pdf

While this is a good method for planting trees, there are some trees that do not do well when bare rooted.

Trees Difficult to Transplant Bare Roots[8]

- **American Hophornbeam** *Ostrya virginiana*
- **Bald Cypress** *Taxodium distichum*
- **Bur Oak** *Quercus macrocarpa*
- **Chestnut Oak** *Quercus prinus*
- **Chinkapin Oak** *Quercus muehlenbergii*
- **Frontier Elm** *Ulmus 'Frontier'*
- **Ginkgo** *Ginkgo biloba*
- **Hornbeam Carpinus spp.**
- **Lacebark Elm** *Ulmus parvifolia*
- **Scarlet Oak** *Quercus coccinea*
- **Shingle Oak** *Quercus imbricaria*
- **Tulip Tree** *Liriodendron tulipifera*
- **Tupelo** *Nyssa sylvatica*
- **Washington Hawthorn** *Crataegus phaenopyrum*
- **White Oak** *Quercus alba*

Site Preparation

When preparing the planting site, the most common mistake is digging a hole which is both too deep and too narrow. Dig a hole at least twice as wide as the root ball; the wider, the better. Make sure the hole is the correct depth to put the root flare just above ground level. While the soil is out of the hole, remove all debris (sticks, trash, stones, etc.). Do not add artificial or organic matter to the soil. Taper the side walls and roughen them to create cracks into which the roots can grow. Using the soil you have removed, form a solid soil pedestal or mound in the center of the hole. The circle around the pedestal should be deeper in order to drain the excess water away from the roots. The hole should resemble a shallow saucer with a hump or mound in the center. (*Figure 1.*) The mound is larger for a bare rooted tree. (*Figure 2.*)

"Newly planted trees have to adjust to their new conditions and this takes time. The rule of thumb is the adjustment period is one year for each inch in diameter. So, a sapling that is 1 / 2 inch will take six months to adjust and a 2-inch diameter tree will take two years."

– Jim Newton, GEMG

Figure 1

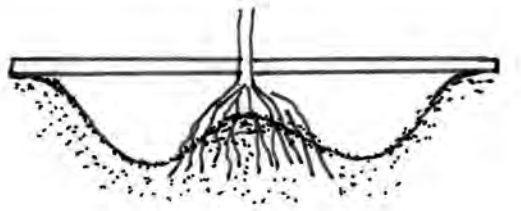


Figure 2

Prepare the Tree

Normally trees are purchased in three conditions: B&B, container grown, or bare root. If you have a B&B or container grown tree, you need to cut away the wire basket, twine and burlap or remove the container from the root ball. If it is a tree that can be bare rooted, soak overnight and use your garden hose and wash the soil off the roots. If it cannot be bare rooted, tease out the roots and loosen the ball slightly. In either case, cut all circling roots and prune out root defects—broken or damaged roots. In all cases keep the ball or roots moist.

Plant the Tree

Place the root crown on top of the soil mound. Additionally, for a bare rooted tree, arrange the roots radially around the mound. Make sure that when properly seated on this mound the tree is planted so that the 'trunk flare' is clearly visible and the 'crown,' where the roots and top meet–determined by the dark stain on the trunk which marks the difference between root and trunk bark–is about two inches above the soil level. (*See Figure 3.*) This will allow for natural settling.

[8] Bassuk, Nina L. and Buckstrup, Michelle *Creating the Urban Forest: The Bare Root Method* http://www.hort.cornell.edu/uhi/outreach/pdfs/bareroot.pdf

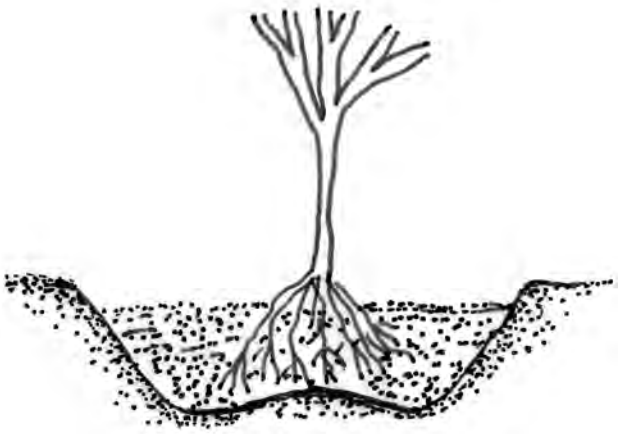


Figure 3.

Backfill the hole (only with the soil from the hole, no amendments or fertilizer), while simultaneously adding water. Use your hands to press the soil against the root ball or into the roots. This method will ensure that air pockets are removed and re-wet the soil and roots. Place 3 to 4 inches of organic mulch on the entire planting area to reduce weeds and maintain soil moisture after the tree is planted, but not too close to the trunk.

Keep pruning to a minimum during the planting so as many leaves as possible can nourish new root growth. Broken, crossing or rubbing limbs, as well as suckers (shoots that originate from roots) and water sprouts (vigorous shoots rising straight up from a limb of the tree) should be pruned off.

Avoid planting trees in a line except as wind breakers. If you must plant in a line, make the spacing slightly irregular so that you avoid the missing tooth appearance if one or more trees dies or is injured by a storm.

FAVORITE FLOWERING TREES

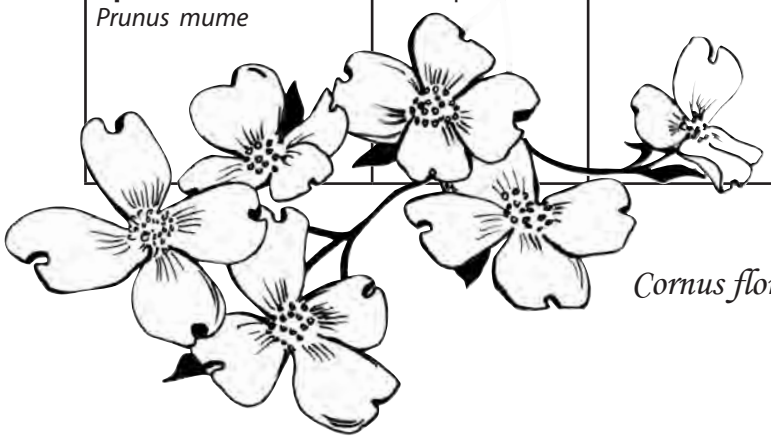
Flowering trees are the landscaper's dream. Fortunately, there are many varieties that will flourish in our area. Ornamental flowering fruit trees (Prunus species) are closely related to the orchard fruit trees that are grown primarily for their fruit. Although many of the ornamental flowering trees bear edible fruit, they are grown primarily for their springtime floral display and attractive form. You should consider trees that are salt-tolerant for locations on the water in Gloucester. There are many varieties from which to choose.

The table below identifies helpful facts on some of our favorite ornamental flowering trees that flourish locally:

Tree	Height / Width	Bloom Period	Description
Dogwood, Flowering *Cornus florida L.*	40 feet tall and 20 to 30 feet wide	Early April	The white flowering dogwood is a native tree to the forests of America. It flowers in early spring for 2 to 3 weeks. Oval berries of bright red are formed following the blooms and persist on the trees into fall and winter after leaves are shed, and until they are eaten by wildlife and birds. In the fall the dogwood trees are covered in brilliant red leaves that change to purple. This tree grows well underneath oak tree shade as well as under pine trees; remarkably, it will grow well in full sun. It is well adapted to stress and is very tolerant of dry weather. It does not like to be over-watered or be in soggy soil conditions.
Fringe Tree - Old Man's Beard *Chionanthus virginicus*	12 to 20 feet tall and equally wide	Late May	This native large shrub to small tree is adaptable. It produces beautiful, fragrant, white flowers and its fruit attracts birds. Easily grown in average, medium, well-drained soil in full sun to part shade. Seldom needs pruning. Tolerant of air pollution and adapts well to urban settings. Intolerant of prolonged dry conditions. Requires male and female trees to produce fruit. Only female trees bear fruit.

FAVORITE FLOWERING TREES (*continued*)

Tree	Height / Width	Bloom Period	Description
Flowering Crabapple *Malus florabunda*	10 to 25 feet tall and 15 to 25 feet wide	April	Ornamental crabapple trees are a group of small flowering trees used for landscape plantings. They are valued for their foliage, flowers, fruit and variations in form and size. The trees have beautiful blossoms of white, pink or red flowers. Be sure to get the disease-resistant variety. They prefer a heavy-loam soil, but will tolerate clay soils as long as they are well drained but moist, with no standing water. Flowering crabs require full sun and open exposure to increase air circulation.
Yoshino Cherry *P. yedoensis*	40 to 50 feet tall and 25 to 40 feet wide	Early spring	It grows quickly to 20 feet, has beautiful bark but is a relatively short-lived tree. It has upright to horizontal branching, making it ideal for planting along walks and over patios. The white to pink flowers blooming in early spring before the leaves develop can be damaged by late frosts or very windy conditions. Prefers full sun and well-drained soil. The tree is heat tolerant.
Sweet Bay Magnolia *M. virginiana*	40 to 50 feet tall and 15 to 25 feet wide	May and June	This tree is often grown as an ornamental landscape tree because of its attractive foliage, flowers, and fruit. It occurs naturally in moist and wet soils in wetland areas such as swamps and along streams and ponds. This tree provides fragrant creamy white flowers. It tolerates wet soil but not salty soil and prefers light shade.
Japanese Flowering Cherry - Oriental Cherry *Prunus serrulata*	15 to 25 feet tall and 15 to 25 feet wide	Early to mid- spring, depending on the cultivar	It may grow about 10 feet in 10 years but is short-lived. The average life span is 15 to 20 years. The showy flowers may be white or pink, single or double; some are fragrant. Double-flowered varieties tend to hold their bloom longer. Flowers occur before or with the leaves. The tree prefers moist, fast-draining, well-aerated soil and requires full sun. Pruning is seldom necessary except to remove dead or diseased wood, or crossing branches that appear awkward or rub against each other. This tree is susceptible to many problems, including cherry virus diseases, canker, twig blight, root rot, powdery mildew, bacterial and fungal leaf spots, borers, aphids, tent caterpillars, and scale.
American Plum - Wild Plum - Goose Plum *Prunus americana*	15 to 30 feet tall and equally wide	Spring	This tree often grows along roadsides. It can be a single stemmed tree. The flowers are white, appearing before the leaves. Fruits are yellow to red and are good for making jelly.
Japanese Flowering Apricot *Prunus mume*	15 to 20 feet tall and equall / wide	March	This is a fast-growing tree when young, averaging 3 to 5 feet per year. Growth slows when the plant is about 10 to 12 years old. The growth habit may be rounded, upright, weeping, or corkscrew, depending on the cultivar. It prefers full sun and fertile, well-drained acid soil. The single or double flowers may be white, pink, rose or red, based on the cultivar.



Cornus florida

FAVORITE EVERGREEN TREES

Be sure to concider native evergreen trees for your landscape. Some of our favorites are described below.

Tree	Height/Width	Description
Foster's Holly *Ilex x attenuate*	20 to 30 feet tall and 10 to 20 feet wide	It likes moist, acid soil and part shade to sun. It is primarily used as a screen and is noted by its red berries. For the best berry production and most compact growth, choose a sunny spot. Poor fruiting on hollies is a problem experienced by many gardeners. This could be due to poor pollination; young, immature plants; high nitrogen levels in the soil; or a late spring frost which injured the flowers.
Eastern Red Cedar *Juniperus virginiana*	40 to 50 feet tall and 10 to 20 feet wide	This pyramidal to columnar evergreen is very common in the wild. It is best with moist conditions, but is drought-tolerant. It has green scale leaves. This tree grows best in well-drained rocky or sandy sites. Its wood, which is in demand, releases an odor that repels moths. It is a slow growing tree.
Southern Magnolia—Bull Bay *M.grandiflora* *M. 'Little Gem'*	60 to 80 feet tall and 30 to 50 feet wide	This grand lady of southern trees is preferred for its fragrant plate-size white flowers that bloom in early summer and sporadically through the rest of the growing season, its dark lustrous leaves and striking fruit, as well as its overall size and stature. It can be used as a lawn specimen, screen, or, with smaller, dense cultivars, as a hedge. Grows in full sun to part shade in humus-rich, moist but well-drained acidic soil. Once established, this tree thrives in full sun. Otherwise, plant the tree in partial shade. The growth rate is variable, depending on the seedling, but generally it grows at a slow to medium rate (1 to 2 feet yearly). It responds to water and fertilization with faster growth. It is a long-lived tree. It blooms in May and June; some cultivars bloom sporadically throughout the summer. This tree requires a lot of space and should be reserved for large properties. This tree is mostly problem-free. When planting, allow enough space so the lower limbs can drape the ground, hiding the fallen leaves, which will provide necessary nutrients as they decompose. A dwarf cultivar that grows well in our warmer climate. It is a slower growing form with a columnar shape which reaches about 14 feet high and 4 feet wide. It flowers heavily over an extended period and bears medium-size cup-shaped flowers.
Live Oak *Quercus virginiana*	40 to 80 feet tall and 60 to 100 feet wide	This tree is extremely long-lived and becomes picturesque and stately with age. Long, yellow catkins decorate the tree in the spring and dark brown to black acorns ripen in late summer. Grows best in full sun and adapts to most soil types and moisture conditions. Grows moderately fast when young, producing 2 to 2½ feet of growth per year, if properly located and maintained. It is best known for its massive horizontal limbs that give old trees their majestic character and is reminiscent of the Old South, especially when planted along avenues or drives leading to old plantations. Although used extensively for street tree plantings, in time the roots will lift sidewalks or streets if planted too close. It will do well as a lawn specimen provided it is given plenty of space. Although it responds best to plentiful moisture in well-drained, sandy soils, it tolerates drier, more compacted sites. Once established, it is drought-resistant. It prefers sun but tolerates more shade than other oaks because its leaves function throughout winter. Live oak is susceptible to leaf blister, a fungal gall that disfigures leaves but does no appreciable harm.
Japanese Cryptomeria or Japanese Cedar *Cryptomeria japonica*	50 to 80 feet tall and 20 to 30 feet wide. Heights of 100 to 125 feet are not uncommon.	This is a splendid evergreen that becomes even more handsome as it matures. The growth rate is slow to medium (20 feet in 20 years). This tree is a handsome specimen for windscreens, borders, and groupings on large properties. It works well as a lawn specimen on smaller properties because of its narrow canopy and relatively slow growth rate. The ideal planting site is in moist, acidic, well-drained soil. Although it is moderately adaptable to dry sites, it needs irrigation during drought. While it prefers full sun, it tolerates partial shade. The tree site should have good air circulation to help prevent disease but should not be exposed to high winds.

FAVORITE DECIDUOUS TREES

In this next table you will find deciduous trees that do well in Gloucester.

Tree	Height/Width	Description
Black Gum— Black Tupelo *Nyssa sylvatica*	30 to 50 feet tall and 20 to 30 feet wide	One of the most attractive native trees around. Summer leaves are a dark green with a high-gloss appearance. The fall foliage is spectacular with many shades of yellow, orange, bright red, purple or scarlet that may appear on the same branch. Bark matures to medium gray and resembles alligator hide. Fruit is bluish-black and is loved by many birds. Makes a strong specimen tree. Prefers well-drained, acid soils, and full sun to partial shade. The species is recommended for stabilizing shorelines.
Crape Myrtle *Lagerstroemia species*	10 to 30 feet tall and 15 to 25 feet wide	This is a handsome, summer-flowering, deciduous small tree or shrub. It is a favorite among Southern gardeners because of its beauty and low maintenance. Old specimens can reach 40 feet at maturity. It grows at a moderate to fast rate and has a moderate to long life span. It is valued for its long period of striking summer flowers, adapts well to confined spaces, and can provide shade in deck and patio areas. The flowers of some selections, however, may stain car paint; the honeydew drops from aphids on the plant may stick on cars or patio furniture. The ideal planting site is in well-prepared, well-drained soil, with full sun exposure and good air circulation. A tree planted in partial or full shade will have reduced flowering and increased disease susceptibility. The tree will tolerate slightly alkaline to acidic (5.0 to 6.5 pH) clay and other soil textures. Although it tolerates drought, it requires irrigation until it is well established (approximately two years). Severe pruning has become a common practice to maintain shrub size. This ruins the natural, graceful effect of the tree. Powdery mildew is a problem during the spring and fall. Planting in full sun and providing good air circulation can prevent it.
Honey locust (Thornless) *Gleditsia triacanthos var. Inermis*	50 to 75 feet tall and 30 to 50 feet wide	This tree lives about 120 years. With its compound leaves, it casts a light shadow and is hence a superior lawn tree. Its long twisted fruit pod can be up to 50 centimeters long. An alcoholic liquid is obtained by fermenting the seed coat. The fruit is also a source of food for birds and mammals. The tree has thorns on its branches that are dangerous when the tree is young. In the past, these hard thorns were used as nails. This tree is very hardy in that it adapts well to many types of soils. It thrives best, however, in moist soil. Its reddish-brown wood is hard, strong and heavy. It resists humidity and decay but is not very pliable. It is used in carpentry and for railway ties.
Japanese Maple *Acer palmatum*	15 to 25 feet tall and 10 to 25 wide	This tree thrives in moist soil and partial shade. There are many cultivars. Red-leafed cultivars are the most popular, followed by cascading green shrubs with deeply dissected leaves. Some tolerate sun and others like shade. Almost all are adaptable and blend well with companion plants. The trees are particularly suitable for borders and ornamental paths because the root systems are compact and not invasive. Well drained soil is preferred and the trees grow strongest when not over-fertilized. Many varieties are successfully grown in containers Anthracnose, powdery mildew, leaf spot, leaf scorch, root rot, aphids, scales, and borers may trouble this tree.
Chaste Tree *Vitex agnus-castus*	10 to 20 feet tall and wide	It is a sprawling plant with branched flower clusters in late spring and early summer. Not only is the tree strikingly beautiful when in full bloom, but it is also fragrant and attracts pollinating bees and hummingbirds. Flowers are white or violet to blue to deep purple and are followed by a fleshy fruit that contains four seeds that are sometimes used as seasoning (monk's pepper). Grow in full sun or light shade in moist, well-drained soil. It is tolerant of salt spray drift and is drought resistant. It make a good specimen tree.

Favorite Deciduous Trees (*continued*)

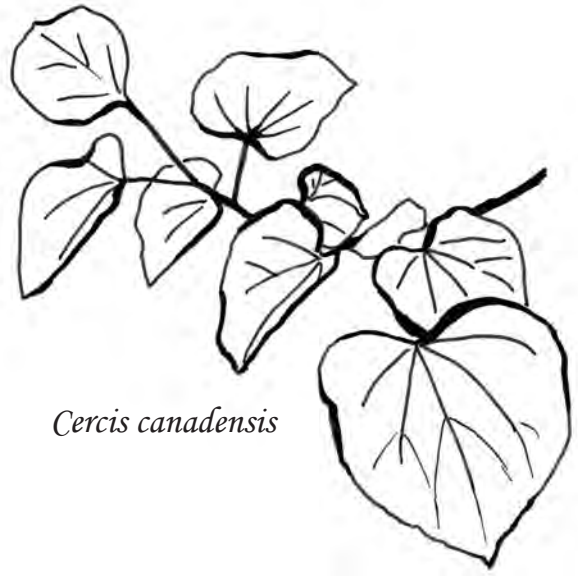
Tree	Height/Width	Description
Redbud—Judas Tree *Cercis canadensis*	20 to 30 feet tall and 15 to 35 feet wide	This tree is an outstanding, deciduous ornamental tree with rosy pink blossoms opening early in spring. This tree always remains small and growing in the sun will be compact and rounded; when grown in shade, its form is loose, open, and tall. It grows at a moderate rate, about 7 to 10 feet in five to six years. It tends to be short-lived. The heart-shaped leaves are reddish as they emerge, and gradually turn dark green in summer. The fall color is yellow. This tree is best used in naturalized areas, where the flowers are contrasted against evergreens or woodlands. Although it does well in most soil types, it prefers a moist, well-drained site. It does not, however, like a site that is permanently wet. It tolerates acid or alkaline soils. It grows well in full sun but prefers some shade in the heat of summer. Although it will grow in fairly dense shade, it blooms more heavily when exposed to sun. It tolerates moderate dry spells but does better when irrigated in summer droughts. Canker is its most destructive disease. Wounds created by pruning serve as entry points for the fungus that infects the wood and causes cankers. Insects such as treehoppers, caterpillars, scales, and leafhoppers can also cause damage.
River Birch *Betula nigra*	90 feet tall and 30 to 50 feet wide	It grows at a medium to rapid rate (30 to 40 feet over a 20-year period). Birches situated in moist areas are long-lived. One of the most appealing features of the birch is the bark, which, on larger, young branches and stems, is reddish to pinkish brown and peels off in papery strips. The graceful elegance of the birch allows it to be used as a specimen or for naturalizing; it is best used in large areas. Although the river birch thrives in wet areas, it does not require excessive amounts of water. It tolerates fairly dry soils once it is established. It requires acidic soil but will suffer from iron deficiency if pH level is 6.5 or higher. This species requires full sun and tolerates high temperatures. Leaf spot diseases, aphids, and early leaf drop may trouble this tree in wet climates. It drops branches during heavy winds and storms.

"Natchez (white) Crape Myrtle tends to provide more of an umbrella canopy than the variety of pinks and purples. Crape Myrtles grow well in the Gloucester area but need full sun and they need to be pruned in February." **– Sally Moore, GEMG**

"The Vitex or Chaste Tree does very well in our area. It grows to medium height of 10 to 12 feet. It is flowery, similar to the butterfly bush, but has a very attractive shape."

– Florace Arnold, GEMG Emeritus

Magnolia grandiflora



Cercis canadensis

"Beware of the Black Walnut trees! There are a number of plants that are impossible to grow near them, including your tomato plants."

– Alma Eacho, GEMG Emeritus

TREES THAT TOLERATE SALT AND WIND

Given that Gloucester has so much waterfront property, it is good to know those trees that can tolerate salt and wind. The following table describes some trees that do well on or near the shoreline.

Tree	Height/Width	Description
Eastern Red Cedar *Juniperus virginiana*	40 to 50 feet tall and 10 to 20 feet wide	Refer to FAVORITE EVERGREEN TREES.
Honey Locust *Gleditsia triacanthus*	30 to 70 feet tall	Refer to FAVORITE DECIDUOUS TREES.
Japanese Black Pine *Pinus thungergiana*	35 to 60 feet tall	This small, irregular, and open tree is a favorite for seashore planting. Performs well in full sun in sandy or gravely soil and tolerates drought
Live Oak *Quercus virginiana*	40 to 80 feet tall and 60 to 100 feet wide	Refer to FAVORITE EVERGREEN TREES.
Southern Magnolia *Magnolia grandiflora*	60 to 80 feet tall and 30 to 50 feet wide	Refer to FAVORITE EVERGREEN TREES.
Salt Cedars *Tamarix species*	10 to 15 feet tall and 10 to 20 feet wide	A genus of deciduous shrubs and small trees from coastal sites and dry or marshy, often salt-rich areas inland. Grow best in full sun in well-drained soil
Yaupon Holly *Ilex vomitoria*	15 to 20 feet tall and 10 to 15 wide	A small evergreen shrub or tree that bears scarlet-red fruit and is useful as a screen or hedge in a swampy area. It is a native plant that has multiple uses in the landscape.

TREES FOR SONGBIRDS AND OTHER WILDLIFE

Try to plant a variety of canopy tree species—penthouse sanctuaries for birds--in your landscape. While space will probably be a concern for most homeowners, proper planning will consider tree size at maturity and other concerns such as the provision of shade, litter accumulation, and root interference. Some hardwood species that are bird friendly in our region include oaks, hickories, maples, tulip poplars, sweetgum, sycamore, and elm. All of these species provide cover for nesting canopy birds such as red-eyed vireos (*Vireo olivaceous*), summer tanagers (*Piranga rubra*), scarlet tanagers (*P. olivacea*), Baltimore orioles (*Ictera galbula*), orchard orioles (*Ictera spurius*), and a variety of warblers and other species. Many hardwood species also provide important foods (acorns, nuts, and fruits) for birds and deer.

Pines also make good additions to the landscape since many species will grow anywhere. Their cones provide important food resources for a number of species of birds and they also provide important cover year-round.

A few stories down from any penthouse lies the understory. Species such as dogwood, sourwood, holly, sparkleberry, persimmon, mulberry, and redbud provide some of the most abundant stores of fruits and berries to be found in the forest.

The Virginia Department of Wildlife Resources encourages property owners to create backyard wildlife habitats by providing information on how we can care for wildlife's needs at home. Their website provides information and encourages corporate landowners, private landowners, schools and homeowners to improve habitat in their community that will benefit Virginia's songbirds, mammals, amphibians and other wildlife.[9]

[9] Habitat for Wildlife, Virginia Department of Wildlife Resources https://dwr.virginia.gov/wp-content/uploads/media/Habitat-at-Home.pdf

REFERENCES

Below are sources for general factual information on trees (i.e., soil conditions, height, problem areas):

Chaplin, L.T. (1994). *The southern gardener's book of lists: The best plants for all your needs, wants, and whims.* Dallas, TX: Taylor Publishing.

Clemson Extension Home and Garden Information Center. *Trees*. Retrieved from: http://www.clemson.edu/extension/hgic/plants/landscape/trees/

Cox, J. *Landscaping with nature: Using nature's designs to plan your yard*. Emmaus, PA. Rodale Press.

Department of Conservation & Recreation. (2009). *Invasive alien plant species of Virginia*. Retrieved from: http://www.dcr.virginia.gov/natural_heritage/documents/invlist.pdf

Holmes, R. (Ed.). (1996). *Taylor's Guide to Fruits and Berries*. Boston: Houghton Mifflin.

Below is a list of Virginia Cooperative Extension publications that address trees. This is but a partial list; there are many publications devoted to specific trees and to specific planting conditions.

The websites where these can be found are https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

24 ways to kill a tree, 430-210 (SPES-307)

A guide to successful pruning: Deciduous tree pruning calendar, 430-460

A guide to successful pruning: Evergreen tree pruning calendar, 430-461

Planting trees, 426-702

Problem-free trees for Virginia landscapes, 450-237

Selecting landscape plants: Flowering trees, 426-611

Selecting landscape plants: Rare and unusual trees, 426-604

Notes:

WHAT IS A SHRUB?

Shrubs are small- to medium-sized perennial woody plants. Unlike herbaceous plants, shrubs have persistent woody stems above the ground. Shrubs can be deciduous or evergreen. They are distinguished from trees by their multiple stems and shorter height, less than 20–33 ft tall.

Why plant shrubs? Besides the obvious reason of providing multi-season color and interest, shrubs can provide shade, privacy, enhance air quality, and provide a natural habitat for wildlife. Planting the right shrubs in the right location could lower your utility bill by providing shade in the summer and in the case of deciduous shrubs, by dropping its leaves in winter allow sunlight to warm your home. Shrubs are a semi-permanent to permanent feature of the landscape of any garden, requiring little maintenace.

Not only are shrubs a source of food for birds, butterflies and bees but they also provide a habitat for them.

DECIDING WHICH SHRUBS TO PLANT

Shrubs are the link between your house and the grounds surrounding it.

Generally, the preference is for evergreens that provide a visual anchor to your landscape year-round. However, deciduous shrubs offer different delights in each season. The artist in you will find a place for both.

To go "native" or not? Native species occur in the region where they have evolved, which means that they have had generations to perfect their adaptability, which translates into their being somewhat trouble-free.

PLANTING SHRUBS

For non-native species the cultural requirements have to be closely monitored to assure success on your property. The natives will be happy if you dig a hole large enough to accommodate their roots. Because so many of our plants arrive in nursery pots, we tend to think the shape of the root development is narrow and deep. It isn't. Roots do not go deep: they go wide, hardly a shape practical for nursery care. Research tells us that the depth of the hole needs to be the same as the pot or the root ball while the width of the hole needs to be two to three times that of the pot.

If drainage is poor, dig a hole deeper than the pot and partially fill with coarse material to improve drainage. If water doesn't drain away from the roots well—an inch an hour in a test hole—the plant will drown. The soil may have to be amended, adding aged manure, compost, or peat moss to give tilth (the suitability of the soil's particle size and structure for growing crops) to thin or sandy soils, or even gypsum to lighten clay soil. When planting a potted shrub, you may find it pot bound to some degree. To encourage the roots to spread, cut and knead the root ball, slicing into the sides in three or four places and spreading the roots. If the roots are fairly loose, shake off the potting mixture so that they have more contact with their new soil. New research indicates to wash away all soil (bare the roots) and plant, incorporating roots directly with the soil.

There are literally thousands of shrubs that can grow on the Middle Peninsula. The lists that follow are very selective, including only those that are well adapted to our climate and soil conditions. The shrubs listed do not require pampering once established. All do well in our Zone 7b climate.

EVERGREEN SHRUBS

The following list does not include the familiar and widely used junipers, yews, arborvitae and pines for lack of space. Here are many others.

Plant	Height/Width	Light/Soil	Description
Abelia *Abelia* In northern climates, this is considered a semi-evergreen.			
Chinese *Abelia chinensis*	6 to 8 feet tall with branches sticking out in all directions to 6 feet	Full sun in moist, well-drained soil	Attracts butterflies. Produces clusters of white, bell-shaped flowers from midsummer until fall.
Glossy *Abelia x grandiflora*	3 to 5 feet tall; 6 feet wide	Full sun to light shade in moist, well-drained, acidic soil	Attracts hummingbird and butterflies. Produces small white or pink blooms from mid-May to first hard freeze. Should be protected from cold winter wind. Drought tolerant and deer resistant.
Aucuba—Gold Dust Plant *Aucuba japonica 'Gold Dust'*	6 feet tall and 3 to 4 feet wide	Deep shade in average to poor soil. Leaves will turn brown if it is planted in too much sun.	A shrub to plant where nothing else will grow. It will flourish, giving lots of cuttings of the handsome leaves for flower arrangements. It has various gold patterned leaves or plain green. Tolerates pollution and salt winds. Unfortunately, it is a deer magnet. Female plants have red berries in the fall.
Azaleas and Rhododendrons *Rhododendron spp.*	The heights vary. Some are very low-growing with dense foliage, others sprawl. Some rhododendron species are tree size.	Heavy to light shade in acid soil. Have your pH tested if you are unsure. Most soil in Gloucester is slightly acid and these plants do very well here.	Tolerate morning sun but are best in light shade. Guard against planting too deeply. Plant shallowly and mulch the roots. Azaleas are both evergreen (kaempferi) and deciduous (Ghent hybrids). Kurume hybrids are dwarf evergreen azaleas. 'Encore' varieties are repeat bloomers. If pruning is needed, do before the end of July so next year's blooms are not cut off. **Note:** Both take 3 years to become established.
Barberry *Berberis spp.* Care should be taken in buying the Japanese cultivars as they are increasingly invasive.			
Mentor *Berberis x Mentorensis*	5 feet tall and 5 to 7 feet wide	Full sun to partial shade in well-drained soil	A semi-evergreen (probably a true evergreen here in Gloucester) that has bright red fall color and yellow flowers in the spring.
Wintergreen *Berberis julianae*	10 feet tall and wide	Full sun to partial shade in well-drained soil	This barberry keeps its leaves all winter, grows upright and makes a grand medium hedge plant. It has holly-like leaves, thick clusters of yellow flowers in spring followed by bright red fruit. The leaves are orange-red in fall.

EVERGREEN SHRUBS (*continued*)

Plant	Height/Width	Light/Soil	Description
Boxleaf Honeysuckle *Lonicera nitida 'Baggesen's Gold'*	5 feet tall and wide	Full sun to part shade in most soils	Gold, chartreuse foliage to brighten shade border. Grows slowly. Tubular creamy white flowers form in spring through early fall and are followed by bluish purple berries. Good for hedges. Deer, drought, and wind tolerant.
Boxwood *Buxus spp.* There are two types of boxwood—American and English. Boxwood is grown for its rich green year-round foliage and may be used as a hedge, edging, or topiary. Both are tolerant of full sun but full sun and dry soil may encourage a poor, dull foliage color or scorching.			
American *Buxux sempevirens 'Arborescens"*	3 to 15 feet tall and wide	Part shade in fertile, well-drained soil	American boxwood is the more common boxwood and grows quickly. Leaves are longer ovals with very pointed tips. Will grow in a bushy form if left unpruned.
English *Buxus sempevirens 'Suffruticosa'*	2 to 4 feet tall and wide	Part shade in fertile, well-drained soil	English boxwood grows slowly and survives for generations. It is much denser than American and has small oval leaves with blunt tips. It is a perfect plant that says 'Virginia." It is more prone to disease than American. Tolerates aggressive pruning.
Camellia *Camellia spp.* There are two types of camellia—spring blooming and fall blooming.			
Spring Blooming *Camellia japonica*	7 to 12 feet tall and 5 to 10 feet wide	Best in part shade; tolerates full sun and full shade. Requires fertile, humus-rich, moist, acid soil.	Has heavy green foliage, and sports glorious blooms in cold weather–January through April. Some cultivars are not hardy here so buy with caution.
Fall Blooming *Camellia sasanqua*	Many cultivars are small trees but most are between 5 and 10 feet tall and 3 to 5 feet wide.	Best in part shade but tolerates full sun and full shade. Requires fertile, acidic, humus-rich, moist, acid soil.	This is a denser plant than Camellia japonica, thus makes a better landscape plant. Blooms in the fall, thus providing another season of color in the landscape.
Cherry or English Laurel *Prunus laurocerasus 'Otto Luyken'*	3 to 5 ft tall and wide	Full sun to part shade in humus-rich, moist, well-drained soil	This dwarf ideal for foundation planting: a pleasant shrub with masses of small white, fragrant flowers in spring and often in fall. This plant is deer resistant. Tolerates seashore conditions.
Chinese Fringe Shrub *Loropetalum chinense*	May reach 6 feet tall and wide	Sun to part shade in fertile, humus-rich, moist, well-drained soil	This small to medium bushy shrub also has spider-like white flowers. It is said to be highly deer resistant. L.c. 'Razzleberri' has red flowers off and on all year.
Daphne (Winter) or Daphne (Fragrant) *Daphne odora*	18 to 35 inches tall and wide	Part shade in average, well-drained soil	This small evergreen shrub blooms in late winter with magenta or white flowers that are very fragrant. It is lovely shrub that brightens winter dreariness. Protect from drying wind.
Drooping Leucothoe *Leucothoe fontanesiana*	3 to 6 feet tall and wide	Part to full shade in moist, well-drained, organic soils and acidic growing conditions	Has racemes of waxy white bells in early spring and the foliage is a bronzy red in winter. It has graceful arching stems. This one has a 'nana' species for ground cover use.

EVERGREEN SHRUBS (*continued*)

Plant	Height/Width	Light/Soil	Description
Florida or Purple Anise *Illicium floridanum*	8 feet tall and 8 feet wide	Full shade to part shade in moist, well-drained, humus-rich, acidic soil Can tolerate sun if kept watered	This bushy evergreen shrub has a small glossy leaf and small witch hazel-like flowers in yellow or maroon. It won't grow to its listed height in a dry spot, only in a swampy area. Deer resistant
Gardenia *Gardenia jasminoides 'Chuck Hayes'*	6 feet tall by 5 feet wide	Part sun—avoid afternoon sun and protect from wind. Plant in moist, fertile soil.	Blooms with white, fragrant flowers from mid spring to mid summer and in mid fall. Fertilize monthly from April through November with acidic fertilizer. Needs winter protection. Great specimen plant and good cut flowers.
Hollies *Ilex* All hollies require acid soil. They like riparian environments. Cannot take salt water.			
Chinese Holly—Burford holly *I. cornuta 'burfordii' nana*	5 to 8 feet tall and wide	Full sun or part shade in moist but well-drained, moderately fertile, humus-rich soil	Dwarf variety. Bears lots of red berries. Nasty thorns on leaves. Don't plant where people may have bare feet. Drops leaves in late spring and early summer.
Chinese Holly—Carissa Holly *I. cornuta carissa*	4 or 5 feet tall and wide	Full sun or part shade in moist but well-drained, moderately fertile, humus-rich soil	An ideal landscape plant as it has no pest or disease problems. Not spiny.
Inkberry *I. glabra*	10 feet tall and wide *I. glabra* 'Compacta' is 4 to 6 feet tall and wide.	Full sun or part shade in moist but well-drained, moderately fertile, humus-rich soil	Native. Has black berries. Grows slowly with small dark, shiny leaves without spines. Can be trimmed to encourage thicker growth. Usually looses lower leaves.
Yaupon *I. vomitoria*	Dwarf and weeping cultivars from 4 to 10 feet tall and wide available.	Full sun or part shade in moist but well-drained, moderately fertile, humus-rich soil	Native. Bears scarlet-red berries. This holly is impervious to salt air, pests, and alkaline soil, wet or dry. It is beloved of wildlife and makes a good backdrop. Taller specimens make good screens.
For the really short plants find varieties with the words 'compacta,' 'helleri,' or 'nana' in the name.			
Indian Hawthorn *Raphiolepis indica; also Rhaphiolepis*	4 feet tall and spreading to 6 feet wide	Full sun in most soil types and moisture conditions	A low-growing shrub with heavy dark green leathery leaves and small pink or white fragrant blooms in late spring. Beware of leaf spot.
Poet's Laurel or **Alexandrian Laurel** *Danae racemosa*	3 feet tall by 3 feet wide	Part to full shade in moist, well-drained soil. Has also done fairly well in full sun	Elegant small shrub with long stems with small classic laurel leaves, inconspicuous fruit, and showy orange fruits.
Sarcococca (fragrant) or Sweet Box *Sarcococca ruscifolia*	3 feet tall by 3 feet wide	Part to full shade–the answer for those troublesome shady places too dark for grass. Rich, acidic, organic, well-drained soil	Miniscule white flowers that are intensely fragrant in bloom January and February. Flowers are followed by fairly large (about 1/3 inch) glossy, deep red fruits. This broadleaf evergreen is a wonderful winter shade plant and should be planted in an area with a lot of foot traffic because of its beauty and fragrance.

EVERGREEN SHRUBS (*continued*)

Plant	Height/Width	Light/Soil	Description
Viburnum (Laurestinus) *Viburnum tinus*	6 to12 feet tall and form a vase shape 2 to 4 feet wide.	Full sun to part shade in most soils	This shrub produces many pinkish-white, fragrant, early spring flowers, followed by ornamental blue-black fruit which attract birds. Use as a hedge, border; specimen, mass planting, container, or accent plant. Attracts butterflies.
Wax Myrtle— Southern Bayberry— Candleberry *Myrica cerifera*	10 to 15 feet tall and wide	Full sun to part shade in moist, sandy soil	This is a tough native shrub or small tree and is a great plant for along the shore. It was a colonial source of candle wax. Tolerates salt and excess moisture. Prune routinely to get dense growth.

DECIDUOUS SHRUBS

Evergreens are wonderful, but they are always GREEN! Deciduous shrubs come in a great variety of size, shape, and color. The foliage of deciduous shrubs can be varigated, green or burgundy and can even vary from season to season creating diverse landscapes.

The list that follows leaves out some familiar favorites because widespread planting has led to their becoming invasive in Tidewater. Others, such as crape myrtles and Hibiscus syriacus (Rose of Sharon), are more properly trees.

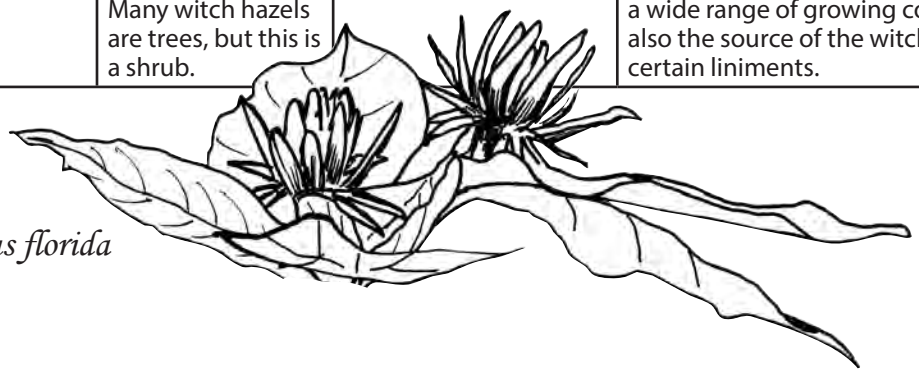
Plant	Height/Width	Light/Soil	Description
Azaleas (Deciduous) *Rhododendron spp*	2 to 8 feet tall and wide	Light to half shade in humus-rich, moist, well-drained, acidic soil	A surprise that not all of these treasures are evergreen! Families of deciduous azaleas give you the yellow, orange, and other tawny combinations that glow under tall pines. Your best source of information is a catalog.
Beautyberry Bush— American Beautyberry Bush *Callicarpa americana*	4 to 8 feet tall and wide	Partial sun and well-drained soil in woodland setting	Beautyberries have small, lavender-pink, lilac-like flowers in spring, followed by vivid purple berries in fall. The berries attract birds, as well as provide winter color.
Beautybush *Kolkwitzia amaabilis*	5 to 10 feet tall and wide	Full sun in moist, well-drained soil Tolerates alkaline soil	Arching shoots covered with pink bells in late spring/early summer. May sucker into a thicket. This shrub should be pruned annually by removing some of the older stems, to maintain good form.
Butterfly Bush— Summer Lilac *Buddleia davidii*	Unpruned 15 feet tall and 8 feet wide; dwarf and pruned specimens 5 to 8 feet tall and 3 to 4 feet wide	Full sun to part shade in average to sandy, fertile to infertile, well-drained soil	A woody shrub that gets a bit rangy unless pruned. It can have white, pink, or purple flowers borne on long, arching branches and is drought tolerant. It attracts butterflies and a host of other nectar-seeking insects as well as vertebrates. This bush can become invasive.
Chokeberry *Aronia*			
Red *Aronia arbutifolia*	6 to 10 feet tall and 3 to 6 feet wide	Full sun to half shade in wet to dry, fertile to infertile, acidic soil Adaptable	Has brilliant red fall color and red berries following white flowers in corymbs. Protect the young growth from rabbits. A suckering shrub with small, ovate dark green leaves.
Black *Aronia melanocarpa*	3 to 5 feet tall and wide	Full sun to light shade Not fussy as to soil	Produces inconspicuous white flowers in May and purplish-black fruits September through December. Spreads by suckers so can be invasive. Good fall color.

DECIDUOUS SHRUBS (continued)

Plant	Height/Width	Light/Soil	Description
Holly *Ilex* These two hollies shed their leaves to display the wonder of their berries against the winter bark. Both of these have friendly leaves, not the skin-tearing holly norm.			
Winterberry *Ilex verticillata*	6 to 10 feet tall and wide 'Nana' is 2 to 4 feet tall and wide.	Full sun for best berries in humus-rich to heavy, wet to swampy, acidic soil Can take light shade	Covered with red berries in fall and winter, but uninteresting in other seasons. Good for winter decorating. Fruit sets only on pollinated female plant. Requires a pollinator–at least one male for every three to five female plants; plant the male in close proximity.
Possumhaw *Ilex deciduas*	6 to 20 feet tall and up to10 feet wide.	Full sun in humus-rich to sandy, acidic soil in wet to swampy site	Makes a good show in a winter garden with its orange to scarlet berries on silvery-barked branches.
Hydrangea *Hydrangea spp.* Hydrangeas are pH sensitive, having blue flowers in acidic soil and pink in alkaline, although many cultivars will retain a particular color despite soil pH.			
French (Big Leaf) *H. macrophylla*	2 to 8 feet tall and wide	Light to half shade; acid soil for blue flowers; alkaline soil for pink flowers	Blooms May 25-July 4 with large rose-pink or bright blue globe-like flowers. Gardeners express a decided preference for either the 'mop-head' (hortensia) or the flat-flowered 'lace cap' cultivars. Check before you buy since there does not seem to be an indicator in the name.
Oakleaf *H. quercifolia*	6 or more feet tall and 4 feet wide	Full sun to part shade; acidic soil	This favorite for a shady location is a spreading shrub with large white panicles that turn buff colored. Large oak-leaf shaped leaves turn brilliant red in the fall.
Peegee *H. paniculata 'Grandiflora compacta'*	5 feet tall and wide (note the 'compacta).	Full sun to part shade	This is the small version of a tree sized shrub. It blooms with pointed clusters of greenish-white flowers which mature into creamy white, then age to rose.
Smooth *H. arborescens Grandiflora'*	3 to 5 feet tall and rounded	Light to half shade. Full sun if constantly moist	A small shrub that produces large white flower clusters–snowballs–almost six inches in diameter on new growth. It can be killed back to the ground in winter but grows rapidly and flowers.
Japanese Spirea *Spiraea japonica* A clump-forming, deciduous shrub with erect shoots. This is considered moderately invasive in the mountains and piedmont regions of Virginia but not in the coastal region.			
Spiraea japo 'Alba'	2 feet tall and 3 feet wide	Full sun in fertile, moist, well-drained soil	Has pale green leaves and white flowers in corymbs. Heat and drought tolerant.
Spiraea japonica 'Anthony Waterer'	3 to 5 feet tall and wide	Full sun in fertile, moist, well-drained soil	Stays small but has bright, hot pink, small, flat-topped flower umbels all summer.
Spiraea japonica 'Goldflame'	2 to 3 feet tall and wide	Full sun in fertile, moist, well-drained soil	Its young leaves in spring open in shades of yellow, orange and red, fading to pale green. The flowers are airy clusters of dark pink flowers which some gardeners feel clash with the foliage and attempt to remove them. Heat and drought tolerant.
Lilac *Syringa patula 'Miss Kim'*	4 to 9 feet tall and 5 to 7 feet wide	Full sun in well-drained, average to sandy soil	This is one of the few lilacs for our climate as it tolerates our hot summers and blooms without the needed cold winter other lilacs need.

DECIDUOUS SHRUBS (continued)

Plant	Height/Width	Light/Soil	Description
New Jersey Tea *Ceanothus americanus*	3 to 4 feet tall and 3 to 5 feet wide	Full sun Tolerates poor growing conditions	A small shrub bearing dense clusters of white summer flowers. It is tough, adaptable, and nitrogen fixing. The blue flowered species are not hardy in our zone 7b. The flowers were used for tea during earlier times.
Summersweet *Clethra alnifolia*	4 to 8 feet tall and 4 to 6 feet wide	Sun or part shade in moist soil	Legend tells us that sailors in the Bay could smell this plant, a Tidewater native, from their ships. A cultivar called 'Hummingbird' grows to only four feet. Give it plenty of room: it is a traveler.
Sweetshrub, Carolina Allspice *Calycanthus florida*	Grows to 8 feet tall and several feet wide.	Partial to full shade in average soil	Native bushy shrub with handsome foliage and reddish-brown, sweet-smelling blooms in the spring.
Viburnum These great shrubs come in all sizes with a variety of tolerance for soil and habitat. Most have heavy, crinkled leaves and are handsome. Some spring flowers have the nostalgic fragrance of 'Old Spice.'			
Arrowwood *V. dentatum*	5 to 7 feet tall and wide	Full sun to part shade in moderately fertile, moist, but well-drained soil	Has tiny white flowers which are followed by rich blue-black berries.
Blackhaw *V. prunifolium*	12 to 15 feet tall and 8 to 12 feet wide	Full sun to part shade in moderately fertile, moist, but well-drained soil	A deciduous shrub whose new growth in spring is as red as it is in the fall and the blue/black fruit is sweet enough to eat. Bears small white flowers.
Nannyberry *V. lentago*	12 feet tall by 10 feet wide	Full sun to part shade in moderately fertile, moist, but well-drained soil	A large shrub with shiny foliage, purple to red in the fall. Blue-black fruit follows large white flower clusters.
Virginia Sweetspire *Itea virginica* *'Henry's Garnet'*	3 to 4 feet	Sun or part shade in moist soil	Creamy white flowers on erect racemes grace this native plant in mid May. It has reddish purple fall color. Can form a large thicket.
Witch Alder *Fothergilla* Fothergilla belongs to the witch hazel family, Hamamelidaceae and includes only two species, F. gardenia and F. major, both native to southeastern North America.			
Dwarf *Fothergilla gardenii*	2 to 3 feet tall and 2 to 4 feet wide	Prefers moist, acidic, organically rich and well-drained soil Best flowers in full sun	Lovely white bottle brushes grace this dwarf fothergilla in spring ahead of the leaves. It is a wonderful red in fall. For fragrance, use honey-scented 'Suzanne.'
Large *Forthergilla major*	6 to 10 feet tall and almost equal spread.	Full sun to light shade in acidic well drained soil	Same flowers as the dwarf but flowers a little later. Excellent fall color and tolerates dry site.
Witch Hazel *Hamamelis virginiana* *'Little Suzie'*	4 to 5 feet tall with rounded shape. Many witch hazels are trees, but this is a shrub.	Sun or part shade	Autumn is its season when the yellow leaves shine. The late fall blooms, miniature strappy pompoms, are unique. Tolerates a wide range of growing conditions. It is also the source of the witch hazel found in certain liniments.



Calycanthus florida

ROSES

On November 20, 1986, the rose became our national flower as declared by President Ronald Reagan in a special ceremony at the White House. The rose has been around for a long time and is a symbol of love and peace among many other things. They also grow naturally throughout the United States and North America. Every home garden needs a few of our national flower. Roses that flower from May to December can flourish with the right selections.

Planting

It is wise to prepare your beds or planting holes in advance using the Formula for Rose Planting Mix described in the box to the right and provided by Joy Long, Rosarian and Master Gardener. Mix all ingredients well and place in the planting hole.

Soak new bare root roses overnight in a clean trashcan filled with water. Place the roots of the rose bushes over a mound of planting mix in the bottom of the hole. Plant rose bush with the bud union (or graft) at or slightly below ground level. Backfill with prepared planting mix and water generously to settle the soil around the roots.

Shade newly planted roses with a cardboard box, basket or large plastic planting pot (with drain holes for ventilation) for about two weeks to help them become established. Water newly planted bushes regularly.

Feeding

Feed a new rose after its first blooming cycle by applying a water-soluble fertilizer at the rate of 1 tablespoon per gallon of water or following label directions. Use a balanced granular agricultural fertilizer (10-10-10) at the rate of 1/2 cup to 1 cup depending on the size of the bush. The granular should be placed around the drip line of each bush and scratched in lightly. Remember to water deeply before and after feeding with granular fertilizer for best results. Another feeding about mid-July will do for the year. Joy Long suggests, "Lazy Rosarians will have healthy plants and great flowers for cutting by using a product designed just for roses once a month. A wonderful treat for roses is mushroom compost. It is inexpensive and it works well. Use as a top dressing, a quart for minis and a gallon for all others."

Requirements of Roses

- Six (minimum) to eight hours of sun per day
- Morning sun is best
- Good drainage as roses will not tolerate wet feet
- An inch of water each week
- A soil pH of 6.0 to 6.5

Formula for Rose Planting Mix

- 1/3 sphagnum peat moss (See page 106.)
- 1/3 original soil from planting hole
- 3-pound coffee can of perlite
- 1 cup green sand (potash)
- 1 cup rock phosphate or triple super phosphate
- several cups of garden gypsum (helps break up heavy clay soil)

If you want to win a trophy or two, indicates Joy Long, suggests using a slow release organic fertilizer at the rate of one or two cups per bush after pruning and again in August. Supplement the organic fertilizer with 20-20-20 (one tablespoon per gallon of water, two gallons per plant) or fish emulsion, (two tablespoons per gallon of water, one gallon per plant) and alternate between the two and use every two weeks.

If you want a magic elixir, make a batch of Joy Long's alfalfa tea for use as a growth stimulant. Use one gallon of the alfalfa tea per standard rose bush; use only one quart per miniature rose. Stand back to watch them grow. If there is sediment left in the bottom of the trashcan, refill with water and reapply. One load of organic ingredients will make up to two batches. It is a good idea to alternate between organic and inorganic fertilizers. Stop fertilizing in the late summer.

Alfalfa Tea

Place 12 cups alfalfa meal or pellets in a 32-gallon trashcan filled with water.

Steep for three days to one week, stirring daily.

Add ½ cup Epsom salts, ½ cup chelated iron, ¼ cup of a seaweed fertilizer (such as Response), and one cup 20-20-20 fertilizer.

Pruning

Most roses benefit from a yearly pruning to rejuvenate the plant. Prune in early spring— when the forsythia are blooming – just before the buds begin to swell. Pruning should produce a plant of good form, urn shaped with the center open to sun and air. Dead or diseased canes should be removed anytime. Climbing roses and once blooming roses should be pruned after they bloom. Severe pruning will disrupt the spring bloom cycle. Remove spent blooms from plants.

Diseases and Insects

The most common diseases of roses are powdery mildew and black spot. Caused by fungi, they can be controlled, but rarely eliminated. A systemic fungicide attacks both of these as well as rust and anthracnose. Spray every 21 days. A pesticide is available that is completely organic, but you will have to use it more often than the systemic fungicides. Do not spray in the heat of the day; always water deeply the day before spraying any chemical on your roses. Sucking and chewing insects can be controlled with a systemic all-purpose insecticide. Washing foliage periodically can control mites.

Reliable Rose Selections

Joy Long recommends the rose varieties listed in the following table as being reliable, easy to grow, disease resistant, and good bloomers for Gloucester. 'Earth Kind' roses have been tested for 10+ years at Texas A&M. They have outstanding disease and insect resistance, and a high level of landscape performance.

Standard-Size Roses

Rose	Description	Rose	Description
Ballerina	A 4-foot tall, 3-foot wide shrub rose with soft pink flowers with white eyes. Single small blooms in large clusters often mistaken for a hydrangea. Will tolerate some shade.	**Knock Out**	A shrub that is not only 'Earth Kind' but the most disease-resistant rose in 50 years. It is 4-to5 feet tall and 3 feet wide and comes in red, pink, yellow with more colors to come.
Belinda's Dream	A hybrid tea form in a pink shrub, 'Earth Kind.'	**Lady Banks**	A yellow species with no thorns, no fragrance, and no maintenance. Can grow 20 to 40 feet and blooms once a year. Protect from the cold.
Bonica	A shrub rose with medium pink flowers of forty plus petals and semi-glossy foliage.	**La Marne**	A cluster bloomer of hot pink flowers with shiny, disease- resistant foliage. This is an 'Earth Kind' rose.
Pink Pet (formerly Caldwell Pink)	A 4-foot plant with pinkish lavender pom-pom flowers. This 'Earth Kind' rose spreads by runners so you will have babies to give away.	**Lyda Rose**	A rose that is 5 feet tall and 5 feet wide at 3 years. It bears white edged in pink single flowers that look like apple blossoms and are fragrant.
Carefree Beauty	An 'Earth Kind' with medium pink flowers	**Rugosa spp.**	These tough old-timers survive even in salt-spray areas and have wonderful fragrance.
Flower Carpet	This plant is short and has spreading growth. It has sprays of 15-20 deep pink flowers with dark green foliage.	**The Fairy**	A low growing, 3 to 4 foot, 'Earth Kind' rose with pale pink cluster or pom-pom flowers. Can bloom from spring until Christmas. Spreads by runners so it may be wider than it is tall.
Gartendirektor Otto Linne	This bushy 3-foot plant has 30 or more clusters of dark carmine pink flowers.	**White Meidiland**	A shrub, 2 feet tall by 4 feet wide, with very full white flowers (over 40 petals), dark green glossy foliage, and spreading growth. Will tolerate some shade.

"If you inherited a shed or garage with your dream home that you must keep up, plant a Lady Banks rose. Within ten years a lovely camouflage will be complete."

– Celeste Dudley, GEMG Emeritus

"Minis and minifloras in pots are a great way to add interest in the garden and around the home. Move to a prominent location when blooming to add a splash of color." **– Sandy Pait, GEMG**

'Ballerina'

Minis and Minifloras	
Minis	
Minis or miniature roses are twiggy, repeat-flowering shrubs ranging from 6 inches to 36 inches in height; most are 12 to 24 inch tall. Climbing varieties, bearing tiny flowers, can reach up to 5 feet tall. Blooms come in all the hybrid tea colors. Minis are great in containers or make lovely borders.	
Rose	**Description**
Gourmet Popcorn	White blooms. It is a real "pop" of color.
Green Ice	Starts out with white blooms which mature to green blooms.
Jeanne Lajoie	Mini climber. Great pink color. American Rose Society Award of Excellence winner.
Rainbow's End	Buds are yellow with great edging on the outer petals and deepen to red in the heart. American Rose Society Award of Excellence winner.
Minifloras	
The American Rose Society defines a miniflora as, "Those roses whose leaf structure and leaf morphology and bloom structure are essentially smaller than a floribunda but larger than the typical miniature." They were created largely through the breeding of large roses with miniatures. The average miniflora bush is 2 1/2 to 4 1/2 foot tall and can be within that range for plant width as well. They are easy to grow, pretty, and grow well in pots.	
Butter Cream	Medium yellow blooms; often a show winner.
Foolish Pleasure	Pink and white blended blooms.
Memphis Music	Dark red (burgundy) and yellow stripes—reverse yellow and red.

These are but short lists of reliable roses that do well in Gloucester. Ask your friends which roses grow well for them. Everyone has his or her favorites and likes to share. Don't be afraid to try what appeals to you. Check with your local nurseries as they usually stock roses that grow well in our area. In May several area nurseries have spring sales at which they display many varieties of roses. The Colonial District of the American Rose Society is also a great resource. They will provide you with the names of local American Rose Society certified rosarians in our area. Check out www.colonialdistrictroses.org.

"Glossy foliage that is dark green usually indicates a rose that is disease resistant.

If your roses need a pick-me-up, try adding a mixture of equal portions of old milk and water. Great tonic!!" **–Joy Long, GEMG**

PROBLEMS WITH SHRUBS

There are few problems with shrubs as a rule. To keep in bounds established shrubs that flower in spring on the previous year's growth, you may cut out as much as 1/3 of the old canes at the base of the plant in any one year. This applies to butterfly bush, forsythia, and mock orange. If the shrub has been placed in a favorable location, only a little trimming is needed. If you suspect insect or disease problems, contact the Gloucester County Virginia Cooperative Extension Office for a positive identification and diagnosis or publications available at https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. Many homeowners spread mulch around their shrubs and trees to keep weeds down. Sometimes an oddity will appear on the mulch—Dog Vomit or Slime Mold. Not to worry. Read the following.

Dog Vomit or Slime Mold *Fuligo septica*

Ever wonder what that foamy looking tan, yellow, orange or pink blob is on your mulch? It is not a fungus nor is it a mold but rather a plasmodium (a giant cell with many nuclei). It usually appears after rains or watering and moves slowly in the mulch, consuming fungi and bacteria that are on decaying plant matter. As it reaches maturity it firms up forming a mound that looks like dog barf. Eventually it dries up and releases brownish clouds of spores when disturbed.

Slime mold is harmless to people, pets, and plants and is a natural phenomenon that doesn't hurt anything. Actually, it helps the garden as it breaks down plant matter which aids the microorganisms essential to the healthy growth of plants.

You cannot prevent slime molds as the spores are everywhere—just waiting for the right conditions to become active. If you cannot tolerate the look of it, you can shovel it into a trash bag or just turn it over.

Information extracted from Botts, Beth. "*Dog Vomit Slime Mold*." Chicago Gardener, Chicago Tribune. com, 30 June 2007

INVASIVE SHRUBS

According to the Virginia Department of Conservation and Recreation's Invasive Alien Plant Species of Virginia dated September 2003, there are some commonly available shrubs that are considered invasive and should be monitored. They can be 'aggressive' by growing underground runners or by spreading seed. The invasiveness level in natural areas and native plant habitats attributed to the shrub by the Virginia Native Plant Society and the Virginia Department of Conservation and Recreation is noted in parenthesis.

- **Amur Honeysuckle** *Lonicera maackii* (moderately)
- **Morrow's Honeysuckle** *Lonicera morrowii* (highly)
- **Winter Honeysuckle** *Lonicera fragrantissima* (occasionally)

The honeysuckles listed here are of the bush variety and not the vines. They are upright, generally deciduous shrubs that can grow from 6 to 16 feet in height. These bushes can grow so dense that it interferes with the growth of many native plants.

- **Autumn Olive** *Elaeagnus umbellata* (highly)

Autumn Olive is considered very invasive because of its very prolific fruiting that are consumed by birds and the seeds to be easily dispersed. The plant also has the ability to adapt to poor soil and is a rapid grower. Very hard to eradicate as it resprouts vigorously aafter cutting or burning. Autumn olive can grow to a hright of 20 feet.

- **Japanese Barberry** *Berberis thunbergii* (moderately)
- **Linden Viburnum** *Viburnum dilatatum* (occasionally)
- **Border Privet** *Ligustrum obtusifolium* (moderately)
- **Thorny Elaeagnus** *Elaeagnus pungens* (occasionally)
- **Winged Euonymous** *Euonymous alatu*s (highly)

Winged Euonymous or Winged Burning Bush is a deciduous shrub that can grow to 20 feet in height. Like the Autumn Olive, this shrub has very prolific fruits that birds love and the seeds are very easily dispersed. Because of its high tolerance of full shade and easily germination, it doesn't take long for it to spread like wildfire!

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Relf, D. (2009). Trees & shrubs. In Relf, D. (Ed.), Master gardener handbook: A guide to gardening in Virginia. (pp. 416-429). Blacksburg, VA: Virginia Tech.

Virginia Department of Conservation and Recreation (VDCR). (2009). Invasive alien plant species of Virginia. Retrieved from: http://www.dcr.virginia.gov/natural_heritage/documents/invlist.pdf.

Below is a partial list of Virginia Cooperative Extension publications that address shrubs. These and other publications about specific shrubs can be found at https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

A guide to successful pruning: pruning shrubs, 430-459
A guide to successful pruning: Shrub pruning calendar, 430-462
A guide to successful pruning: Pruning basics and tools, 430-455
Fertilizing landscape trees and shrubs, 430-018
Growing azaleas and rhododendrons, 426-602
Managing winter injury to trees and shrubs, 426-500
Problem-free shrubs for Virginia landscapes, 450-236
Selecting landscape plants: Broad-leaved evergreens, 426-607
Shrubs: Functions, planting, and maintenance, 426-701
Tree and shrub planting guidelines, 430-295
Trees and shrubs for acid soils, 430-027
Trees and shrubs that tolerate saline soils and salt spray drift, 430-031

In addition, go to: http://www.yorkcounty.gov/vce and click on Local Horticultural Publications.

Syringa patula

Notes:

Perennials are herbaceous plants that usually live a number of years. Their leaves and stems most often die down after a season's growth, but their roots persist. Next year, new growth will appear. While some perennials will have a bloom period of several months, as a rule, most bloom for only two or three weeks.

GROWING PERENNIALS

Probably the two most important considerations in growing perennials in Gloucester County are soil preparation and location–selecting the right site for a particular plant. These factors will influence the level of your success in the landscape.

Soil in Gloucester can range from dry and sandy (fast draining) to hard packed clay (moisture retaining). Some areas are buffeted by strong, cold winds from the adjoining water, and all of Gloucester County has hot, humid summers. Dry periods in the summer alternate with short, gully-washing storms that bring too much water all at once. Because there is often a layer of clay under sandy soil, the result can be water logging and resultant death to some perennials. In her book, *Time-Tested Plants: Thirty Years in a Four-Season Garden*, about gardening in Seaford (very similar to Gloucester County), Pamela Harper recommends planting in raised beds and using berms or banks to allow for better draining.

Basically, there are two approaches to growing perennials: (1) grow only the types of plants that like your soil conditions or (2) amend the soil to allow for more freedom of choice. The latter is the better way to go, but it requires work. Using a mixture of clay, sand, rock particles, and organic matter, you want to create a soil with a loamy, well-aerated consistency. The resulting soil will drain well and retain water and nutrients in the root zone. With a large garden, you may choose to amend smaller areas, while leaving other areas as they are. When amending, dig at least one-foot deep and incorporate decomposable organic matter and coarse, washed sand. You must be careful when adding sand to clay soil as a small amount of sand added to the clay soil produces a cement-like mixture. Add sand to clay soil only when you can add at least one-quarter by volume. Organic matter such as compost is always a better additive.

Perennials can be planted in the fall or early spring; however, fall is the preferred time. In the fall, the ground is warm, a condition that allows roots to grow, and the weather is easy on the emergent foliage. In the spring, you will need to water frequently to support new growth. Whenever you plant, do not crowd your plants and water deeply, rather than too often, to encourage good root systems. Most perennials should be divided every three to five years.

Here are some hints for planting perennials.

- A landscaping principle is to plant in an odd number. Plant in clumps or groups (5 to 7 or more) for a show of color.
- Group plants requiring similar soil and watering conditions together.
- For a free-standing border, put tallest plants in the middle. With a fence or wall as background, plant the tallest in the rear.
- Try to include some winter interest foliage such as grasses.
- Label plants whose foliage disappears in the winter so you know where they are.
- Mulch in spring to keep in moisture. A loose covering of branches is good for winter protection.

FAVORITE PERENNIALS FOR GLOUCESTER

Perennial	Light/Soil/ Bloom Period	Description
Bee Balm *Monarda*	Full to part sun in moist soil. Blooms in summer.	Native. Attracts hummingbirds with lilac, red or pink flowers. May be invasive.
Black-eyed Susan *Rudbeckia hirta*	Full sun to light shade in good soil. Blooms in late summer.	Native. Daisy-like yellow-gold flowers with purplish-brown center. Free seeding and short-lived.
Blanket Flower *Gaillardia x grandiflora*	Full sun in poor, sandy soil. Blooms from early summer to early fall.	Native. Short-lived with yellow, orange, red banding flowers. Deadheading lengthens bloom period.
Blue Phlox *Phlox divaricata*	Part shade in fertile soil. Blooms in early spring.	Native. Good groundcover with late blooming spring bulbs. Lavender or violet-blue flowers. Dormant in summer so mark location.
Byzantine Gladiolus *Gladiolus byzantinus*	Plant bulb in fall in average soil in full sun. Blooms in May-June.	Winter hardy. Blooms in late spring. Shorter than other glads, thus self-supporting. Brilliant magenta with white stripes.
Elephant Ears *Colocasias*	Full sun in well-drained, poor to average soil. Blooms in summer.	Most are perennials and will come back every summer. Some clump; other spread on runners along the ground. Choose clumpers to limit their spread. Come in varied sizes with heart-shaped leaves in black, purple, emerald green, chartreuse, yellow, or a mix of colors.
Gaura *Gaura lindheimeri*–white Often called 'Whirling Butterflies'	Full sun in poor to average soil. Blooms May through October.	Drought resistant; good filler plant and is very graceful. It is a loose, bushy plant with flowers above the foliage on erect spikes. Self-seeds.
Hosta—**Plantain Lily** *Hosta*	Light shade in moist, fertile soil. Tolerates clay. Blooms in summer.	Good foliage plant; many varieties, sizes, and colors. Can be grown under black walnut trees. Deer do enjoy.
Johnny-Jump-Up *Viola tricolor*	Partial shade in fertile soil. Blooms spring to fall.	Vibrant flowers that are deep purple and yellow, creating a solid carpet of color for weeks. Self-sows freely.
Peony *Paeonia*	Full sun in rich, well-drained soil. Blooms in May.	Prefers slightly alkaline soil. Do not plant too deep. Long-lived and does not like to be moved. Colors from white, through pink to deep red.
Pincushion Flower *Scabiosa caucasica* 'Clive Greaves'– lavender 'Miss Willmont'– white	Full sun in well-drained, neutral to alkaline soil. Blooms late spring to early fall.	Flowers are blue, pink, and white. Deadhead to extend blooming period.

"Neither lupines nor foxgloves do well for me here (Ware Neck). In fact, they die before the end of the season and never return.

Sedums have perfect growing conditions in Gloucester—dry, hot summers. You can pretty much plant and ignore them, even in semi-shade."

– Marguerite Supler, GEMG

"Epimedium is great for dry shade; Astilbe for moist shade. Mexican Sage, Salvia leucantha, blooms in the fall, and the cut flowers last a long time. Stokesia is sort of weedy, but lives. All Sedums are great perennials. Guara is great as a soft filler, and it will seed itself a bit."

– Celeste Dudley, GEMG Emeritus

Favorite Perennials for Gloucester *(continued)*

Purple Coneflower *Echinacea purpurea* 'Kim's Knee High'	Full sun in sandy, well-drained soil. Blooms June to August.	Native. 30 inches tall. Summer blooming. Good cut flower. Draws butterflies. Dwarf 18-24 inches tall. Hybridization has produced many cultivars in many colors.
Sedum *Sedum spp.'Autumn Joy'*	Full to part sun in average soil. Blooms August to November.	A medium-green succulent that remains pretty from spring through fall with seed heads in winter.
Shasta Daisy *Leucanthemum × superbum 'Becky'*	Full sun to light shade in average well-drained soil, Blooms in summer.	36-inch tall with large, white flowers with yellow centers. Withstands summer heat.
Tickseed *Coreopsis*	Full sun in poor to average soil. Blooms late spring until fall.	Flowers are bright yellow or rose. Many cultivars. Good cut flower.
Yarrow *Achillea*	Full sun in average soil. Requires excellent drainage. Blooms midsummer into fall.	Flower colors include white, yellow, gold, pink and red. The aromatic foliage is green or gray. Drought resistant; good for drying.

"Soil preparation is the most important factor. That aside, daylilies do very well. So far they have not been nibbled by voles. Liriope is a joy with next to no maintenance. Native plants are best."

– Peggy Cooney, GEMG

Echinacea purpurea

PERENNIALS THAT CAN TAKE SUN ALL DAY

Perennial	Soil and Bloom Period	Description
Blue False Indigo *Baptisia australis*	Average, well-drained cool soil. Blooms late spring, early summer.	Native. Drought resistant. Very deep roots. Voles may be a problem.
Boltonia, white *Boltonia asteroides 'Snowbank'*	Average, well-drained soil. Blooms in late summer and early fall.	Native. A 4- to 5-foot tall plant that has white aster-like flowers on blue-green foliage.
Butterfly Weed *Asclepias tuberosa*	Poor to average soil. Blooms in summer.	Native. Yellow or orange flowers. Attracts swallowtail and monarch butterflies. Poisonous.
Candytuft *Iberis sempervirens*	Well-drained soil. Blooms early spring to early summer.	Good border plant and ground cover that has small white flowers. Shear after bloom.
Chrysanthemum—Mum *Dendranthemum spp.*	Well-draining poor to average soil. Blooms in fall.	For larger blooms, pinch back until early July. Good cut flowers in a wide variety of colors.
Daylily *Hemerocallis*	Average soil with good drainage. Blooms in summer.	All colors except white and blue. Deadhead for neatness or select self-grooming varieties. Tetraploid plants with twice as many chromosomes are stronger and have larger flowers.

Perennials That Can Take Sun All Day *(continued)*

Perennial	Soil and Bloom Period	Description
Great Flowered Aster *Symphyotrichum grandiflorum*	Average, well-drained soil. Blooms in the fall	Native. 30 inches tall with 2-inch blue flowers
Iris *germanica* (bearded) *insata* (Japanese) *tectorum* (roof) *siberica*	Check planting instructions carefully because different species have quite different soil preferences. Blooms in spring	Good cut flower in many colors Look for newer, reblooming bearded hybrids. Fall interest with decorative seed pods on Siberian iris
Joe-Pye Weed *Eupatorium purpureum*	Does best in moist soil, but can adapt to any soil. Blooms late summer to fall	Native. Grows to six feet and is good for back of border. Mauve flowers attract swallowtail butterflies.
Lantana (Hardy varieties) *Lantana camara* 'Miss Huff,' 'New Gold,' Mozelle,' and 'Pink Caprice'	Full sun and any well-drained soil Blooms May to frost	Attractive flowering plants that produce an abundance of nectar-rich flower clusters that are absolute butterfly, bee, and hummingbird magnets. Do not prune until early spring when new growth begins.
Pinks *Dianthus spp.*	Sandy, alkaline loamy soil. Blooms spring through summer	Use as a ground cover; mound-forming with fragrant pink flowers.
Red Hot Poker *Kniphofia*	Well-drained but not dry soil. Will tolerate clay soil. Blooms late spring, early summer	Arching clumps of evergreen foliage with spikes of long blooming yellow and orange flowers. Attracts butterflies, hummingbirds. Deer resistant
Salvia *S. guarantica 'Black and Blue'* *S. greggii 'Wild Thing'* *S. greggii 'Maraschino'*	Prefers moist, well-drained soil. Drought tolerant once established. Long blooming late spring through summer Blooms mid-summer to frost Blooms May to October May to November	Attracts butterflies and hummingbirds. Deer resistant. 40 inches tall with 12-inch deep blue flower spikes 20 inches tall with hot pink flower spikes 30 inches tall with scarlet flowers
Sundrops *Oenothera fruticosa*	Average soil. Blooms in spring	Native. 18 inches tall with yellow flowers. Naturalizes well
Sunflower *Heliopsis helianthoides*	Average soil. Blooms July to frost	4-inch yellow flowers, some double. 36 inches tall. Clump forming. Divide often.
Wormwood *Artemesias,* *'Silver Mound,'* *'Powis Castle'*	Light, well-drained soil. Blooms in summer	Can be hang dried. Cut back in late spring. Can be invasive. A foliage plant with low cushion of ferny, silvery leaves and insignificant yellow flowers A bushy, woody-based perennial grown for its aromatic silvery foliage. It rarely flowers
Yarrow *Achillea*	Average soil. Blooms in summer	Flower colors include white, yellow, gold, pink and red. Can be hang dried and are good for fresh or dried arrangements.

PERENNIALS FOR SEMI-SHADE

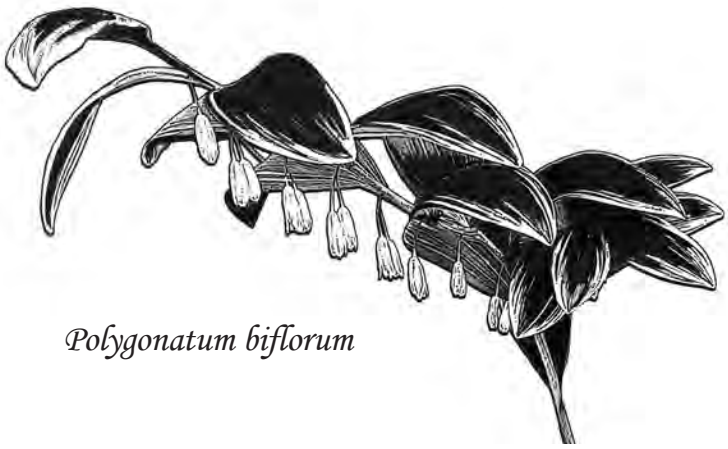
Perennial	Soil and Bloom Period	Description
Bluestar *Amsonia*	Moist, fertile soil. Blooms late spring to early summer.	Native. Powder blue flowers in star-shaped form. Golden foliage in fall.
Columbine *Aquilegia* *'Biedermeier'* *'Double Pleat Blue'* *Aquilegia canadensis*	Well-drained soil, drought tolerant. Blooms in spring.	Distinctive bell-shaped, spurred flowers are short-lived, lasting only two to three years. Self-seeds prolifically. With a wide choice of hybrid varieties, colors range from light pastels to bright yellow, red, orange and purple selections. Plant foliage has an attractive lacy appearance. 20 inches tall pastel shades. 24 inches tall with double violet-blue /white flowers. Native. Bicolor with red and yellow flowers.
False Dragonhead *Physostegia virginiana*	Moist, slightly acidic soil. Blooms mid-summer to mid-fall.	Native. Pink, lavender or white flowers. Can be aggressive.
Foxglove *Digitalis mertonensis*	Moist soil. Blooms in late spring.	True perennial if frequently divided. Rosy-pink flowers. Will re-flower if cut back. Start in the fall.
Japanese Anemone *Anemone japonica*	Moist soil. Blooms in late summer.	A very tall plant. Graceful rose to pink colored flower good for cuttings. Spreads easily.
Virginia Blue Bells *Mertensia*	Acidic, humus-rich soil. Blooms in spring and then becomes dormant.	Native. Pink buds open to small bell-shaped blue flowers. Good with ferns. Naturalizes well.

PERENNIALS FOR SHADE

Perennial	Soil and Bloom Period	Description
Chinese Astilbe *Astilbe chinensis*	Rich, moist soil. Blooms in summer.	Spiky pink to lavender flowers grace this plant. Fertilize in the spring. Divide every 3 years.
Coral Bells *Heuchera americana*	Rich organic, well-drained soil. Blooms in spring and summer.	Foliage plants. The native genus, sanguinea, does not do well in our heat and humidity.
Epimedium—Barrenwort—Bishop's Hat *Epimedium spp.*	Moist but well-drained, acid to neutral soil. Blooms mid-spring to late spring.	Good ground cover with flowers in soft colors of white, yellow, rose, and lavender. Because the foliage is long lasting, this plant always has something to display. Deer and rabbits will not eat.
False Solomon's Seal *Smilacina racemoso*	Moist, organically rich, acidic soil. Blooms in spring.	Until they bloom, you can seldom tell the real Solomon's seal from the False Solomon's seal. The latter produces dense, frothy clusters of white flowers at the ends of the stems and the blooms are followed by clusters of red berries, much different from the blue-black ones of Solomon's seal.

Perennials for Shade *(continued)*

Perennial	Soil and Bloom Period	Description
Ferns 'Autumn Brilliance' (*Dryopteris*) 'Ghost' (*Athyrium*) Japanese Painted (*Athyrium*)	Prefer adequate moisture and some organic matter in the soil. Ferns are at their best in spring, summer, and fall.	Great fillers, especially at edge of woods. 24 inches tall. Emerges orange, maturing to green/orange. 30 inches tall. Silver-green in spring, maturing to dark green. 18 inches tall with silvery weeping fronds.
Lenten Rose *Helleborus orientalis*	Deep, rich neutral or alkaline soil. Blooms in late winter-early spring.	Flowers are cup-shaped, nodding white to pink to rose-purple with yellow stamens. Poisonous. Good ground cover under shrubs
Lily of the Valley *Convallaria majalis*	Humus-rich soil. Blooms mid-spring to late spring.	Fragrant, dainty, white, bell-shaped flowers appear in spring. Good ground cover. Reproduces readily
Lungwort *Pulmonaria*	Cool, moist soil. Blooms in early spring.	The early spring blooming flowers resemble Virginia bluebells and can be red, white, blue or violet. Good ground cover. Superb under deciduous trees.
Solomon's Seal *Polygonatum biflorum*	Average to poor soil. Blooms in spring.	Elegant shade plant that has arching stems and dangling creamy bells. Easy to grow and will slowly colonize.



Polygonatum biflorum

ANNUALS THAT BEHAVE AS PERENNIALS

Because of our mild winters in Gloucester, many annuals will self-seed prolifically; others that are cut back in the fall or early spring will bloom again in the spring. Among these annuals are larkspur, dusty miller, snapdragons, the hardy varieties of lantana (especially trifolia), vinca, and impatiens. Amaryllis and gerbera daisy will winter over and re-bloom if planted in a sunny protected spot, perhaps next to a brick wall.

"Snapdragons will live through the winter here for many years. Penstemmons 'Huskers Red' also do well here." **– Joy Long, GEMG**

Antirrhinum majus

BIENNIALS

Although the life cycle for biennials is two years, you can keep them going every year by scattering the seeds of plants that have bloomed that year. Here are some of our favorite biennials:

- Hollyhock (Althea rosea) (requires full sun)
- Foxglove (Digitalis) (requires shade/semi-shade)
- Honesty, Money Plant (Lunaria) (requires semi-shade and is a great plant to dry)
- Sweet William (Dianthus barbatus) (requires full sun)

"I started my foxgloves from seeds and had wonderful results–big, healthy plants that came back for several years. Then, they were no more as they did not self-seed themselves."

– Noel Priseler, GEMG Emeritus

BULBS

The daffodil is important in the history of Gloucester County. When Gloucester was formed in 1651, the early settlers brought these soft reminders of English springs as they established themselves in the area. The soil and weather conditions were ideal for daffodils. The bulbs were passed from neighbor to neighbor and spread from the orderly beds and burying grounds of the great houses to the fields. By the beginning of the 1900's daffodils grew wild in the untended fields of Gloucester. It is from this abundance of natural beauty that grew the extensive daffodil industry, which earned the county the title "Daffodil Capital of America" in the 1930's and 40's. This heritage is celebrated each April with the Daffodil Festival.

Today there are more than 25,000 cultivars of daffodils and they can be purchased in 13 different divisions ranging from Trumpet to miniature blooms. Daffodils are planted in the fall for a spectacular spring showing. They are virtually pest proof, as the foliage and bulbs are poisonous to most insects and animals—including our pet cats and dogs as well as deer. Because of the climate in our Gloucester, it's possible to have daffodils flowering from November to May. Little if any division is needed for the bulbs.

"When choosing daffodil bulbs, you may want to choose one that is not a hybrid. Hybrids are not as faithful in coming back year after year. Ask for daffodils that naturalize. They will not only come back year after year but will also mulitply." **– Sally Moore, Retired GEMG**

Other favorite bulbs planted in the fall include tulips, alliums, anemones, camassias, crocus, croscosmia, fritillarias, iris, and muscari. These bulbs make great companions for the daffodils but may need protection from pests such as voles or squirrels. This may be accomplished by planting them underground in hardware cloth baskets or cages. Non-hardy gladiolus should be planted in early spring for a mid-summer blooming. Colchicum, fall crocus, Lycoris radiata, Lycoris squamigera, and Sternbergia lutea are a few of the bulbs you plant in the spring for a fall blooming. Lycoris and Sternbergia, like daffodils, are members of the amaryllis family and thus toxic to pets. The other bulbs will benefit from pest protection.

As a rule of thumb, plant bulbs at a depth three times the height of the bulb and space them three times the width of the bulb. To have a spectacular show, plant the bulbs in clusters. Bulbs do not require fertilizer when planted; however, established bulbs would benefit from a fall application of fertilizer. The general clean-up rule is: after the blooms have faded, wait until the foliage turns yellow before removing the foliage. This will give the bulbs the energy needed through photosynthesis to produce next year's bloom. The location of dormant bulbs can be marked with a golf tee or straw.

Daylilies are wonderful succession plants for spring bulbs because they hide the spent foliage. They also mark the location of the dormant bulbs.
Summer blooming bulbs are planted in early spring. Try alocasia, caladium, and Zantedeshia "calla lilies" in the shade and dahlia, canna and oxalis for a sunny location. These bulbs should be removed in the fall and stored in a cool dry location.

"In spring, when you're enjoying your daffodils, mark spots where you would like to put in more bulbs in the fall with plastic knives, forks, and spoons." **– Debbie Bartok-Newton, GEMG**

PERENNIAL ORNAMENTAL GRASSES

Grasses create an informal and naturalistic environment that is often found in waterfront property and wetlands. They can also be combined with perennials in the mixed border. Some are evergreen; others have beautiful brown foliage in their dormant state.

Ornamental grasses produce a great volume of leaves and stems that must be cut back and cleaned up once a year. This is best done in late winter or very early spring before new growth begins.

Grass	Description	Comment
Blue Fescue—Blue Sheep's Fescue *Festuca ovina 'Glauca'*	This is a small cool-season grass that forms hedgehog-like mounds of fine-textured, pale, silvery-blue leaves. Grows 6 to 12 inches tall and wide in full sun or bright shade. Does not like damp spots. Evergreen foliage	Works well as an edging or ground cover or in rock gardens. Should be divided every 3 years.
Feather Grass—Needle Grass—Spear Grass *Stipa tenuissima*	Densely tufted with erect, narrowly linear to filament-like, tightly rolled, bright green 12-inch leaves. Throughout the summer bears narrow, nodding, softly feathery panicles. Light soil and dry weather suit it best. Evergreen foliage	The whole plant billows in the slightest breeze. This is short lived and treated as an annual, so when brown, lift out. It will be surrounded by baby tufts for the next year.
Feather Reed Grass *Calamgrostis x acutiflora 'Stricta'*	A stiffly, upright clump grass that changes with the seasons. In spring it is a fountain of light green leaves that by summer are topped with feathery pink inflorescences that change to light purple and ripen to golden wheat like sheaves in midsummer. In fall the leaves turn gold and stand during winter. Grows 4 to 7 feet tall, 2 to 3 feet wide. Best in full sun. Grows well in wet sites	This is one of the first grasses to bloom and is a handsome plant in any garden and a good screen when mass planted. Deer resistant
Fountain Grass *Pennisetum alopecuroides*	Arching stalks of bottlebrush-like light pink or cream flower spikes appear in the late summer from dense, upright mounds of slender bright green leaves. Varieties grow from 1 to 4 feet tall. Grows in full sun in fertile, moist, well-drained soil. Good for wet sites. Evergreen foliage	Should be cut back in fall to avoid self sowing; however, can be cut back in late winter. Mulch well. Good when paired with Sedum 'Autumn Joy.' Deer resistant
Little Bluestem *Schizarchyium scoparium* *'Prairie blues'* *'The Blues'*	3-foot tall silver blue dense clump of slender blades. Evergreen foliage 36 inches tall. Foliage turns orange and red in fall. Blue foliage with pink stems and bronze flowers	Native. Should be divided every third year. Deer resistant
Miscanthus—Maiden Grass *Miscanthus sinensis* *'Hinjo'* *'Morning Light'*	Miscanthus species are big grasses with broad, gracefully arching leaves. Grows well in wet sites. 4 feet tall and gold banded. Elegant, 4- to 5-foot tall carefree grass.	Thrives in heat and humidity. Deer resistant. A favorite of locals; it is the variety on Rt. 17 in York County.

Perennial Ornamental Grasses *(continued)*

Grass	Description	Comment
Muhly Grass *Muhenbergia capillaries*	A clump-forming grass that grows 1 to 3 feet tall and 2 to 3 feet wide and is noted for its attractive summer foliage and spectacular clouds of vibrant pink, airy flowers in the fall. Prefers sandy soil and a sunny to lightly shaded location.	Native. Deer resistant. Withstands heat, humidity, drought, and poor soil.
Pampas Grass *Cortaderia*	A large, fast-growing plant that produces dense, impenetrable, 4- to 5-foot wide evergreen fountains of saw-toothed, narrow, arching leaves. In late summer plumes of cream to pink flowers soar on long stems that can reach 6 feet or more. Full sun to partial shade in well-drained soil. Evergreen foliage.	Because of its huge size, plant this grass in a spot where you need a big, impressive accent and surround with mass plantings to balance its striking vertical flow.
Rush *Juncus effusus*	2 to 3 feet tall, flexible, and steel gray. Sun to light shade in moderately moist to wet soil. Evergreen foliage.	Native. Good bog plant
Sedges *Carex spp. 'Marginatum'*	A dense arching mound of stiff wide leaves that thrives in shade in average to fertile, moist but well-drained soil. Grows 12 to 18 inches tall and 2 to 3 feet wide. Evergreen foliage.	While sedges look very much like grasses, they're actually only distant relatives. Flower stalks of grasses are round; sedges have triangular stems . Remember, sedges have edges.
Sweet Flag *Acorus gramineus 'Ogon'*	Narrow, grass-like, arching leaves in dense clumps. The leaves have bright yellow stripes on chartreuse, 8- to 10-inch tall foliage. Full sun to partial shade in fertile, moist or wet soil. Grows in average garden soil or wet sites. Evergreen foliage.	Slow growing ground cover that almost seems to glow. Suitable for planting at pond's edge, directly in the shallow water, or in other moist locations.
Switchgrass **Panicum virgatum** *'Shenandoah'* *'Dallas Blues'* *'Heavy Metal"*	Dense upright clumps of narrow leaves that change color with the seasons. 36 inches tall and wide. Leaves turn maroon in fall . 5 feet tall with wide bluish blades and plumes 4 feet tall with metallic blue leaves that turn yellow in fall	Native. Does well in coastal areas as withstands sandy soil, drought, and salt spray. Does best in full sun. Good erosion control plant. Deer resistant.

"When pruning back pampas grass, use an electric hedge trimmer. Have a tarp lying alongside and put cuttings right on the tarp. Gather tarp and haul to the dump in the tarp. This saves picking up pieces all over the yard."

– Betty Durrette, GEMG

PROTECTION AGAINST VOLES

Voles are a problem in Gloucester. Using the tunnels made by moles, voles move through the soil and feed on roots and stems of plants. It is the recommendation of the Virginia Cooperative Extension that voles be trapped with a mousetrap baited with apple and peanut butter on the underside of the bait holder. Put the trap next to the vole hole and cover with a flowerpot or basin topped with a brick. Be patient; it may take time, but usually in three days, you will have trapped the vole. You might also trap a second or third vole by rebaiting the trap and leaving outside the same hole and following the same procedure.

The following are some tips for outsmarting the voles from Gloucester Master Gardeners—or at least living with them.

- Plant most precious perennials in big plastic pots with drainage holes; submerge these pots in soil. Put chicken wire or hardware cloth over the tops of pots. This is also good for tulips and other enticing bulbs.
- Plant tulips, other delicate bulbs, and fleshy rooted plants favored by voles and squirrels in wire cages made from hardware cloth.
- Surround and underline plants and bulbs with sharp gravel or kitty litter (fresh or used).
- Narcissus and other members of the amaryllis family are poisonous to critters and you do not need to protect them; however, you can surround those bulbs you need to protect with bulbs from the amaryllis family as a means of keeping the critters at bay.

"Nylon fishing line coiled into a nest in the bottom of a planting hole has protected hostas in my yard from voles for four years. I plan to wrap tulip bulbs with line this fall."

–Ruth White, GEMG

"Plant bulbs in plastic containers to deter voles. The containers last about three years."

–Teresa Denby, GEMG

"A way to plant your hostas to prevent them from being eaten by voles is to use pots and sharp gravel! First find a pot one size larger than your hosta is currently in, cut out the bottom. Then dig your hole and put the new pot in this hole with the top of the pot at ground level. Next you put a layer of small, sharp gravel in the bottom. Then comes your hosta with your mix and you top with another layer of sharp gravel. When you finish this layering, mulch like normal. This may also work for other plants that voles may like."

– Jim Brant, GEMG

DÉCOR TIPS

Here are some fun things to do with perennials:

Pots et Fleurs (potted flowers and cut flowers combined)

During January and February—when the winter doldrums strike—buy blooming plants, such as calla lilies, daffodils, hyacinths, crocuses, oriental lilies, and hydrangeas, which can later be put in the garden. You may enjoy these as they are, or you can create "Pots et Fleurs" creatively to make a beautiful arrangement.

1. Buy some small trailing ivies and blooming plants. Select a basket or decorative planter that is leak proof. Place the pots of flowers in the container with the ivies trailing over the sides.
2. Hint: Sometimes it works better--you can fit and angle better--if you remove some of the plants from the pots and put each plant in a small plastic bag.
3. Insert some cut flowers that have been placed in small skinny jars filled with water, blocks of wet oasis in plastic bags, or water tubes.
4. Arrange in a pleasing layout. Cover bare spots with sphagnum moss that has been wetted and squeezed.

Bulbs in Containers

Along about November, try the Triple Decker or Lasagna approach to planting bulbs in a container. This will give you a beautiful long-blooming display come February.

1. Pick a large, deep pot with good drainage.
2. Plant a layer of tall-growing bulbs, such as daffodils, 10 inches deep in the container. It's okay for the bulbs to touch each other.
3. Cover with 2 to 3 inches of soil.
4. Plant a layer of tulips and cover with soil.
5. Add a layer of small bulbs such as crocuses or grape hyacinths and cover with 4 to 5 inches of soil.
6. Top with an inch of mulch and/or plant pansies for a winter flower display.
7. Water well and place in a sunny spot.

Obtaining Perennials

1. Buy compact plants with healthy green leaves at garden centers. Avoid root-bound plants or those that have been allowed to dry out.

2. When buying plants at stores other than garden centers, purchase them early in the season because most of these stores are ill-equipped to maintain healthy plants for any length of time.

3. Plants grown by Gloucester Master Gardeners are sold at the Plant Extravaganza held annually on a Saturday in early September. Master Gardeners in near-by counties have plant sales at various times in the fall and spring.

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Below is a list of Virginia Cooperative Extension publications that address discussion points in this chapter. The websites where these can be found are https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

Daylilies in Virginia, 426-030
Flowering Bulbs: Culture and Maintenance, 426-201
Perennials: Culture, Maintenance and Propagation, 426-203
Planning the Flower Border, 426-202

NOTES:

ALL ABOUT ANNUALS

Annuals are herbaceous plants that complete their life cycles from seed to mature bloom to death in one growing season. Many annuals, like petunias and impatiens, produce seeds that develop into new plants the following season.

Some perennials, biennials, tuberous plants, and bulbs including mums, hollyhocks, begonias, and tulips are not cold hardy in USDA Hardiness Zone 7b, which includes most of the Middle Peninsula. Gloucester Point is in Hardiness Zone 8a. They are grown as annuals, lasting for one season only. We let them die back and replace them the next year.

> ***"Cleome, celosia, and petunias will self-seed if planted in full sun."***
>
> **– Mary Simpson, GEMG Emeritus**

Annuals are inexpensive and easy to grow. They display an amazing variety of colorful blooms all summer. Annuals can be used in flowerbeds, cutting gardens, cottage gardens, window boxes, and containers. Annuals are great for filling in spaces after spring-flowering bulbs die back. Some annuals, such as morning glories, are climbers; some, like sweet alyssum, are low-growing plants that produce carpets of color.

Seeds of hardy annuals can be sown directly into garden beds. Some annuals that thrive when started from seed sown directly into the soil include marigolds, nasturtiums, zinnias, and cosmos. Tender annuals like impatiens and coleus must be planted indoors and transplanted outside when the soil and nighttime temperatures are warm enough (about 60° F). In Gloucester County, transplanting time occurs about four weeks after the average last frost date of April 21.

> ***"Annuals add some color and attract butterflies. Buy early for best selection; nurture and protect from frost until suitable to plant outside."*** **– Suzanne Swift, GEMG**

SELECTING AND PLANTING ANNUALS

Select plants that are covered with buds rather than open flowers. Water annuals before removing them from their containers. Transplant annuals late in the day or on a cloudy day to keep plants from being burned by the sun. Leave sufficient spacing between plants to allow air circulation and discourage diseases and insect pests. Place plants in the ground at the same level that they growing in the tray or pot. Stagger plant placement to avoid even rows that present little interest to the eye.

> ***"Plant pansies in the fall. Fertilize monthly with a fertilizer that has a higher middle number (e.g., 2-10-2). They will be beautiful by early spring."***
>
> **– Felicity Ericson, GEMG Emeritus**

> ***"Petunias, zinnias, impatiens, and verbena are self-seeders adding later color in the garden for fall."*** **– Nell Jones, GEMG**

CARE OF YOUR ANNUALS

Always deadhead or cut off spent blooms and seed pods to keep your annuals blooming longer, especially if you are growing ageratum, calendula, cosmos, marigold, pansy, scabiosa, or zinnia. If your plants get spindly or leggy, pinch off the flowers and new leaves at the ends of the stems to increase fullness.

> ***"Pinch back your new annuals—zinnias, petunias, and salvia—at 4 to 6 inches to promote bushy growth."***
>
> **– Felicity Ericson, GEMG Emeritus**

Weeding is a boring but necessary chore. To decrease the time you spend in weeding, cover plants with a 2 to 4 inch layer of organic mulch. Besides deterring the growth of weeds, mulch will protect plants from soil temperature extremes; improve the richness of the soil as it decomposes; and help the bed retain moisture. Pine straw, bark nuggets, finely ground bark, and shredded leaves are among the many choices for organic mulch.

Some annuals require more fertilizer that others. Get to know your plants and their nutrient requirements.

Enrich the soil before you plant by adding compost or other organic matter. If you use a commercial chemical fertilizer, follow label instructions to help prevent chemical runoff into local waterways that lead to the Chesapeake Bay.

ANNUALS BEST SUITED TO GLOUCESTER

The following table includes some annuals and tender perennials that are well suited for planting in Gloucester. The plants are organized by their uses.

Most of the annuals and tender perennials listed in the following tables are not native to North America. Some non-native plants can seed or spread aggressively and will invade garden beds and nearby fields and wooded areas, where they will crowd out native species. Introduced species thrive because they have no natural insect or disease enemies.

A few native annuals are aggressive spreaders if not carefully controlled: however, they are not considered invasive. They are classified by the USDA Natural Resources Conservation Service (NCRS) as opportunistic native plants.

Some of the listed plants have toxic properties and should not be planted in gardens frequented by children or pets.

Use	Annual	
Containers	**Angelonia** *Angelonia augustifolia*	**Lantana** *Lantana camara—non-hardy cultivars*
	Bacopa *Sutera cordata and grandiflora cultivars*	**Million Bells** *Calibrachoa*
	Coleus *Solenostemon sauttellarioides*	**Pansy** *Viola x wittrockiana*
	Geranium *Pelargonium*	**Petunia** *Petunia x hybrida*
	Impatiens (all types) *Impatiens walleriana*	**Sweet Potato Vine** *Ipomoea batatas*
Edging	**Sweet Alyssum** *Lobularia maritima*	**Periwinkle—Vinca---Myrtle** *Vinca major, Vinca minor*
	Dahlborg Daisy—Golden Fleece— *Thymophylla tenuiloba (Dyssodia tenuiloba)*	**Petunia** *Petunia x hybrida*
	Dianthus—Pinks---Carnation *Dianthus spp.* *D.chinensis* - **China pinks** *D. barbatus* - **Sweet William**	**Portulaca—Rock Rose** *Portulaca grandiflora*
	Dwarf French Marigold *Tagetes patula*	**Verbena** *Verbena x hybrida*
	Lobelia *Lobelia erinus*	**Wax or Bedding Begonia** *Begonia semperflorens*

ANNUALS BEST SUITED TO GLOUCESTER (*continued*)

Use	Annual	
Mixed Borders	**Ageratum** *Ageratum houstonianum* Aggressive spreaders	**French Marigold** *Tagetes patula*
	Garden Balsam *Impatiens balsamina*	**Petunia** *Petunia x hybrida*
	Cleome - Spider Flower *Cleome (Sterile cultivars available)*	**Salvia—Scarlet Sage** *Salvia splendens*
	Cosmos *Cosmos bipinnatus*	**Snapdragon** *Antirrhinum majus*
	Lantana *Lantana camara—non-hardy*	**Zinnia** *Zinnia elegans*
	Dusty Miller *Senecio cineraria*	
Fences and Trellises	**Blue Trumpet Vine—Thunbergia** *Thunbergia grandiflora*	**Morning Glory** *Ipomoea pupurea*
	Gourds *Cucumber family*	**Scarlet Runner** *Kennedia prostrate*
	Moonflower *Ipomoea alba*	**Sweet Pea** *Lathyrus odoratus*
Screen Plants	**Celosia—Cockscomb (Tall)** *Celosia, Plumosa group*	**Marigold (Tall)** *Tagetes erecta—African Group*
	Cleome—Spider Flower *Cleome*	**Zinnia (Tall)** *Zinnia elegans*
Low Borders	**Celosia—Cockscomb (Dwarf)** *Celosia, Cristata group)*	**Pansy** *Viola x wittrockiana*
	Dahlia (Dwarf) *Dahlia x hybrida*	**Hybrid Petunia** *Petunia x hybrida*
	Marigold (Dwarf) *Tagetes patula*	**Zinnia (Dwarf)** *Zinnia—Button Box Series*
	French Marigold *Tagetes patula*	
Height	**Bachelor's Button—Cornflower** *Centaurea cyanus*	**Flowering Tobacco—Nicotiana** *Nicotiana alata*
	China Aster *Callistephus chinensis*	**Mealycup Sage—Salvia** *Salvia farinacea 'Victoria'*
	Dahlia (Bedding) *Dahlia x hybrida*	**Pincushion Flower—Scabiosa** *Scabiosa caucasica*
	Black-eyed Susan or **Gloriosa Daisy** *Rudbeckia hirta*	**Pot Marigold** *Calendula officinalis*

"The hand tools I use are often green, metallic, or brown. They become hard to find in bushes or weeds. I have found that either tying a piece of bright colored plastic or painting the handle red helps me keep track of my tools, and I don't have to wait until plants die back in the winter to find them."

– Sally Moore, GEMG

Nicotiana alata

ANNUALS BEST SUITED TO GLOUCESTER (*continued*)

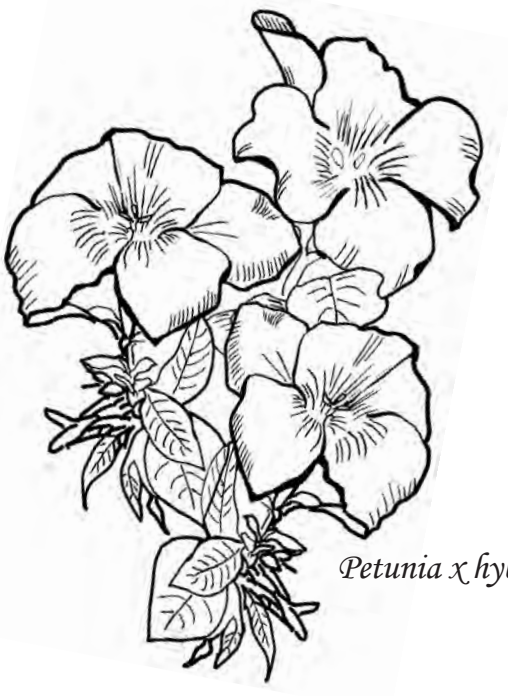
Use	Annual	
Full Sun	**Angelonia** *Angelonia augustifolia*	**Larkspur** *Consolida ambigua*
	Bachelor's Button—Cornflower *Centaurea cyanus*	**French Marigold** *Tagetes patula*
	Blanket Flower—Gaillardia *Gaillardia pulchella*	**Morning Glory** *Ipomoea purpurea*
	Celosia—Cockscomb *Celosia, Cristata group*	**Petunia** *Petunia x hybrida*
	Cleome—Spider Flower *Cleome*	**Portulaca—Moss Rose** *Portulaca grandiflora*
	Cosmos *Cosmos bipinnatus*	**Salvia—Scarlet Sage** *Salvia splendens*
	False Heather—Hawaiian Heather *Cuphea hyssopifolia*	**Shasta Daisy** *Leucanthemum x superbum* *Chrysanthemum x superbum*
	Four O' Clock *Mirabilis jalapa*	**Sunflower (Dwarf)** *Helianthus annus hybrids*
	Geranium *Pelargonium x hortorum* or *peltatum*	**Zinnia** *Zinnia elegans*
Shade	**Caladium Bicolor** *Caladium x hortulanum*	**Johnny-Jump-Up** *Viola tricolor*
	Cardinal Flower—Lobelia *Lobelia cardinalis*	**Sapphire Flower** *Browallia speciosa*
	Coleus *Solenostemon sauttellarioides*	**Wax or Bedding Begonia** *Begonia semperflorens*
	Impatiens (all types) *Impatiens walleriana*	
Adapted from Virginia Cooperative Extension, Publication 426-600 Master Gardener Handbook, A Guide to Gardening in Virginia and GMGs' experiences		

"Wave petunias are excellent annuals. They are very colorful, are long blooming, and spread nicely over a moderate area."

– Florace Arnold, GEMG Emeritus

"The larkspur spikes of delicate white, violet, pink, and even red flowers make a great display in drifts or as a background to small annuals. As larkspur self seeds, there will always be some in the garden. The trick is to recognize them as flowers and not pull them up as weeds when they first start growing in late spring."

– Noel Priseler, GEMG Emeritus



Petunia x hybrida

FACTS AND GROWING TIPS ON SOME OF OUR FAVORITE ANNUALS

Hundreds of new annual cultivars are developed each year. All-America Selections (AAS) is an independent, not-for-profit organization that impartially tests and introduces the best new varieties of garden plants developed each year in North America. Some classic and new AAS award winners, as well as favorites of Gloucester Master Gardeners, are described in the table on the following pages.

Plant	Description	Garden Uses	When / Where to Plant	Care
Ageratum *Ageratum houstonianum*	Tender annual with fluffy blue-violet color. Both dwarf and tall varieties. Blooms from May to frost. 'Blue Danube' is a favorite.	Dwarf varieties are great for borders, edgings, rock gardens, window boxes, and small beds. Tall varieties are good for cut flowers and may be dried for arrangements.	Start seeds indoors for transplanting or sow directly in open ground after April 21 and where they will remain throughout the season. Plant in full sun or semi-shade in fertile, well-drained soil.	Mulch to protect during the hot summer. Deadhead for continuous blooming. Frost tender Some cultivars spread aggressively.
Angelonia *Angelonia augustifolia*	Known as summer snapdragon. It has dozens of 1-inch blooms in white, blue, pink, and lavender on glossy green foliage. Blooms all summer into fall. New for 2019: Angelface® 'Cascade Blue.'	Good choice for flowerbeds and containers	Plant in mid spring in full sun in moderate to dry location.	Shear plants back 50 percent in midsummer for heavy re-bloom in 2 to 3 weeks. Heat-loving plant Deadheading not necessary.
Bacopa *Sutera cordata and grandiflora cultivars*	Small snowflake-like flowers in white, blue, and pink peak out from the trailing stems of this plant. Blooms late spring through the summer. New for 2015: 'Cabana,'a jumbo white.	This annual is best suited to be grown in containers. Excellent for trailing over the edge of mixed patio pots or in hanging baskets	Plant in mid spring in container in potting soil in full to partial sun.	Routinely pinch back growing stems to keep plants shapely. Fertilize every two weeks.

Tagetes patula

"Take an old decorative pot 10 to 12 inches, metal or ceramic, with the bottom completely out. Bury the pot in the ground about 4 inches. Plant a marigold in the middle below the pot edge. The plant will fill in the pot and hang over the sides beautifully."

– Jodie Sholtis, GEMG

FACTS AND GROWING TIPS ON SOME OF OUR FAVORITE ANNUALS (*continued*)

Plant	Description	Garden Uses	When / Where to Plant	Care
Begonia - Wax *Begonia semperflorens*	Smooth, waxy green or reddish-brown leaves. Flowers are shades of red, pink, salmon, and white. Blooms from May to frost. Cocktail series has bronze leaves, which grow better in sunny areas than other begonias. New for 2021: Double Delight® 'Blush Rose' and 'Primrose' (yellow)	Great for borders and container plantings	Start seeds indoors for transplanting or buy plants in packs at garden centers for planting when night temperature reaches 60 degrees. Plant in full sun or partial shade in rich, moist, slightly acidic soil.	Mulch to protect during the hot summer. Must have good humidity. Can be lifted in fall and potted as indoor plant.
Coleus *Solenostemon sauttellarioides* or *Plectranthus sauttellarioides*	Tender perennial treated as an annual. Brightly patterned foliage plant that provides showy colors for shaded areas. Grows up to 24 inches. Leaf colors include brilliant red-mahogany, green, yellow, white, blue, rose, and more as the cultivars increase. New for 2021: Color Blaze® 'Royale Pineapple Brandy' 2020 AAS Ornamental Winner: Coleus 'Main Street Beale Street' New for 2019: Colorblaze® 'Rediculus'™, 'Torchlight'™, 'Sedona Sunset'™	Great for containers or for under-plantings. Also used as a houseplant	Grows easily from seed outdoors after temperatures reach 70 degrees. Plant in bright shade of tall trees or in dappled light—no direct sun. Seeds can be planted inside anytime.	To encourage branching, pinch out the top 3 to 4 inches of the lead stem. Remove flower spikes as they start up to prevent the plant from becoming straggly. Blooms from mid-spring until killed by frost
Dusty Miller *Senecio cineraria*	Silvery-white foliage with yellow flower. Cut off flower to encourage leaf growth. Grows from 6 inches to 3 feet tall. Heat and drought resistant. "Silver Lace" is a delicate-looking cultivar.	Best in containers, bedding or mixed borders	Plant after soil is above 60 degrees in sun or part shade. Grows in poor but well drained soil. Plant 2 inches apart.	Continue to pinch out top to encourage the plant to fill out throughout the season. Shear occasionally to prevent legginess. Will make a nice showing until frost.

FACTS AND GROWING TIPS ON SOME OF OUR FAVORITE ANNUALS (*continued*)

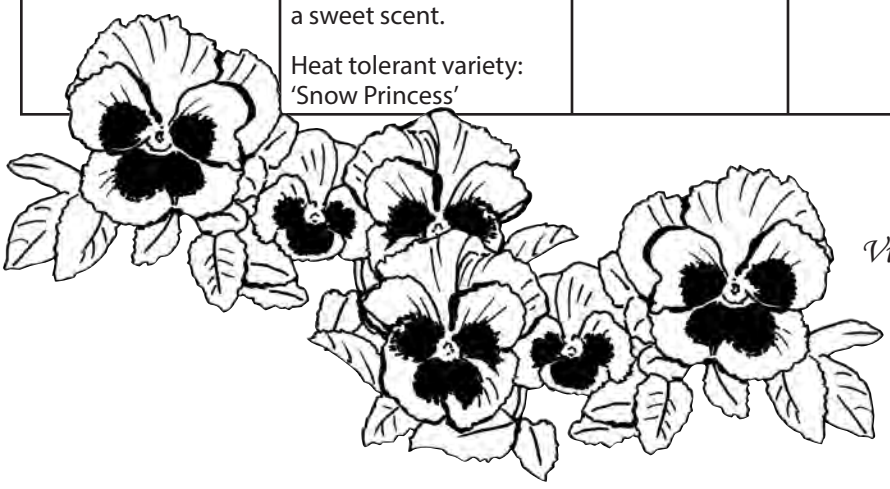
Plant	Description	Garden Uses	When / Where to Plant	Care
Impatiens *Impatiens walleriana*	Most varieties range in height from 6 inches to 2 feet with single or double flowered forms. The foliage is shiny green to reddish or variegated green and yellow green. The flowers come in many shades of pinks, reds, and purple as well as white and bicolor. Blooms from May to frost. 2019 AAS National winner: SunPatiens® 'Vigorous Shell Pink' New for 2021: SunPatiens® 'Compact Hot Pink' and 'Compact Orchid Blue'	Loves shade; grows well under trees	Plant in mid spring in extreme shade in good loamy soil.	Very pest-free and requires very little maintenance to promote blooms
'Joey'-Pink Mulla Mulla *Ptilotus exaltatus*	A short-lived annual native to Australia. Large 3- to 4-inch bottle-brush spikes in neon pink on attractive silvery foliage. Grows 12-18 inches tall and blooms all summer. "Joey"- silver-pink blooms with silver-pink foliage.	Mounding plant which is very heat and drought tolerant. Use as a specimen pot plant, an accent plant in a mixed container, or a landscape plant.	Plant in mid spring in full sun in average, well-drained soil.	Allow to dry out before watering.
French Marigold *Tagetes patula*	Most easily grown and popular annual. Grows from 6 inches to 4 feet tall. Color ranges from bright yellow to orange and red. Has strong scented foliage and blooms from May to frost. 2019 AAS Flower Winner: 'Marigold Big Duck Gold' 2019 AAS Flower Winner: 'Super Hero Spry'	Great for cut flowers. Plant dwarf French marigolds with vegetables because of their pest-repellent properties. Some forms exude substance from the roots that rid the garden of nematodes (soil pests).	Plant in late spring in sun or part shade. Blooms best in hot sunny location Loves poor, rather than rich soil.	Nearly trouble-free. Will bloom from early summer to frost if spent blossoms are removed.

FACTS AND GROWING TIPS ON SOME OF OUR FAVORITE ANNUALS (*continued*)

Plant	Description	Garden Uses	When / Where to Plant	Care
Million Bells *Calibrachoa group*	Look like small petunias but have strong, wiry stems, not easily broken and not bothered by tobacco budworms. New for 2019: Superbells® Cardinal Star™, Double Chiffon™, Evening Star™ New for 2021: Superbells® Coral Sun™	Excellent for containers but less successful as bedding plants	Plant in mid spring in full sun or light shade. Will flower from spring to frost	Come in a wide variety of colors Faded flowers drop cleanly, not requiring dead-heading. Will flower from spring to frost.
Morning Glory *Ipomoea spp.*	Ornamental vining plant with violet, blue, white, or pink flowers. 'Heavenly Blue' is a favorite.	Great for climbing over fences and objects like tree stumps	Plant in mid spring in full sun. If starting from seed, soak seeds overnight in water and abrade to hasten germination.	Mulch to protect during the hot summer. Common morning glory, *Ipomoea purpurea*, and ivy-leaved morning glory, *Ipomoea hederacea*, are moderately invasive.
Nasturtium *Tropaeolum majus*	Over 50 varieties—most are climbers. The entire plant has a spicy, peppery, yet delicate pungent flavor much like cress. 2019 AAS Flower Winner: 'Nasturtium Baby Rose' AAS 2020 Winner: 'Tip Top Rose'	Useful herb for salads/sandwiches; seeds make a great snack in winter and can be substituted for capers. They are good plants for organic vegetable gardeners as they attract aphids away from susceptible fruits/vegetables.	Plant in mid spring in full sun in well-drained location. Prefer sandy soil Sow seed in fall for winter-spring bloom.	Add nitrogen fertilizer sparingly.
Ornamental Cabbage and Kale *Brassica oleracea—Acephala group*	The cabbages come with purple or white centers. Red, pink, and white cultivars.	Grow well from fall to spring	Grow in early fall in full sun in fertile, well-drained, alkaline soil	Require little care. Slugs and snails are frequent pests.
Pansy *Viola x wittrockiana*	The flowers look like monkey faces. Colors include blue, apricot, white, purple, red, or orange. V. odorata 'Duchesse du Parme' and 'Lady Hume Campbell' are fragrant.	Great in borders, beds, and containers	Plant in fall as soon as weather cools and again in spring.	Pansies are very hardy, withstanding temperatures down to 15 degrees if mulched. Deadhead to encourage new blooms. Will fade in June, as they cannot tolerate heat.

FACTS AND GROWING TIPS ON SOME OF OUR FAVORITE ANNUALS (*continued*)

Plant	Description	Garden Uses	When / Where to Plant	Care
Petunia *Petunia x hybrida*	Accounts for 50% of all annuals grown. Plants have single or double flowers and most colors, including bi-colors. 2021 AAS Flower Winner: Supertunia® 'Royal Velvet' 2019 AAS Flower Winner: Petunia Wave®'Carmine Velour' 2017 AAS Flower Winner Petunia 'Evening Scentsation'	Use for edging, mass bedding, in containers and hanging baskets, or for accent. Multi-floras are more heat and disease resistant.	Plant in spring. Adaptable to rich or poor soils, moist or dry conditions, full sun or part shade	Use newer varieties that are resistant to Botrytis rot. Plant in well-drained soil. Deadhead frequently to encourage new blooms.
Salvia —Scarlet Sage *Salvia splendens*	Ornamental sage. Comes in many colors. Best known is scarlet sage with red blossoms that appear in early summer and last until frost. Salvia Summer Jewel™ Lavender, 2016 AAS Flower Winner Salvia Summer Jewel™ White, 2015 AAS Bedding Plant Winner Salvia Summer Jewel™ Pink, 2012 AAS Bedding Plant winner Salvia Summer Jewel™ Red 2011 AAS Bedding Plant Winner	Great in mass bedding. Goldfinch love the seeds in the fall.	Grow best in mid spring in full sun	When young plants are 6 to 8 inches high, pinch back to encourage lush growth.
Sweet Alyssum *Lobularia maritima*	Profuse white or purple blooms over a long period. Generally pest resistant. Grows to 4 inches in height and has a sweet scent. Heat tolerant variety: 'Snow Princess'	Effective in masses in informal beds, or in tubs or hanging baskets	For early bloom, sow seed as soon as ground is workable.	Add compost to soil before sowing. Shear plant tops every few weeks to remove fading flowers and produce more blooms.



Viola x wittrockiana

FACTS AND GROWING TIPS ON SOME OF OUR FAVORITE ANNUALS (*continued*)

Plant	Description	Garden Uses	When / Where to Plant	Care
Sweet Pea *Lathyrus odoratus*	Vining plant with masses of fragrant, pea-shaped flowers in every color but yellow. Look for heat resistant varieties. New for 2019: 'Zinfandel' Modern variety: 'April in Paris' Heirloom: 'America', from 1896	Great for wrapping around small objects and for containers	In mild winter areas, sow seed in the fall.	Does not tolerate dry soil and should be well mulched. Requires soil enriched with compost. The more you cut sweet peas, the better they bloom.
Sweet Potato Vine *Ipomoea batatas*	Annual trailing vine that comes in chartreuse, black, and tricolor. No flowers. New for 2019: 'Sweet Caroline'™ 'Kiwi'™ and 'Raven'™	Great in containers for trailing effect	Plant in early summer. Requires full to partial sun in average soil	Very low maintenance
Zinnia *Zinnia elegans*	Many varieties in varied heights, flower size, and colors. 2021 AAS Flower Winner: Zinnia 'Profusion' red-yellow bicolor 2020AAS Flower Winner: 'Holi Pink' New for 2019: 'Raspberry Sorbet' 2018 AAS Flower Winner: 'Queeny Lime Orange'	Great as cut flower	Sow seeds only when soil is warm. Grows in almost any soil and will survive our hot summer weather	Pinching is not necessary; however, cut off dead flowers to maintain attractiveness. As you cut the flowers, the plant branches freely.

"Shade gardens are a challenge for color but the annuals—impatiens, begonias, and coleus—come to the rescue. And one advantage to the shade garden is fewer weeds!" **– Kay Williamson, GEMG**

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Notes:

GROUND COVERS

Grass is the best-known ground cover, but it is not suited to all locations. Other ground cover plants should be used where grass is difficult to grow or maintain. These ground covers are low-growing plants—no taller than 3 feet—that cover the ground in mat-forming or trailing plants. Most ground covers are not intended to be walked on or mowed. In fact, in most cases, damage is caused by pedestrian traffic. Newly cut banks and slopes, greater than a 12-degree grade, are best treated with ground cover plantings. Around buildings, ground covers are superior to paving for reducing heat, glare, noise, and dust. In addition, they effectively reduce maintenance work and put the finishing touch on landscaping projects. Some ground covers can provide a habitat and an environment that encourages a diverse population of birds, insects, and other small critters.

Locations for Ground Covers

Ground covers are used most frequently in the following locations:

- Steep banks or slopes
- Shady areas under trees or next to buildings
- Under plantings in shrub borders and beds
- Where tree roots grow close to the surface and prevent grass from growing
- Very wet or dry locations

Functions of Ground Covers

When ground covers are chosen carefully and placed correctly, they enhance the beauty of the landscape. A great many plants can be used as ground covers, producing patterns with variation in height, texture, and color. In addition, ground covers fulfill a number of practical functions:

- Control erosion on slopes
- Obstruct foot traffic without impeding the view
- Conserve soil moisture
- Reduce lawn maintenance
- Provide vegetative growth where grass is difficult to maintain

"Ground covers are a good, water-wise alternative for lawns." **–Mo Lynch, GEMG**

Selection of Ground Covers

Selection of a ground cover will depend upon the area where it will be grown. Soil conditions must be studied. Some ground cover plants, such as pachysandra, require a moist, fertile soil in partial shade; others, such as bishop's weed, thrive in partial to deep shade in poor soil. Ice plant likes full sun in average soil.

Your choice of an evergreen, perennial, or herbaceous ground cover will depend on your preference. Consideration should be given to herbaceous ground covers, as they will greatly increase your choices of colors, textures, sizes and forms. Since some ground covers tend to grow rampantly beyond their intended borders, due consideration should be given to the spread and growth patterns of each. A possible problem that limits the use of a specific ground cover is the cost of installation since large numbers of small individual plants are needed.

Preparation of Planting Area

A well-prepared planting bed will help to develop a dense, healthy ground cover. Where possible, soil should be worked to a depth of 6 to 8 inches. Organic materials, such as leaf mold, compost, or well-rotted manure, open pore space in clay and improve the water-holding capacity of sandy soils. Eight to ten bushels of organic materials per 100 square feet incorporated 6 to 8 inches deep may be necessary in poor soils. Not all ground covers, however, require fertile soil, but most require well-drained soil.
A soil test provides best guidance for fertilizer and soil pH usage. Without this information, a general rule would be to use 4 pounds of a commercial fertilizer, such as 5-10-5, per 100 square feet. Mix the fertilizer into the soil at a depth of 6 to 8 inches and include in this the proper amount of product that is indicated in the soil sample result. Most ground cover plants can be planted at anytime during the growing season; however, either spring or fall is preferred. The arrangement and spacing of plants in the planting bed depends on the growth characteristics of the plant. Space plants so they will uniformly cover an area in a relatively short period of time. To do this, place the plants in staggered rows (not straight lines) in both directions to get faster coverage. Also, if one or two die, it isn't as noticeable.

Plants that spread, such as ice plant and pachysandra, may be spaced further apart than slow-spreading types, such as ajuga and liriope. Spacing also depends on funds available and how quickly a complete cover is wanted. Spacings from 6 inches to 2 feet are most frequently used.

"Peat moss is not recommended much anymore because it is not a renewable resource."

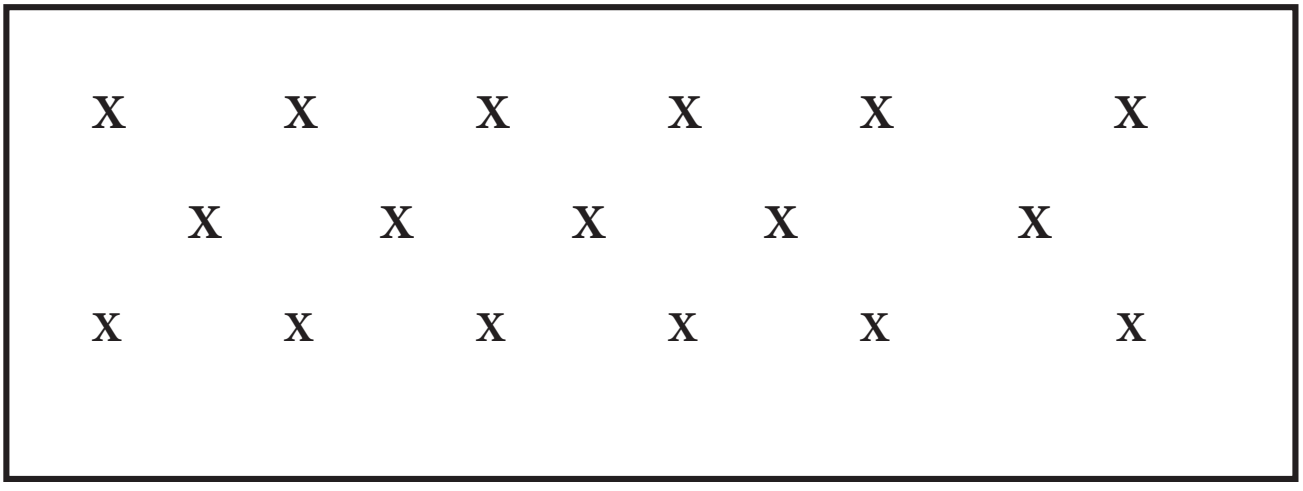
– Jim Orband, Senior Extension Agent Emeritus (formerly Unit Coordinator, Extension Agent, Agricultural and Natural Resources, Environmental Horticulture, York County

The following chart lists the area covered by 100 plants at different planting distances.

Most ground covers do not require significant maintenance; however, during their first years, weeding, mulching, fertilizing, and controlling disease and pests are recommended. When the ground cover is maintained, a good, dense ground cover planting will be your reward.

Planting Distance in Inches	Area Covered in Square Feet
4	11
6	25
8	44
10	70
12	100
18	225
24	400
36	900
48	1600

Reprinted from Virginia Cooperative Extension Publication Selecting Landscape Plants: Ground Covers, 426-609



GROUND COVERS FOR GLOUCESTER

The ground covers listed in the following table have proven to be reliably cold hardy and are all successfully grown in Gloucester. While there are at least a dozen different varieties of ground covers that grow in our area, detailed information on those specifically recommended is provided on the following pages.

Caution: Ground covers are used to quickly cover areas; this fact alone makes many of them aggressive and potentially invasive.

Ground Cover	Description	Height/Spread	Exposure/Soil	Uses and Care
Aaronsbeard St. Johnswort *Hypericum calycinum*	A low-growing deciduous shrub with 3- to 4-inch leaves, medium to dark green, bluish green below. Purplish fall cover. Yellow flowers in the summer	16 inches tall and spreads 18 to 24 inches by underground stems. Fast grower	Best in full sun to part-shade. Prefers acidic, well drained soil. Moderately drought tolerant. Will tolerate less than ideal conditions	Can be used in high foot traffic areas (3 or more times a day) If it becomes unkempt, mowing will rejuvenate its appearance.
Ajuga— Bugleweed— Carpetweed *Ajuga reptans*	A semi-evergreen dense, mat-forming, stoloniferous ground cover. White or blue flowers bloom in April and May	6 to10 inches tall; spread is non-stopping and varied	Prefers slightly shaded locations with well-drained soil of a pH of 6.5. Likes moist mulched soil and is not drought tolerant	Excellent spreading ground cover for shaded or moist areas. May be used to fill in beneath foundation shrubs around buildings. Avoid planting near door entrances as it attracts pollinators. Occasionally invasive
Autumn Fern— Japanese Wood Fern *Dryopteris erythrosora*	A dwarf fern with fronds displaying coppery-red turning to deep green colors	12 to 24 inches tall by 12 to 36 inches wide	Shade to part sun in moist well-drained soil with a pH of acidic to slightly alkaline	Can be grown as a ground cover under trees in the dry shade Deer proof
Barrenwort— Bishop's Hat *Epimedium sp.*	Many are evergreen ground covers for dry shade which produce inconspicuous sprays of small white, yellow, orange, pink, or lavender flowers in spring.	1 foot tall with a spread of 1 to 3 feet	Woodland setting (dappled shade or morning sun) in moist well-drained soil	Epimedium species should be grown in conditions mimicking their native woodland habitats where they're naturally mulched by fallen leaves.
Bishop's Weed— Goutweed— Snow-on-the-Mountain— *Aegopodium podagraria 'Variegatum'*	A medium-sized variegated herbaceous perennial ground cover that has an upright mat growth habit. Small white flowers appear in June	10 inches tall and 12 inches wide	Part to full shade in moist but poor to average soil. Leaf scorch will occur if receives too much sun.	Used for edging, border, foundation, raised planter, or focal point ground cover Should be used only in a restricted root zone area because it spreads rapidly by underground invasive stolons.
Catmint *Nepeta phyllochlamys*	A mat forming perennial with wooly, silver leaves and delicate pink flowers in summer	4 inches tall with spread of 8 inches	Full sun in average, well-drained soil	A small plant that is great in a container or rock garden Deer proof

GROUND COVERS FOR GLOUCESTER (*continued*)

Ground Cover	Description	Height/Spread	Exposure/Soil	Uses and Care
Common Periwinkle—Creeping Myrtle Vinca minor **Big Periwinkle** Vinca major	An evergreen, prostrate, mat-like ground cover which blooms with white or purple flowers March through May	4 to 6 inches tall; spread is non-stopping and varied. 10 to 12 inches tall with an indefinite spread	Prefers sun to shade and a soil of medium drainage and low fertility with a pH range of 4.0 to 7.0.	Excellent, fast-growing ground cover for large sunny areas such as creek or river banks. Both are occasionally invasive.
Coral Bells—Rock Geranium—Alum Root *Heuchera sp.*	A perennial ground cover that comes in a wide array of leaf colors, sizes, and textures. Plants grow in mounds. Blooms in summer with tall flowers spikes. Plants with Heuchera villosa genes tolerate our heat and humidity more easily.	Up to 20 inches tall with a spread of 12 inches	Part shade to full shade in rich, loamy, moist, well-drained soil	Best used as a border plant, specimen, or ground cover
Creeping Dianthus—Pinks *Dianthus*	A low-growing perennial that has silvery foliage and pink, white, red, rose, or lavender flowers that bloom off and on all summer	4 to 30 inches tall and 4 to 18 inches wide	Part to full sun in average, well-drained soil	Good for containers, borders, slopes, and general ground cover Attracts hummingbirds and butterflies and is drought tolerant and deer resistant
Creeping Juniper *Juniperus horizontalis* **Blue Rug** *'Wiltonii'*	A needled evergreen ground cover that is a vigorous grower capable of covering a large area. The foliage turns a purple or slate color in the winter. Very popular cultivar. Foliage is steel-blue-green in summer, purplish in winter.	Depending on the variety, it grows 3 to 6 inches tall with a spread of 8 to 10 feet. Grows 1 to 3 feet tall and spreads 6 to 10 feet	Prefers full sun and average, medium moisture, well-drained soil. Adaptable to a wide range of soils, but prefers a dry, sandy soil	It tolerates hot, dry situations and is an excellent plant for slopes and banks. Monitor for mites and scale. Helps with erosion Low flat status of growth of 5 inches makes it prone to weed infestation, as not as dense as other varieties.
Creeping Phlox—Moss Pink—Moss Phlox *Phlox subulata*	A low, carpet-like mat-forming evergreen perennial ground cover that blooms with pink, blue, white, or reddish-purple flowers April through June	4 to 6 inches tall; spread is to 24 inches	Prefers sun to shade and well-drained soil with a pH of 6.0 to 8.0. Plants perform best when soil is kept moist.	A good edging plant that is also useful in front of a perennial border or a rock garden. May be used in large plantings along sunny slopes. For more compact growth, shear plants back after flowering. Clumps should be divided every 3 to 4 years.

GROUND COVERS FOR GLOUCESTER (*continued*)

Ground Cover	Description	Height/Spread	Exposure/Soil	Uses and Care
Creeping Wintergreen *Gaultheria procumbens*	An evergreen ground cover that has year-round appeal. In spring small pinkish-white bell-shaped flowers are followed by winter-green-scented bright red fruits that persist until spring. Dark green leaves, winter-green-scented, turn burgundy-red in fall	6 inches tall and 3 inches wide	Part to full shade in moist, acidic, well-drained soil	A ground cover for shaded areas Deer resistant
Foamy Bells *Heucherella*	Heucherella are sometimes called foamy bells because they are a genetic cross between coral bells (Heuchera) and foam flowers (Tiarella). Foamy bells are shade tolerant perennials that bloom in the spring on tall flower stalks and usually have pink or cream colored flowers.	Compact with foliage clumps growing 10 inches tall and wide. Flower stalks can grow 18 inches high.	Part to full shade in well-drained soil	An alternative ground cover, edging plant, shade garden, foliage plant or accent in large containers to brighten shady areas. Deer resistant Foliage is year round
Golden Creeping Speedwell *Veronica repens 'Sunshine'*	A low-growing perennial with golden leaves that make an attractive spreading cover. Near white flowers bloom in mid spring. Low growing mat	1 to 2 inches tall and spreads moderately at 6 to 10 inches a year	Part shade to part sun. Tolerates most soils, including a dry area with little to no watering after established. Not drought tolerant	Works well in woodland setting around ferns and hostas. Makes a beautiful showing under azaleas and rhododendrons. Good lawn replacement as will hold up to moderate foot traffic (2 to 3 times a day.) Deer and rabbit resistant
Hosta—Plantain Lily *Hosta sp.*	A perennial whose foliage dies back in winter, leaving the ground exposed. New foliage develops in spring and lasts well into the fall.	Height and width vary widely—less than four inches across and three inches high to more than six feet across and four feet high—depending on the variety.	Prefers partially shaded areas where the soil remains slightly moist	Often used as perennial borders, accent plants, or edgings; their large leaves provide a lush covering for the soil. Deer food
Ice Plant (Hardy) *Delosperma*	A fast- and low-growing succulent with purple and yellow blooms	2 to 6 inches tall with a spread of 1 to 3 feet	Full sun in average, very well-drained soil	Useful for edging, ground cover, mass plantings, rock garden, wall planting, along paths and slopes. Very prolific plant that spreads rapidly Once established, it is drought resistant

GROUND COVERS FOR GLOUCESTER (*continued*)

Ground Cover	Description	Height/Spread	Exposure/Soil	Uses and Care
Lamb's Ear *Stachys byzantina*	A low-growing perennial spreader with very fuzzy, pale, silvery gray-green foliage. Pink flower spikes bloom in late spring/early summer	6 to 8 inches tall with a 12-inch spread	Full sun to part shade in most soils	Often used in children's gardens because of the soft, furry texture of the leaves As a perennial, it disappears in the winter. Can be invasive Deer proof
Lilyturf—Big Blue -Clumping *Liriope playphylla (formerly Liriope muscari)* *Varieties available*	An evergreen grass-like mounding ground cover with white or purple flowers which bloom June through September	12 to 18 inches tall with a spread of 12 to 18 inches	Most types do better in part to full shade; sun-tolerant cultivars are available Drought tolerant	Good ground cover under trees and shrubs or in rock gardens. Often used as border plants. Cut back with lawnmower or shears in late winter.
Lilyturf—Spreading *Liriope spicata*	An evergreen grass-like spreading or creeping ground cover	9 to 16 inches tall with a spread of 1 to 2 feet. An aggressive spreader	Prefers sun to shade and grows in many types of soil. It is heat and drought tolerant	As this is an aggressive spreader, it should not be used in small garden beds as it could choke out other plantings. In larger garden beds and on slopes, it will effectively fill in empty spaces while adding foliage interest.
Miniature Moneywort *Lysimachia japonica minutissima*	Low and dense growing evergreen that is slow to fill in. Grows about 2 to 4 inches annually. Small star shaped yellow flowers cover in the summer.	Tight and dense to the ground height—1 to 2 inches; this keeps weeds to a minimum. Spreads to 12 inches.	Acceptable of most soils Likes well drained location Part sun to part shade	This variety is not considered invasive. Holds up to high traffic (3 or more times a day). Deer and rabbit resistant Deadheading blooms will encourage a second blooming. Minimal pruning, if any.
Mondo Grass *Ophiopogon japonicus* *'Nana' variety (Dwarf)*	An evergreen stoloniferous matting ground cover. Often confused with Liriope muscari but the leaves of mondo grass are more narrow, the smaller violet/ lavender flowers are hidden by the leaves, the fruits are blue compared to the black fruits of liriope, and mondo grass is less cold hardy. Topped in summer with round balls, deep blue in color	8 to 12 inches tall and wide 3 inches tall. Slow spreading— 2 to 4 inches a year	Needs to be grown in part shade to shady conditions in mildly acidic soil Part to full shade	It is great filler for containers and beds, a useful groundcover, and ideal to use bordering paths, in the front of borders, and in rock gardens. It is drought tolerant. Deer resistant Handles moderate foot traffic (1 to 2 times a day) It makes excellent filler between walkways and stepping stones.

GROUND COVERS FOR GLOUCESTER (*continued*)

Ground Cover	Description	Height/Spread	Exposure/Soil	Uses and Care
Pachysandra—Japanese Spurge *Pachysandra terminalis*	A slow-growing medium-sized, herbaceous perennial evergreen ground cover that spreads via a combination of its basal shoots and leaning top growth. It has a procumbent mat growth habit. It has insignificant white flowers in early April.	10 inches tall with a spread of 12 to 18 inches	Prefers part to dense shade and moist, fertile, acidic, well-drained soil	Excellent ground cover for, under trees and shrubs or to prevent erosion on slopes. Typical planting will take about three years to fully establish a solid carpet of ground cover; in the interim, a light mulch will retain soil moisture and reduce the invasion of weeds.
Red Creeping Thyme *Thymus praecox 'Coccineus'*	A flat-growing, fragrant evergreen with bright reddish pin flowers that fade to light pink in the summer. Foliage turns to a bronze as the weather turns cold. Low mat	1 to 2 inches tall with a 6- to 10-inch spread per year	Part to full sun Tolerant of all soil conditions but needs to be well drained	Versatile ground cover on dry slopes, perfect lawn substitute. Good for erosion control.
Sedum—Stonecrop *Sedum sp.*	A deciduous perennial with thick, fleshy, succulent-like leaves that bloom August through September. Many different varieties	Wide range of shapes and sizes with upright (2-foot shrubby mounds) as well as low ground cover varieties	Full sun to light shade in average to poor but well-drained soil	Useful in perennial and rock gardens. Cut back dead stalks in spring. Divide sedum every 3-4 years to maintain its compact growth. Drought-tolerant, rabbit and deer resistant, and salt tolerant. Handles moderate foot traffic (1 or 2 times a day).
Shore Juniper *Juniperus conferta* *Pacific Blue Cultivar*	Blue-green needle shaped foliage and trailing branches. Dull green in winter	18 inches tall with a spread of up to 8 feet	Full sun, well drained soil. Tolerates sandy soils and salt exposure (seaside environments or road salt)	Excellent spreading cover Useful in mass planters and on slopes. Branches will cascade
Snow-in-Summer *Cerastium tomentosum*	A herbaceous perennial that has wooly, silvery foliage with small white flowers that bloom in late spring/early summer	6 to 12 inches tall with a spread of 9 to 12 inches	Full sun in average soil	Suitable for a rock garden or border. Trim back foliage after flowers bloom to encourage further flowering. Can be invasive

GROUND COVERS FOR GLOUCESTER (*continued*)

Ground Cover	Description	Height/Spread	Exposure/Soil	Uses and Care
Willowleaf Cotoneaster *Cotoneaster salicifolius* Low growing evergreen varieties: *Scarlet Leader* *Autumn fire* *Repens*	Evergreen to semi-evergreen. The wrinkled, dark green leaves are long and narrow on arching branches. Leaves turn purplish in the winter. Two-inch clusters of fragrant white flowers appear in June; bright red fruit in fall and into winter.	2 feet tall with a spread of 8 feet 6 to 12 inches tall with a spread of 4 to 6 feet 2 feet tall with a spread of 6 feet 1 foot tall with a spread of 8 feet	Full sun to light sun Prefers fertile light textured soil, but generally tolerant of poor soil and drought conditions	Excellent spreading ground cover. Moderate growth rate for mass plantings Especially attractive trailing over retaining walls or large groupings on a bank. Minimal pruning necessary except for shaping. Great for sloped sites or difficult areas to mow. Drought tolerant Fast grower
Yellow Alyssum *Aurinia saxatilis*	A perennial that has a trailing habit and puts out yellow flowers in April-May	12 inches tall and 18 inches wide	Full sun in well-drained poor soil	Excellent in borders, disturbed areas, and rock gardens. Re-seeds itself to form a dense mat Drought-tolerant After the blooms fade, cut back by 1/3 to promote re-blooming.
Yucca *Yucca filamentosa*	A broadleaf evergreen. As a rugged plant often used as an accent plant in modern ground plantings. Tall stems bear cream flowers in early summer.	4 to 8 feet tall with leaves rising in a rosette fashion in a 2 to 3 foot spread	Full sun in average soil	Well suited for hot, dry conditions

In addition to the ground covers listed in this table, you might consider ornamental grasses. See the chapter on Perennials to learn more about ornamental grasses that can be used as ground covers.

Ground Covers That Are Deemed Invasive

Here today, gone tomorrow. Some ground covers that we typically see throughout Gloucester have now been deemed to be highly to moderately invasive, and homeowners are urged not to plant them. The fact is that you may have certain areas in your yard that you want these ground covers because of their appearance and hardiness. The decision is yours; just be aware that they can overtake other plants that you want to thrive and they can be difficult to eradicate. The following plants are the ones to think twice about:

- Crown Vetch *Coronilla varia* (occasionally)
- Bittersweet (American) *Celastrus scandens* and (Oriental) *Celastrus orbiculatus* (highly)
- English Ivy *Hedera helix* (moderately)
- Japanese honeysuckle *Lonicera japonica* (highly)
- Lilyturf Spreading *Liriope spicata* (highly)

- Moneywort (Creeping Jenny) *Lysimachia nummularia* (moderately)
- Morning Glory (Ivy-leaved) *Ipomea hederacea* and Morning Glory (Common) *Ipomoea purpurea* (moderately)
- Wintercreeper *Euonymus fortunei* (moderately)

"Ice plant works well in dry, sunny areas."
– Mary Simpson, GEMG Emeritus

"I love ice plant—a succulent. I started with a small pot and now have large patches of this wonderful plant. It is chartreuse green so it looks great against orange or dark red. It stays low to the ground and adds a coolness to the landscape."
– Betty Durrette, GEMG

"Periwinkle has covered my bank and is going down the hillside."
–Joy Long, GEMG

VINES

Vines are climbing or trailing plants that add interest to any garden landscape. Generally, they grow rapidly and are relatively drought resistant. They provide spectacular visual effects while taking up a modest spot in the ground. There are annual, evergreen, deciduous perennial, and herbaceous perennials vines.

Functions and Locations of Vines

Vines may be used as barriers or dividers. They can provide privacy for a deck, patio, or porch or they can screen unsightly views. On steep banks or in other areas where it is difficult to establish grass, vines may be used as ground covers. In addition, they can be grown on trellises against homes and other buildings to provide shade, thus improving energy efficiency for cooling. All vines need a structure—tree, pole, trellis, wall, fence, or similar tall object—to climb. They can also be grown where other plants would not have enough room to survive.

"Collect long pieces of driftwood and stand them in the ground; then plant with climbing vines and they make attractive outdoor art."
– Maxine Slone, GEMG Emeritus

Selection of Vines

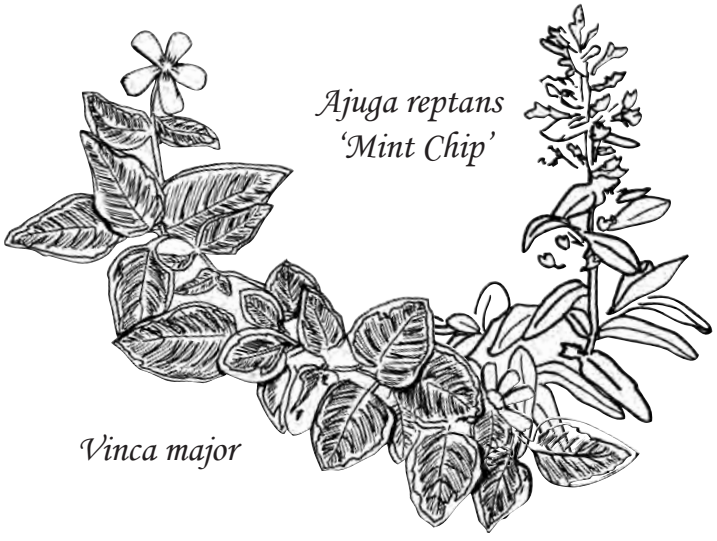
The support required of a vine is a primary consideration in selecting a vine. Some vines, such as the wisteria and moonflower, are very heavy and require a tall sturdy structure. In addition, how the vine climbs dictates the type of support. Vines are divided into three groups according to the way they climb.

1. Attach small, root-like appendages or modified tendrils with circular discs at the tips to a wall or other structure—Boston Ivy—or attach small rootlets along the stem to attach to brick or wood—Virginia Creeper
2. Wind tendrils or leaf-like appendages which act as tendrils around a support—clematis and grapevines
3. Climb by twining—Carolina yellow jasmine and wisteria. Twining climbers often need some guidance when young to direct their growth.

By knowing how the vine climbs, you can provide the proper support.

"Vinca major is sold locally and looks like periwinkle (Vinca minor) with larger leaves. It likes shade or part shade. Once planted, it will take over as it is extremely aggressive."
– Susan Malcom, GEMG Emeritus

"Be careful in planting houttuynia; it has 10 to 12 inch roots, and spreads everywhere, plus it does not have a pleasant odor."
– Noel Priseler, GEMG Emeritus



VINES FOR GLOUCESTER

Vine	Description	Length	Exposure/Soil	Support and Care
Black-eyed Susan Vine *Thunbergia alata*	A fast-growing annual vine that displays flowers in shades of red, orange, and yellow with and without dark eyes. Blooms in summer	6 to 8 feet	Sun to part shade in average soil	Climbs by twining around a trellis or other support and is excellent in mixed containers or hanging baskets
Boston Ivy *Parthenocissus tricuspidata*	A fast-growing, close- clinging vine that has inconspicuous flowers that attract bees and bluish-black berries in grape-like clusters	10 to 50 feet	Full sun to part shade in many soil types	Climbs by root-like appendages. Use to quickly cover supports or structures. Can cause structural damage
Carolina Yellow Jasmine *Gelsemium sempervirens*	A fast-growing vine with reddish, wiry, twining stems. In late winter blooms with masses of fragrant, funnel-shaped golden flowers.	10 to 20 feet	Blooms best in full sun but can grow in part shade. Tolerates slightly acidic and slightly alkaline soils	Climbs by twining around fences, porches, and trellises. All parts of the plant are poisonous.
Clematis				
Jackman's Clematis *Clematis x Jackmani*	A fast-growing hybrid with beautiful flowers 4 to 7 inches across in pink to purple, crimson, lilac, sky blue, and more colors	8 to 20 feet	Vine blooms best in full sun; however, keep root system cool with mulch or shaded in some manner. Plant in good, moist but well-drained soil.	Climbs by twining stems and leaf petioles. Train on a support or trellis. Depending on cultivar, flowers May through October on new growth.
Sweet Autumn Clematis *Clematis ternifolia*	A vigorous perennial vine that has fragrant, small white blossoms in late summer/ early fall	20 to 30 feet	Sun to partial shade	Will take over support frame and even reach for nearby trees. Prune hard in early spring. Can be invasive
Climbing Hydrangea *Hydrangea anomala petiolaris*	A showy landscape plant with flat-topped flower clusters in the summer. Can also be useful as a ground cover.	30 to 40 feet	Full sun to medium shade in average soil Blooms prefer sunny location. Performs well in most soils, but does like it well drained It does best if the soil is slightly acid to alkaline (pH 5.5 to 7.0)	Climbs by twining. Slow to establish but, once established, grows rapidly and forms a dense mat of flowers and foliage. Support should be sturdy. Can also ramble along the garden floor as a ground cover
Coral Honeysuckle *Lonicera x heckrottii 'Goldflame'*	A fast-spreading perennial that bears fragrant, carmine flowers that bloom from late spring to fall and are followed by red berry-like fruits	10 to 20 feet	Blooms best in full sun in soils with pH of 6.0 to 8.0	Climbs by twining around fences, porches, and trellises
Hyacinth Bean *Lablab purpureus*	A fast-growing vine grown as an annual in Gloucester. Bears purple flowers in mid to late summer	6 to 15 feet	Full sun in average soil	Climbs by twining Seeds are poisonous if ingested. Self seeds

VINES FOR GLOUCESTER (*continued*)

Vine	Description	Length	Exposure/Soil	Support and Care
Moonvine—Moonflower *Ipomoea alba*	A fast-growing vine grown as an annual in Gloucester. It bears large, very fragrant white flowers that open toward evening and remain so until about noon on the following day.	10 to 20 feet	Full sun in average soil	Climbs by twining. Becomes heavy so provide good support.
Purple Passionflower—Maypop—Apricot Fruit *Passiflora incarnata*	A fast growing vine grown as an annual in Gloucester. In mid and late summer, it bears complex white and purple/blue flowers that many think represent events about the crucifixion of Christ.	15 to 20 feet	Full sun to light shade in well-drained average to poor soil	Excellent climbing a fence or on a trellis Although attractive to bees and butterflies, parts of this plant are poisonous if ingested. Can be invasive
Sweet Potato Vine *Ipomoea batatas*	Chartreuse green, black, and tricolor. A fast growing annual vine that thrives in hot conditions. No flowers	3 to 4 feet spread	Full to partial sun in average soil	Excellent in containers and thrives throughout summer and into fall
Wisteria				
Japanese Wisteria *Wisteria floribunda*	This fast-growing vine develops a woody trunk and bright green leaves with 9- to 20- inch drooping clusters of fragrant, bluish-violet, pink, or white flowers.	30 feet or more	Blooms best in full sun but can grow in part shade. Plant in moist, well-drained loam.	Climbs by twining. Slow to become established and may require several years to reach blooming stage. More cold hardy than Chinese wisteria and less invasive. Requires a strong support Don't plant near windows, doors, gutters, or a live tree as it can invade openings and kill trees. All parts of the plants are poisonous. Considered occasionally invasive
American Wisteria *Wisteria frutesens*	A high-climbing, fast-growing wisteria that is not as vigorous or dramatic as the Japanese Wisteria. Its lilac/purple flowers appear June through August.	30 feet or more	Full sun in well-drained soil	Requires less pruning than Japanese Wisteria and is less aggressive. It is easier to control than the Asian wisterias as it does not send out long root suckers.
Virginia Creeper—Woodbine *Parthenocissus quinquefolia*	A native, deciduous vine with a loose, open growth pattern. Leaves change colors with the seasons.	30 to 50 feet	Sun or shade in many types of soil	Climbs by branched tendrils that often terminate into flattened pads. Is very drought-resistant. Presents an interesting pattern on blank walls, rustic structures and rocky banks. Can be invasive

Vines That Are Deemed Invasive

Like ground covers, there are some vines, such as Kudzu vine, that are considered highly to moderately invasive and require caution when considering their use. These are the following:

- Chinese Wisteria Wisteria sinensis (highly)
- English Ivy Hedera helix (moderately)
- Japanese Honeysuckle Lonicera japonica (highly)
- Trumpet Vine Campsis radicans (highly)

"Coral honeysuckle will grow 5-6 feet high in full sun but must be tied to a support (fence, post, or chicken wire around a post). Keep it trimmed for constant bloom from early spring to late fall and sometimes through winter. It's lovely in flower arrangements; cut when one of the blossoms in a cluster has opened and condition it in warm water before using."

– Jan Price, GEMG

"Native Virginia clematis makes a nice arbor plant. Don't plant trumpet vine. It's invasive."

– Mary Simpson, GEMG Emeritus

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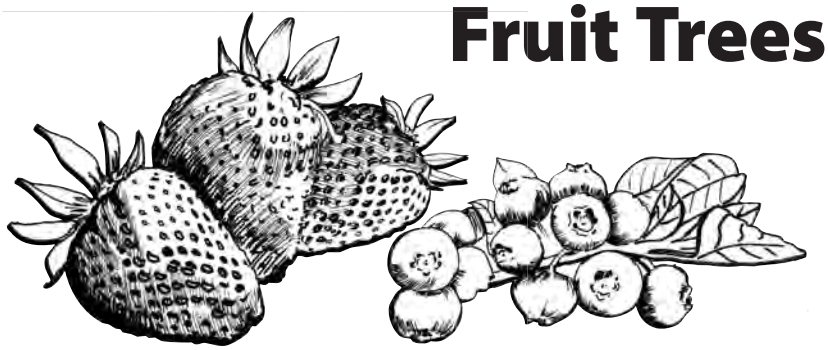
This publication can be found at https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

Selecting landscape plants: Ground covers, 426-609 (Hort -31P) (2012)p

Notes:

Fruit Trees and Bushes



TREE FRUIT IN THE HOME GARDEN

Tree Fruit in the Home Garden is the title of an excellent publication that is available on line (https://Resources.ext.vt.edu.) It is officially numbered as Publication 426-841. It covers many aspects of fruit tree growing for the home gardener. Check this out before you start planting fruit trees. For your benefit, highlights of the referenced publication are included below. At the same time, visit https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu/handle/10919/5548 for a host of references ranging from proper pruning techniques to advice on specific fruit trees, such as Publication 3010-1483, Flowering Crabapples of the *Malus* species.

It is desirable to locate your fruit trees as close to your home as possible. If space is limited, fruit trees may be set in almost any location suitable for ornamental plants as long as the tree will have eight hours of sunlight each day and is located at least 35 feet from the septic system and away from tidal areas. Always consider first the mature size of the tree when planning its location. About six months before planting, have your soil tested. Soil test materials can be obtained from your Gloucester County Virginia Cooperative Extension Office.

Dwarf fruit trees lend themselves admirably to ornamental plantings as well as orchards. They come into bearing earlier than standard-sized trees, occupy less space, and can be more easily pruned and sprayed with equipment normally available to the average gardener. Most nurseries now carry dwarf and semi-dwarf apple trees of all varieties. However, only a few varieties of dwarf pear, peach, and cherry trees are offered by local nurseries as, generally, these trees may not survive more than five years due to disease and incompatibility problems.

Obtain the best nursery stock available. Beware of "basement bargains." Well-grown nursery stock is not cheap but paying the extra price now will result in a better bargain long-term. One-year-old trees are usually preferred. Younger trees allow you the opportunity to properly train and observe their growth; you cannot do this for the older "ready-to-bear" trees. **Bearing age is usually 4 to 7 years from time of planting.** When buying fruit trees, look for disease-resistant varieties and, again, pay a little extra for the more disease-resistant varieties. There have been many improvements over some of the older stock.

Planting Trees

Fruit trees can be planted in Virginia in fall or early spring. You can be assured of good results by selecting either one of these planting periods. Planting a month after the first killing frost—on or about December 11 in the fall—or a month before the last killing frost—on or about April 10 in the spring—is generally recommended. It is important to remember that trees should be dormant and that the soil should have proper moisture content to foster good growing conditions.

If the places selected for trees are in a lawn, it is best to remove the turf and spade the soil deeply over an area of several square feet where each tree is to stand. Preparation of the soil where fruit trees are to be planted should be as thorough as preparation of the soil for a vegetable garden or ornamental planting. Good drainage is important. A rule of thumb is to plant your tree in a relatively high area.

Dig the hole only as deep as and two times wider than the root system. You may retain the root ball

but bare root planting is the preferred technique. Prune the roots of young trees only where necessary to remove broken and damaged ones or to head back some that are excessively long. Set the tree at approximately the same depth it grew in the nursery.

Now let's take a moment to explore some important definitions.

"A **rootstock** is a plant, and sometimes just the stump, which already has an established, healthy root system, used for grafting a cutting or budding from another plant. The tree part being grafted onto the rootstock is usually called the **scion**. The scion is the plant which has the properties desired by the propagator, and the rootstock is the working part which interacts with the soil to nourish the new plant. After a few years, the tissues of the two parts will have grown together, producing a single tree although genetically it always remains two different plants."

–Wikipedia, the free encyclopedia,
whttp://en.wikipedia.org/wiki/Rootstock

Never set it so deep that the union of the scion and rootstock is below ground level when the hole is filled.

Alternately, add pulverized topsoil and water to the hole; gently lift the tree up and down to settle the soil around the roots. When the hole is filled, tamp the soil firmly and thoroughly with your foot or hands. Do NOT compact the soil with the flat end of your shovel. Leave the soil loose on top. This ensures the vital flow of oxygen into the root system.

Mulch and Rodent Control

Young trees should be mulched or cultivated until they begin to bear fruit. Weeds must be eliminated so they will not compete for available moisture and fertilizer. Cultivation must be shallow to avoid injury to roots near the surface. The cultivated or mulched area should extend a little beyond the spread of the branches.

There are several concerns with the use of mulch around fruit trees. First, both organic (i.e., wood chips) and inorganic mulch (i.e., black plastic) provide habitats for rodents such as mice and voles. Mice chew off the bark at ground level or below and often completely girdle a tree, causing it to die. Voles eat the roots of the trees. Most of this damage occurs in the winter. Keep mulch pulled away from the base of the tree at a distance of three to four inches so these rodents cannot hide in it.

A second concern is that organic forms of mulch release nitrogen throughout the season. This affects the grower's ability to control when and how much nitrogen is available. The remedy suggested is to remove the mulch in the fall after the growing season has ended.

Rabbits account for the loss of thousands of young fruit trees each year. The most satisfactory method of preventing rabbit damage is the use of a mechanical guard. Refer to *Tree Fruit in the Home Garden* for more detailed explanations.

Fertilizer

As a rule, no fertilizer is needed at the time of planting. A little background: the three numbers (commonly referred to as "N-P-K") that appear on the label of every packaged fertilizer represent the three main plant nutrients: Nitrogen, Phosphorus and Potassium (which is sometimes called 'Potash'). Dan Nortman, former York County Extension agent, reminds us that the ratio between Carbon and Nitrogen is important in bud set and flower/fruit production. You want to maintain moderate levels of each for optimum production. It is important to have your soil tested and follow the recommendations given by Virginia Tech for your particular soil. Rollin Woolley, horticulturist and owner of Orchard Lane Growers in Gloucester, has raised fruit trees for years. He recommends fertilizing in the fall with a 5-10-10 fertilizer, compost, or organic fertilizer. The publication, *Tree Fruit in the Home Garden*, also has recommendations for fertilizing the fruit trees.

Tree Fruit Spraying

For significant insect or disease problems, it may be necessary to follow a spray program. Information on the use of chemicals for such a program is available at the Gloucester County Virginia Cooperative Extension Office. To be successful with your spray program, spray at the proper time and do it thoroughly. Leave no portion of the tree unsprayed. To make the job easier and to ensure adequate cover-

age, thin out excessive growth and remove all dead and weak wood. Cut old trees back to 20 feet or less, if possible. Train younger trees so they reach a height of no more than 18 feet.

Semi-dwarf and dwarf trees should be considered when making your planting. Their small size makes the task of spraying easier. Early maturing varieties are less likely to be seriously affected by insects and diseases than late-maturing varieties because of the shorter growing season. This factor should not be overlooked in the selection of varieties.

Sanitation

Adopt good orchard sanitation practices. The destruction of places that harbor insects and diseases plays a large part in the control program. Conditions that encourage mice should also be eliminated. These are some practices to include in an orchard sanitation program:

- Collect and burn debris.
- Keep weeds and grass from under the tree canopy.
- Remove and destroy all dropped fruit.
- Rake and burn apple and cherry leaves.
- Scrape loose bark from trunks, crotches, and main limbs of apple trees.
- Prune out and destroy all dead or diseased limbs, branches, and twigs.
- Prune annually.
- Plan to use pesticides to control diseases and insects.

Variety Selection

Give special attention to the selection of varieties. They must be adapted to your soil and climatic conditions. If possible, without sacrificing too much yield or quality, select varieties with the fewest insect and disease problems. Several varieties of the same kind of fruit maturing at different times may be planted to prolong the harvest season. The value of certain varieties for special uses, such as freezing, canning, and preserving, should be considered. Some varieties may be purchased in season from commercial growers more economically than you can grow them yourself.

Cross-pollination is necessary for satisfactory fruit set (evolution of fertilized flowers into tiny fruits) in many tree fruits. Varieties that are cross-fruitful and that have overlapping bloom dates should be selected.

"Plant a crabapple tree in your orchard to ensure pollination success"

—Dan Nortman, Williamsburg Extension Agent

"This really works! I planted a Crabapple tree among my dwarf apple trees and saw 100% pollination of all varieties!"

—Henry "Hurricane" Thompson, GEMG

RECOMMENDATIONS FOR TREE FRUITS

Apples

The following list of apple varieties is compiled from Virginia Tech's recommendations in publication, *Tree Fruit in the Home Garden*, 426-841, and from interviews with Rollin Woolley in Gloucester. Over the years, Mr. Woolley has tried different varieties, including many of the older or heritage kinds, and these are the ones with which he has had the most success. He has done no spraying in his orchard since the visit by Hurricane "Isabel" in 2003. This is an ongoing experimental orchard in Gloucester.

With apple trees, a minimum of three trees is necessary for cross-pollination. To be certain of adequate cross-pollination, plant at least three varieties of apples. Don't confine your selections to Summer Rambo, Winesap, and Stayman. These varieties will not cross-pollinate. According to Virginia Tech, Golden Delicious apple trees are used by many commercial growers as pollinizers for other varieties of apples in their orchards. Having a summer, fall, and winter variety in the garden extends the season.

"Plant a crabapple tree in your orchard to ensure pollination success", says Dan Nortman, Williamsburg Extension Agent.

"This really works! I planted a Crabapple tree among my dwarf apple trees and saw 100% pollination of all varieties!"

—Henry "Hurricane" Thompson, GEMG

"If deer are a problem on your property, do not plant dwarf trees—plant standard-sized only; otherwise, the deer will keep the leaves stripped from the entire tree."

– Rollin Woolley, Horticulturist and Gloucester Apple Grower

The following tables list varieties in order of ripening as well as provide descriptions of the varieties and

Recommended by Virginia Cooperative Extension

Variety	Description
Ginger Gold	One of earliest yellow apples to ripen; good for eating out of hand. Flavor is mild with a tart finish. Does need spraying
Summer Rambo	An early-ripening tender, juicy, green apple with a fine tart flavor. Good for frying, pies, and applesauce
Rome Beauty (red strain)	A dark red apple that is large to very large, roundish to somewhat oblate in shape. The thick, smooth skin is yellowish-green almost entirely covered with bright red and dark carmine stripes. The yellow flesh is firm, crisp and juicy with a tangy pleasing flavor. One of the best cooking and processing apples. Ripens in September to October and keeps well. Does need spraying
Golden Delicious	Fruit is large, conic to round in shape with mostly smooth golden yellow skin with occasional russet patches. The crisp, clean juicy yellow flesh is sweet and mild—good for eating out of hand. A self-fertile tree that is an excellent choice for a pollinator tree. Ripens mid to late September

Varieties Grown by Rollin Woolley In Gloucester

Variety	Description
Lowland Raspberry	The flesh is fine-grained, juicy and very tender. Fruit is medium to large and somewhat flattened on both ends. Ripens in July/August. A dessert apple
Summer Rambo	An early-ripening tender, juicy, green apple with a fine tart flavor. Good for frying, pies, and applesauce
Yellow Transparent	Fruit is medium sized with smooth transparent yellow skin. White-fleshed, tender, fine-grained and juicy. Flavor is quite tart and tangy. Ripens June to July, depending on location
William's Pride	An early-maturing, attractive, dark red apple with excellent fruit quality and field immunity to apple scab. The fruit is of medium to large size and matures with the very earliest known commercial red cultivars in the midwestem United States. A summer dessert apple
Mollies Delicious	One of the best yellow delicious apples on the market. They are good for fresh eating, pies, and sauces. This apple matures in mid-season and is a very productive, vigorous tree. The fruit texture is crisp and firm.
Gravenstein	An oblong or lopsided fruit having bright yellow skin with a pinkish-orange flush and light red striping. The creamy yellow flesh is tender, crisp, juicy, and aromatic. Ripens July to August in most areas and is not a good keeper
Zabergau Reinette	German russet-style apple, but sharper than Egremont Russet, tastes of nettles when straight from the tree. Great for pies. CAUTION: prone to fire blight
Golden Delicious	A large, yellow skinned cultivar and very sweet to the taste. It is prone to bruising and shriveling, so it needs careful handling and storage. It is sweeter than the Granny Smith and is a favorite for salads, apple sauce, and apple butter.

Varieties Grown by Rollin Woolley In Gloucester (*continued*)

Ashmead's Kernel	Its appearance is lumpy, misshapen, and rather small but it has a distinctive flavor that is quite different from most other varieties. This dessert apple is outstandingly rich and tart. The apple sweetens as it stores and stores successfully for up to 12 months. The fruit is generally picked in October for use between December and February. It makes a good apple juice or applesauce.
Russet	Russet apples are not a single type of apple but rather a group of apples in which there are many cultivars. Russet apples often exhibit exceptional scent and flavour, typically reminiscent of nuts, and are often very sweet. Dessert apples
Albemarle Pippin	The most famous of the Virginia apples. The crisp, juicy, firm flesh and very distinctive taste, along with its excellent keeping qualities, made the Pippin the most prized of American dessert apples.
Arkansas Black	A beautiful dark red to almost black apple considered to be one of the best storage apples. The fruit ripens late November and is rock-hard when harvested, but softens and improves in flavor in storage. Fruit is medium-sized and slightly conical in shape. Yellow flesh is firm, fine-grained, crisp, moderately juicy, and slightly subacid in flavor. A cooking apple
Pomme Gris	The fruit is medium to small in size, with a thick, tough, greenish-yellow skin, usually completely covered with a russet. The yellow flesh is crisp, juicy, aromatic and richly flavored. The tree grows upright and bears full crops annually. This excellent cider apple stores well and ripens in September. Thomas Jefferson grew Pomme Gris at Monticello as a dessert apple, and it is a notable one for the connoisseur, with a rich sweet nutty flavor.
Johnson's Fine Winter Keeper—also called York Imperial	One of the most important commercial processing apples in Virginia, It has long-keeping abilities and fine processing qualities. The fruit is medium to large with a distinctive oblong or lopsided shape. The skin is light yellow in color with stripes of brownish-red. The coarse yellow flesh is firm and juicy with a mild tartness to the flavor. Ripens late fall (November - December) and hangs well on the tree into late winter. It is a dessert apple.
Red Royal Limbertwig	One of the best for eating fresh, for apple butter, and cider--an all-purpose apple. Apple is large, round, and some will be a bit conical. Red and greenish yellow with stripe and white dots. Very aromatic, firm, and crisp, very rich unusual pleasing taste
Yates	Fine flavor and long keeping qualities. Grows well in all regions from the mountains to the coast. Fruit is small to very small with yellowish-white skin covered with red stripes and dark red shading. The yellowish-white flesh is tender, juicy and aromatic. Ripens in October and keeps very well until April

Quick Notes:

1. You must first decide if you intend to spray your fruit or grow them organically. If the latter is true, you must look for disease resistant varieties. Many of the problems such as Cedar Apple Rust and Apple Scab have been bred out of the newer apples. See *Growing Apples in Virginia*, officially numbered as Publication 422-023 at http://pubs.ext.vt.edu/422-023.
2. Shop from various nurseries. Most will happily provide you a catalog. Visit university websites [they contain an ".edu" extension] for nursery recommendations. And ask other growers in your area which nurseries they prefer.
3. You might have a need to transplant your fruit trees, especially dwarf varieties, in order to provide them ample growing space. Before transplanting, use a hand compass to find "North" and make a small mark on your tree. When you site the tree in its new location, make certain that small mark is once again facing 'North'.

"Mollies Delicious is an excellent variety. It produces a real good apple, does not need spraying and can pollinate all other early blooming varieties! "

– Rollin Woolley, Horticulturist and Gloucester Apple Grower

Cherries (Sweet)
Varieties recommended by Virginia Tech for our area are Napoleon (Royal Anne), Vernon, Ulster, Hedelfingen, Windsor, and Hudson. At least two of the recommended sweet cherry varieties should be planted. Windsor is a good pollinating sweet cherry variety. Sour cherries cannot be used to pollinate sweet cherries because they are different species.

Cherries (Sour)
Montmorency is Virginia Tech's recommendation. It is sufficiently self-fruitful to set satisfactory crops with its own pollen.

Paw Paws
With leaves and branches that deer avoid, and fruit that is loved by all, the pawpaw (*Asimina triloba*) is a fascinating native tree. It's the only local member of a large, mainly-tropical plant family (*Annonaceae*), and produces the largest edible fruit native to North America.

While there are native varieties, there are also many cultivated varieties that have been improved by plant breeders. Pawpaw fruits ripen between late August and October, depending on the variety. Their flavor is sometimes described as a cross between a banana, pineapple, and mango. Each fruit contains two rows of several brown seeds. The skin and seeds are not edible. The fruit is very nutritious and can be eaten plain or used in desserts. Native Americans have long eaten and used the fruit.

Pawpaws have gained popularity among horticulturalists and researchers, and native plant enthusiasts because of their nutritional value and because the leaves, bark, and twigs produce anti-cancer and insecticidal compounds called acetogenins.
As an extra bonus, Paw Paw trees are the exclusive larval host plants for the zebra swallowtail butterfly (*Erytides marcellus*).

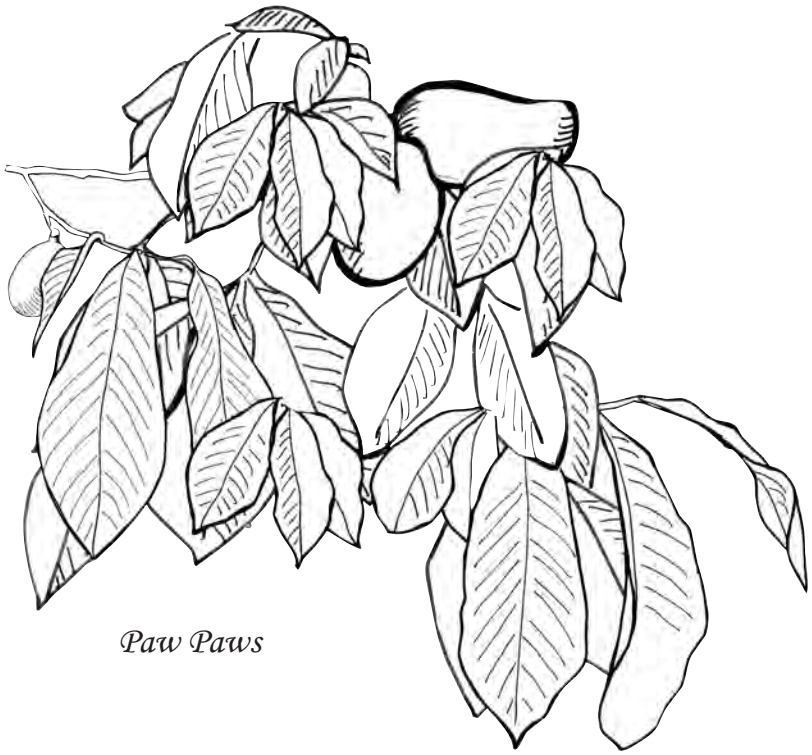
Peaches
Jerseydawn, Redhaven, Loring, Redkist, Earnies Choice, Biscoe, Encore and White Hale are varieties that have done well in the home garden. Like the sour cherry recommended variety, these peach varieties are self-fruitful and do not need pollinizers.

Pears
Harrow Delight, Moonglow, Harvest Queen, Maxine, Seckel, Orient, and Kieffer varieties that have done well in Gloucester. At least two of the recommended pear varieties should be planted.

Plums
Earliblue, Blue Bell, and Stanley have done well in Gloucester. At least two of the recommended plum varieties should be planted. Because Japanese and European plums are not generally effective as pollinizers for each other, two varieties of the same type should be planted.

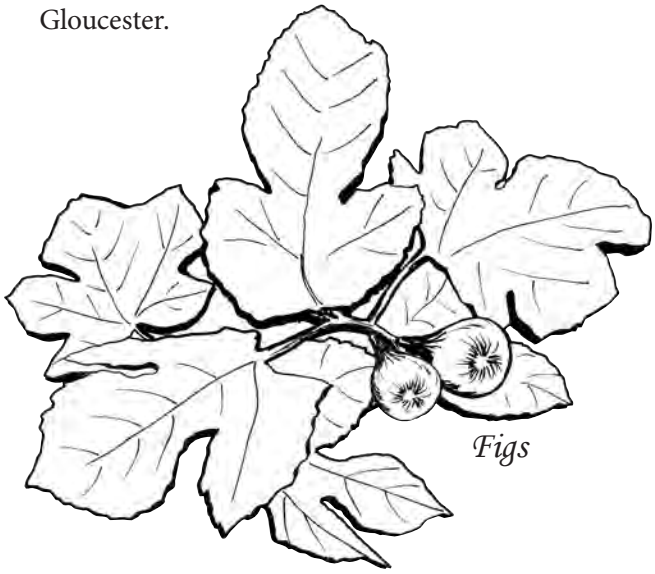
Figs
Many parts of Gloucester are well suited to the growing of figs.

Figs do best in full sun in alkaline soil, but should be protected from the winter winds. The south side of a building is a protected place; just plant the tree at least six feet from the building to allow it room to grow. They like almost any garden soil as long as it drains well. They seem to thrive in the sandy soil such as is found in Bena. Fertilization is not necessary; however a light feeding of dry 10-10-10 fertilizer once a month during the growing season will



Paw Paws

increase the harvest. Mulching with pine straw to a depth of 3 to 4 inches around the base of the trees will help keep down weeds. Figs have few diseases and the biggest pests are the birds. Harvesting early in the morning is the best way to ensure a good crop. One tree should provide enough fruit for one family. There are several varieties of figs that grow well in Gloucester.



Figs

FIG VARIETIES THAT MASTER GARDENERS GROW IN GLOUCESTER COUNTY

"Black "Mission" – looks like a very small eggplant and is great for preserves or to eat fresh

"Celeste" – the best known fig and makes wonderful preserves. It has a small light brownish fruit. *

"Brown Turkey"– a delicious fig to eat right from the tree. It is larger than the "Celeste" and brownish in color. *

"Blanche" (Lemon or Honey) – a greenish fig that is fairly large, very sweet, and needs to be eaten as soon as it is picked. It is as sweet as honey and you have to be quick to get a ripe one before the birds get to it. It cannot be used for preserves because it ripens so quickly, but it is a favorite to eat fresh from the tree.

* Recommended by Virginia Cooperative Extension

Space Requirements, Yields, Bearing Ages, and Life Expectancies of Tree Fruits

FRUIT	Minimum Distance Between Plants (feet)	Approximate Yield Per Plant (bushels)	Bearing Age (years)	Life Expectancy (years)
Apple-standard	30	8	6-10	35-45
Apple—semi-dwarf	18	4	4-6	30-35
Apple—dwarf	8	2	2-3	30-35
Pear—standard	25	3	5-8	35-45
Pear—dwarf	12	½	3-4	15-20
Peach	20	4	3-4	15-20
Plum	20	2	4-5	15-20
Quince	15	1	5-6	30-40
Sour Cherry	18	60 qt.	4-5	15-20
Sweet Cherry	25	75 qt.	5-7	20-30

Taken from Virginia Cooperative Extension publication, Tree Fruit in the Home Garden, 426-840

SMALL FRUIT IN THE HOME GARDEN

Small fruits offer advantages over fruit trees for home culture. They require a minimum of space and bear one or two years after planting. Plant only what you can care for properly. A small well-kept planting is more productive than a large neglected one.

Locate your small fruit in full sun, as close to your home as possible. Where space is limited, small fruits may be used in place of ornamental plants of comparable size. In a very small garden or yard you might want to look for plants that can be grown in containers. Many new varieties are available that would be appropriate.

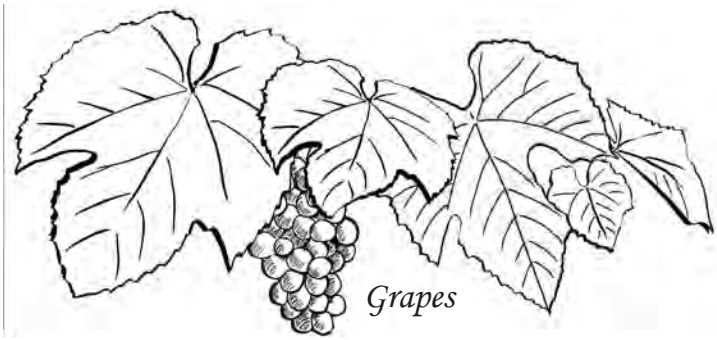
Again, select the best nursery stock available. Place your order early and when it arrives, unpack the bundles and inspect the plants. The roots should be moist and have a bright, fresh appearance. If the plants cannot be set immediately, they should be kept either in cold storage or heeled-in. To cold store, wrap the plants in a garbage bag or plastic sheet and store them in the refrigerator just above freezing. Strawberry plants, in small quantities, may be held in the home refrigerator for a few days. If this is not possible, remove the plants from the bundle and carefully heel them in. Heeling in a plant refers to placing the plants in temporary planting holes or trenches. Dig a trench in a shaded location and put the plants in the trench. Pack the soil firmly around the roots to eliminate all air pockets and to prevent the roots from drying out. Water the trench thoroughly before you put the plants in and after they are in place.

Strawberries

Strawberries are the most popular small fruit in home gardens. They are adaptable to a greater range of soil and climatic conditions than any other fruit and can be grown in every area of Virginia. It should be noted that everbearing strawberries are not recommended for planting in Eastern Virginia because they are less vigorous and generally less productive than the regular varieties.

Grapes

Grapes of some variety can be grown almost anywhere in Virginia as is evidenced by the fact that Virginia is now home to over 250 wineries. Before planting, read the section on grapes in the Virginia Cooperative Extension publication, *Small Fruit in the Home Garden*, publication 426-840, mentioned previously. Besides giving planting instructions and general maintenance, detailed instructions are given on pruning which should be done in the winter when the plant is dormant.



Grapes

"A side benefit of growing your own grapes is to harvest the grapevines at pruning time to make wonderful wreaths." **– Noel Priseler, GEMG Emeritus**

Virginia Tech groups grapes into four categories: American Bunch, Hybrids for wine, Vinifera, and Muscadine. American Bunch are clusters of grapes—such as Concord grapes--that ripen in succession over a long season. Hybrids for wine can be grown anywhere American Bunch grapes can and includes the Vidal
Blanc grape used to produce a white wine. The Vinifera grapes, grown for both table and wine uses, require planting only vines grafted on resistant rootstocks. Muscadine grapes include the Scuppernony, Carlos, and Magnolia varieties.

Brambles

The bramble fruits include raspberries and blackberries and may be successfully grown throughout Virginia. Both yield their full crop the third year after planting. Trailing, rather than erect, blackberries thrive best in Gloucester. Red raspberries are generally better suited to our area than other varieties. Red and black raspberries need to be separated by at least 700 feet as black raspberries are susceptible to viral diseases obtained when grown near red raspberries.

Blueberries

Blueberries have a better flavor when grown where nights are cool during the ripening season. In addition, they have specific soil and moisture requirements but need little protection from insect and disease pests. Two or more varieties of blueberries should be planted to provide adequate cross-pollination and to increase chances for a good crop of fruit.

Currants and Gooseberries

You don't hear of many people growing currants or ooseberries in Gloucester. In the past, their plantng was restricted in many parts of Virginia because hey are alternate hosts to the white pine blister rust isease. The ban has been lifted completely for all urrants and gooseberries.

Currants and gooseberries are hardy and easy to row. They are used mainly in making jellies, jams, reserves, and pies.

RECOMMENDATIONS FOR SMALL FRUITS

Strawberries	Grapes	Brambles	Blueberries	Currants	Gooseberries
Regular: 'Allstar' 'Delite' 'Delmarvel' 'Earliglow' 'Honeoye' 'Lateglow' 'Redchief' 'Sunrise' 'Surecrop' **Ever-bearing:** 'Ozark Beauty' **Day-neutral:** 'Tribute' 'Tristar'	**American bunch:** 'Delaware' (red, seeded) 'Himrod' (white, seedless) 'Mar' (blue, seedless) 'Niagra' (white, seeded) 'Seneca' (white, seeded) 'Steuban' (blue, seeded) **Hybrid—for wine:** 'Chambourcin' (black) 'Chardonel' (white) 'Traminette' (white) 'Vidal blanc' (white) ***Muscadine—** Scuppernong: 'Carlos' 'Magnolia' **Vinefera:** 'Cabernet Franc' (black) 'Chardonnay' (white)	**Blackberries:** **<u>Erect</u>** 'Darrow' 'Cherokee' 'Cheyenne' 'Comanche' 'Navaho' **<u>Semi-erect</u>** 'Black Satin' (thornless) 'Dirksen' (thornless) **Trailing—Dewberry and Boysenberry:** 'Lavaca' 'Lucretia' **Raspberries** **Red:** 'Latham' 'Heritage (everbearing) **Black:** 'Bristol' 'Cumberland' 'New Logan' 'Titan' **Purple:** 'Brandywine' 'Royalty'	**Rabbiteye varieties:** 'Climax' 'Premier' 'Powderblue' 'Tifblue' **Highbush varieties:** 'Earliblue' 'Blueray' 'Bluecrop' 'Jersey' 'Coville' 'Elliott'	'Red Lake' 'Wilder'	'Pixwell' 'Red Jacket'
Taken from Virginia Cooperative Extension publication Small Fruit in the Home Garden, 426-840					
* The classic muscadine grapes are recommended for easy care in our area. The muscadine grapes have thick skin and seeds, but they do not require chemical sprays and only a good seasonal fertilizer to do very well. They are wonderful for jams, jellies, pies, and juices. All grapes require good airflow, an open location, support on a fence or trellis, and good sun exposure.					

Freeze ripe fruit to make jam in the cold winter months when you are overloaded with other canning chores in August and September.

– Joann Gallagher, GEMG Emeritus

In the following table Virginia Tech provides information on space requirements, yields, bearing ages, and life expectancies of small fruits.

Space Requirements, Yields, Bearing Ages, and Life Expectancies					
Minimum Distance Average					
FRUIT	**Between Rows (Feet)**	**Between Plants (Feet)**	**Annual Yield Per Plant (Quarts)**	**Average Bearing Age (Years)**	**Life Expectancy**
Blueberry	6	4	4-6	3	20-30
Blueberry (erect)	8	3	1 1 / 2	1	5-12
Blackberry (trailing)	8	6	1 1 / 2	1	5-12
Raspberry (red)	8	3	1 1 / 2	1	5-12
Raspberry (black)	8	4	1 1 / 2	1	5-12
Raspberry (purple)	8	3	1 1 / 2	1	5-12
Grape (American)	10	8	15 lb.	3	20-30
Grape (French American)	10	8	15 lb.	3	20-30
Grape (muscadine)	10	10	15 lb.	3	20-30
Strawberry (Juneberry and dayneutral)	3	2	1-2	1	3
Currant	8	4	4-6	3	10-20
Gooseberry	8	4	4-6	3	10-20
Taken from Virginia Cooperative Extension publication, Small Fruit in the Home Garden, 426-840					

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Rollin Woolley, Horticulturist and Landscape Supervisor (Retired) for Colonial Williamsburg and owner of Orchard Lane Growers in Gloucester.

Below is a partial list of Virginia Cooperative Extension publications that address shrubs. These and other publications about specific trees and small fruits can be found at https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. (Type in the publication number [e.g. 456-018] in the search box.)

Growing Apples in Virginia, 422-032
Small Fruit in the Home Garden, 426-840
Tree Fruit in the Home Garden, 426-841

Cornell University's Nursery Guide for Berry and Small Fruit Crops www.fruit.cornell.edu/berry/nurseries

Penn State's Small Fruit page: http://ssfruit.cas.psu.edu/

North American Fruit Explorers: http://www.nafex.org/

Clemson University's Tree Fruits page: http://www.clemson.edu/extension/hgic/plants/vegetables/tree_fruits_nuts/hgic1360.html

To find out more about individual varieties of fruit trees and small fruits, go online and search the name of the variety. The internet has a wealth of sites that describe and picture the varieties. As always, you should select the university websites [they contain an ".edu" extension] whenever available.

Notes:

WHAT ARE NATIVE PLANTS?

North American native plants are those that are indigenous to a region before the arrival of European settlers and possess traits that make them uniquely adapted to local conditions. They have evolved over time, adapting to factors specific to their region such as climate, moisture, soils and interactions with other plants, animals and insects. Many animals and insects depend on specific plants for their survival. Native plants play an important role in maintaining biodiversity and balance in the ecosystem.

Gloucester's native plants are species indigenous to Virginia's Coastal Plain, which is bordered by the Fall Line (The edge of the Piedmont/Coastal Plain, where various rivers cross from hard bedrock to soft sediments, is marked by a line of rapids and waterfalls—the Fall Line. ["Geology of the Fall Line"]) to the west and by the Atlantic Ocean, the Chesapeake Bay and its tributaries to the east. Many plants native to other regions such as the Piedmont and Mountain zones of Virginia, as well as those native to other states, will also perform here if used in locations that approximate their natural environments.

For the greatest ecological value, select the "true" species of local native plants, especially if planting for wildlife benefit. Cultivars are varieties that have been grown to provide plants with certain physical characteristics such as different flower color, different foliage or a compact/specific shape or size. Cultivars are suitable for gardening use, but true species provide the preferred food source for native wildlife.

> ***"Young birds are fed native insects. Native plants support native insects that help birds feed their young."***
>
> **– Felicity Ericson, GEMG Emeritus**

Benefits of Native Plants

- Require little maintenance
- Add regional character and a naturalistic element to landscape
- Are better able to withstand local weather conditions such as drought, and insects and disease
- Reduce the need for chemical applications of fertilizers, herbicides and pesticides
- Prevent erosion, store and filter storm water runoff through their deep root systems
- Provide food and shelter for native butterflies, songbirds, beneficial insects and small mammals
- Reduce the potential for introducing invasive exotics
- Reduce the need for fossil-fueled lawn and garden equipment

Designing and Planting with Natives

A benefit of designing with native plants is their ability to grow under a wide variety of conditions. Assess your site for sun, shade, soil type and drainage. Understand the minimum and maximum light and moisture requirements for each species and be sure to group them with plants that have similar cultural requirements. You can incorporate a few native plants into an existing garden design or you can choose to plant an all-native design. Planting species with different bloom and/or fruiting times, as well as some evergreen species, will ensure year-round interest.

Native plants are adapted to a variety of native soils. If you choose a plant that is adapted to your existing soil, little or no soil amendment is needed. If your original topsoil has been removed, purchase similar topsoil, or simulate your own native soils

by incorporating minimal amounts of manure and organic matter such as composted leaves. Native plants typically do not need fertilization and many actually prefer poor soils. They also often require less watering.

It will take time for your native plant garden to become well-established. Irrigation is critical for the first growing season, particularly the two to three weeks after planting. An inch of water a week is optimal. Pruning will be necessary for fast-growing species to maintain visual quality. Clipping spent flowers and branch tips will encourage plant fullness and longer bloom times for perennials.

"Plant an oak tree in your wildlife garden. According to Douglas Tallamy, author of Bringing Nature Home: How You Can Sustain Wildlife with Native Plants, oaks can support over 500 species of moths and butterflies!"

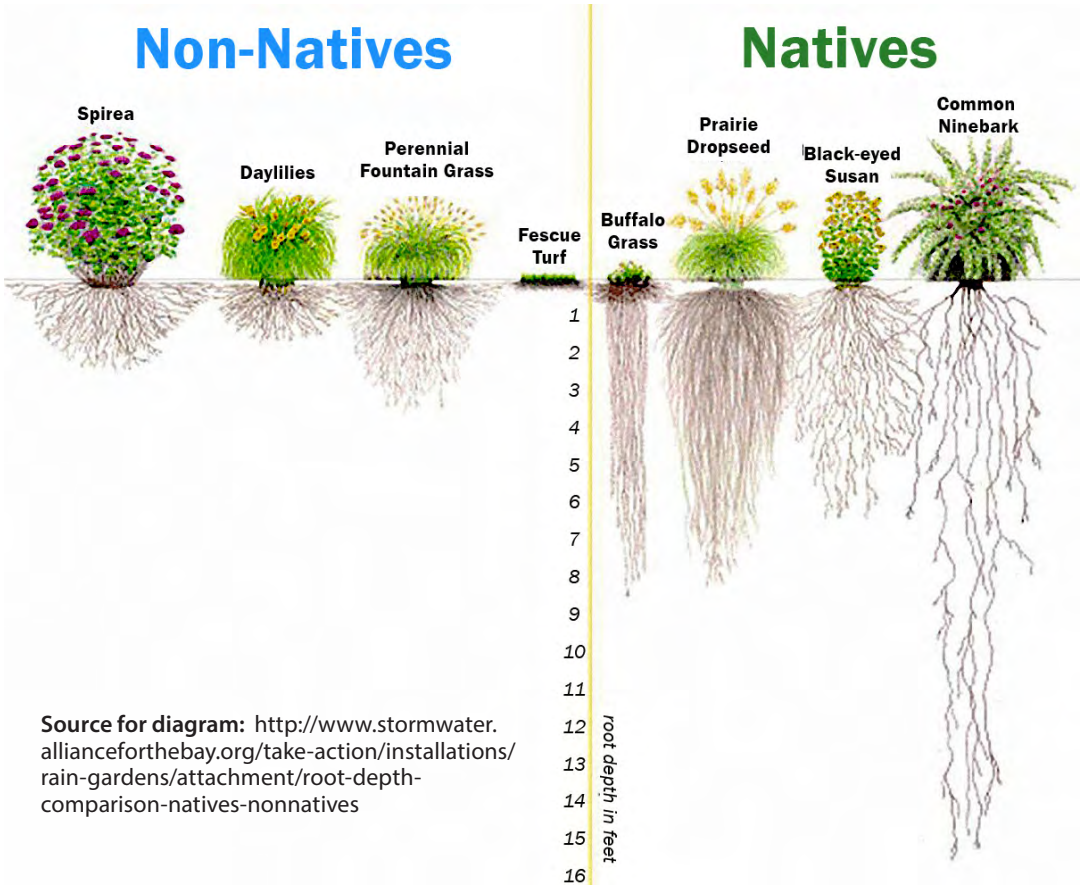
– Bill Walker, GEMG

Uses for Native Plants

- Lawn replacement
- Perennial beds
- Wildlife habitats
- Rain gardens
- Wetland plantings
- Woodland edge plantings

Native plants are particularly effective in rain gardens and wetland areas because they have deep, extensive root systems. These root systems increase soil permeability which allows for better absorption and filtration of rainwater, thereby reducing the amount of nutrients and pollutants that run off your property and into the Chesapeake Bay. The varying root lengths also provide soil stability to control erosion on slopes and in coastal areas.

Root systems of native grasses and forbs (herbaceous flowering plants that are not grasses, sedges, and rushes) can reach depths of 6 to 15 feet compared to the shallow roots of conventional blue grass turf (left of middle in diagram) which grow to only a few inches.



Source for diagram: http://www.stormwater.allianceforthebay.org/take-action/installations/rain-gardens/attachment/root-depth-comparison-natives-nonnatives

RECOMMENDED PLANTS FOR SPECIFIC APPLICATIONS

The following lists offer suggested plantings for various applications. Remember to consider site requirements before making your selection. Details about plants marked with an asterisk (*) can be found in their respective chapters, i.e., flowering dogwood in the Trees chapter. Further information can be obtained from references listed at the end of this chapter.

Plant Species for Birds

TREES	**SHRUBS**
American Beech *Fagus grandifolia*	**Highbush Blueberry** *Vaccinium corymbosum*
American Holly *Ilex opaca*	**Hollies** – both evergreen and deciduous *Ilex spp.**
Black Cherry *Prunus serotina*	**Red Osier Dogwood** *Cornus stolonifera*
Black Gum *Nyssa sylvatica**	**Serviceberry** *Amelanchier arborea*
Crabapple *Malus spp.*	**Spicebush** *Lindera benzoin*
Eastern Red Cedar *Juniperus virginiana**	**Sumacs** *Rhus spp.*
Flowering Dogwood *Cornus florida**	**Virburnums** *Viburnum spp.**
Hawthorns *Crataegus spp.**	**Wax Myrtle** *Morella cerifera**
Hickories *Carya spp.*	
Oaks *Quercus spp*.*	**VINES**
Pines *Pinus spp.*	**Coral Honeysuckle, Trumpet Honeysuckle** *Lonicera sempervirens*
Red Mulberry *Morus rubra*	**Trumpet Creeper, Trumpet Vine** *Campsis radicans*
Sassafras *Sassafras albidum*	**Virginia Creeper** *Parthenocissus quinquefolia**

Host Plants for Caterpillars

TREES	**SHRUBS**
Black Cherry, Wild Cherry *Prunus serotina*	**Button Bush** *Cephalanthus occidentalis*
Flowering Dogwood *Cornus florida**	**New Jersey Tea** *Ceanothus americanus**
Hackberry *Celtis occidentalis*	**Spicebush** *Lindera benzoin*
Oaks *Quercus spp.**	**Sumacs** *Rhus spp.*
Paw Paw *Asimina triloba*	**Sweet Bay Magnolia** *Magnolia virginiana**
Redbud *Cercis canadensis**	**Viburnums** *Viburnum spp.**
Sassafras *Sassafras albidum*	
Tulip Poplar *Liriodendron tulipifera*	**PERENNIALS**
	Asters *Symphyotrichum spp.**
VINES	**Butterfly Weed** *Asclepias tuberosa**
Dutchman's Pipe *Aristolochia macrophylla*	**Golden Alexander** *Zizea aurea*
Purple Passionflower *Passiflora incarnata**	**Milkweeds**, *Asclepias incarnata, A. syriaca*
	Violets (*Viola spp.*) - not all are natives

Nectar Plants for Hummingbirds, Butterflies and Bees

TREES	**PERENNIALS *(continued)***
Serviceberry *Amelanchier spp.*	**Common Sneezeweed** *Helenium autumnale*
	Cowslip, Marsh Marigold *Caltha palustris*
SHRUBS	**Cup Plant** *Silphium perfoliatum*
Button Bush *Cephalanthus occidentalis*	**Goldenrod** *Solidago spp.*
Coastal Azalea *Rhododendron atlanticum*	**Great Blue Lobelia** *Lobelia siphilitica*
New Jersey Tea *Ceanothus americanus**	**Joe Pye Weed** *Eutrochium spp.**
Summersweet *Clethra alnifolia**	**Lyre-leaf Sage** *Salvia lyrata*
Swamp Azalea *Rhododendron viscosum*	**Maryland Golden Aster** *Chrysopsis mariana*
Virginia Sweetspire *Itea virginica**	**Milkweeds** *Asclepias incarnata, A. syriaca*
	Narrow-leaf Sundrops, Southern Sundrops *Oenothera fruiticosa*
VINES	**Narrow-leaved Mountain Mint** *Pycnanthemum tenuifolium**
Coral Honeysuckle, Trumpet Honeysuckle *Lonicera sempervirens*	**New England Aster** *Symphyotrichum novae-angliae**
Trumpet Creeper, Trumpet Vine *Campsis radicans*	**New York Ironweed** *Vernonia noveboracensis*
	Northern Blue Flag *Iris versicolor*
PERENNIALS	**Phlox** *Phlox spp.** also see Groundcovers
Aster *Symphyotrichum spp.**	**Pickerelweed** *Pontederia cordata*
Beardtongue *Penstemon spp.*	**Purple Coneflower** *Echinacea purpurea**
Beebalm *Monarda didyma**	**Rose Mallow** *Hibiscus moscheutos*
Blue False Indigo, Wild Indigo *Baptisia australis**	**Seashore Mallow** *Kosteletzkya virginica*
Black-eyed Susan *Rudbeckia spp.**	**Spiderwort** *Tradescantia spp.*
Blazing Star, Spike Gayfeather *Liatris spicata*	**Tickseed** *Coreopsis spp.**
Bluestar *Amsonia spp.**	**Turk's Cap Lily** *Lilium superbum*
Blue Vervain *Verbena hastata*	**White Turtlehead** *Chelone glabra*
Boltonia *Boltonia asteroides**	**Wild Bergamot** *Monarda fistulosa*
Butterfly Weed *Asclepias tuberosa**	**Wild Columbine** *Aquilegia canadensis**
Cardinal Flower *Lobelia cardinalis*	**Sunflower** *Helianthus spp.*
Carolina Bushpea *Thermopsis villosa*	**Violets** *(Viola spp.) - not all are natives*
Common Sneezeweed *Helenium autumnale*	

Sources: Butterfly Species Host List–Denise Greene, Sassafras Farm
For the Birds, Butterflies and Hummingbirds–Creating Inviting Habitats, HORT-59NP, https://resources.ext.vt.edu/searchresults?contentname=hort-59np
Wildflowers for Butterfly Gardens–Prince William Wildflower Society
Wildlife Habitat–Wildlife Habitat | NRCS (usda.gov)

"Avoid plants with "double blooms" as the extra layer of petals can make it harder for hummingbirds, butterflies, and beneficial insects to access the nectar."

– Rose Sullivan, GEMG

Monarda didyma

Rain Gardens

Rain gardens are usually small gardens which use rainfall and stormwater runoff in their designs and plant selections. They are designed to withstand the extremes of moisture and concentrations of nutrients, particularly nitrogen and phosphorus that are found in stormwater runoff.

Rain Gardens

TREES	PERENNIALS
Atlantic White Cedar *Chamaecyparis thyoides*	**Asters** *Symphyotrichum spp.*
Bald Cypress *Taxodium distichum**	**Atamasco Lily** *Zephyranthes atamasco*
Black Gum *Nyssa sylvatica**	**Beebalm** *Monarda didyma**
Fringe Tree *Chionanthus virginicus**	**Black-eyed Susan** *Rudbeckia hirta*
Hackberry *Celtis occidentalis*	**Blazing Star, Spike Gayfeather** *Liatris spicata*
Paw Paw *Asimina triloba*	**Blue Flag Iris** *Iris virginica, Iris versicolor*
River Birch *Betula nigra**	**Cardinal Flower** *Lobelia cardinalis*
Serviceberry *Amelanchier canadensis*	**Common Boneset** *Eupatorium perfoliatum*
Sweetbay Magnolia *Magnolia virginiana**	**Coneflower, Black-eyed Susan** *Rudbeckia spp.**
Sweet Gum *Liquidambar styraciflua**	**Cut-leaf Coneflower** *Rudbeckia laciniata*
	Goldenrod *Solidago spp.*
SHRUBS	**Great Blue Lobelia** *Cardinalis siphilitica*
Arrowwood Viburnum *Viburnum dentatum*	**Hyssop Skullcap** *Scutellaria integrifolia*
Beautyberry *Callicarpa americana**	**Jack-in-the-Pulpit** *Arisaema triphyllum*
Buttonbush *Cephalanthus occidentalis*	**Joe Pye Weed** *Eutrochium dubium*
Carolina Allspice *Calycanthus floridus*	**Lyre-leaf Sage** *Salvia lyrata*
Common Elderberry *Sambucus nigra spp. canadensis (S. canadensis)*	**Marsh Marigold** *Caltha palustris*
Fetterbush *Leucothoe racemosa*	**New York Ironweed** *Vernonia noveboracensis*
Groundsel Bush *Baccharis halimifolia*	**Nodding Ladies' Tresses** *Spiranthes cernua*
Highbush Blueberry *Vacccinium corymbosum*	**Obedient Plant** *Physostegia virginiana*
Inkberry *Ilex glabra**	**Pickerelweed** *Pontederia cordata*
Ninebark *Physocarpus opulifolius*	**Rose Mallow** *Hibiscus moscheutos*
Possumhaw Holly *Ilex decidua**	**Seashore Mallow** *Kosteletzkya pentacarpos (K. virginica)*
Possumhaw Viburnum *Viburnum nudum*	**Swamp Milkweed** *Asclepias incarnata*
Red Chokeberry *Aronia abutifolia**	**Swamp Sunflower** *Helianthus angustifolius*
Silky Dogwood *Cornus amomum*	**White Turtlehead** *Chelone glabra*
Southern Wax Myrtle *Morella cerifera**	
Spicebush *Lindera benzoin*	**GRASSES**
Steeplebush *Spiraea tomentosa*	**Bluejoint Grass** *Calamagrostis canadensis*
Strawberry Bush *Euonymus Americanus*	**Little Bluestem** *Schizachyrium scoparium**
Swamp Azalea *Rhododendron viscosum*	**River Oats** *Chasmanthium latifolium*
Swamp Rose *Rosa palustris*	**Rushes** *Juncus spp.*
Sweet Pepperbush *Clethra alnifolia*	**Switchgrass** *Panicum virgatum**
Virginia Sweetspire *Itea virginica**	**Sedges** *Carex spp.*
Winterberry Holly *Ilex verticillata**	
Yaupon Holly *Ilex vomitoria**	

Rain Gardens (*continued*)

FERNS	
Cinnamon Fern *Osmunda cinnamomea*	**Royal Fern** *Osmunda regalis*
Maidenhair Fern *Adiantum pedatum*	**Sensitive Fern** *Onoclea sensibilis*
New York Fern *Thelypteris noveboracensis*	

Sources: Native Plants for Southeast Virginia, including Hampton Roads area, https://static1.squarespace.com/static/58e25c41e6f2e17ea4cb7766/t/5964020c099c0166cbe4f826/1499726352177/Native-Plants-for-Southeast-Virginia-Guide-reprint-July-2017.pdf

Native Plants for Wildlife Habitat and Conservation Landscaping: Chesapeake Bay Watershed
https://www.fws.gov/chesapeakebay/PDF/resources/Native-Plants-for-Wildlife-Habitat-and-Conservation-Landscaping.pdf

Rain Garden Plants
https://resources.ext.vt.edu/contentdetail?contentid=1525&contentname=Rain%20Garden%20Plants

Waterfront Landscapes

Plants growing on coastal shores are subjected to environmental conditions much different from those planted inland. Blowing sand, poor soil, excessive drainage, high temperatures, and salt spray determine how well plants grow on coastal landscapes. Most plants will not tolerate salt spray on accumulating on their foliage. Below are plants that have been found to grow well in the Gloucester waterfront areas.

Salt-tolerant Native Plants for Waterfront Landscapes: Outer Coastal Plain

DECIDUOUS TREES	**SHRUBS AND SMALL TREES**
Bald Cypress *Taxodium distichum**	**Beach Plum** *Prunus maritime* – edible fruit
Black Cherry *Prunus serotina*	**Groundsel Bush** *Baccharis halimifolia*
Hackberry *Celtis occidentalis*	**Inkberry** *Ilex glabra**
Live Oak *Quercus virginiana**	**Marsh Elder** *Iva frutescens*
Persimmon *Diospyros virginiana* – edible fruit	**Wax Myrtle** *Morella spp.* formerly *Myrica spp.**
Sweet Gum *Liquidambar styraciflua** – cultivars without seed pods, e.g. 'Rotundiloba'	**Yaupon Holly** *Ilex vomitoria** – tree, dwarf & weeping varieties available
EVERGREEN TREES	**VINES**
American Holly *Ilex opaca* – thorny leaves shed in spring	**Coral Honeysuckle, Trumpet Honeysuckle** *Lonicera sempervirens*
Eastern Red Cedar *Juniperus virginiana**	**Trumpet Creeper, Trumpet Vine** *Campsis radicans*
Loblolly Pine *Pinus taeda*	**Virginia Creeper** *Parthenocissus quinquefolia**
Sweetbay Magnolia *Magnolia virginiana**	
	PERENNIALS
GRASSES	**Asters** *Symphyotrichum spp.* - various species*
Saltmeadow Hay, Saltmeadow Cordgrass *Spartina patens*	**Black-eyed Susan** *Rudbeckia hirta**
Switchgrass *Panicum virgatum**	**Blanket Flower** *Gaillardia spp.**
	Blazing Star *Liatris squarrosa*
TIDAL MARSH (regular salt water flooding)	**Coneflowers** *Echinacea spp.**
Salt Marsh Cordgrass *Spartina alterniflora*	**Goldenrods** *Solidago spp.* – volunteers in unmowed areas
Saltmeadow Hay, Saltmeadow Cordgrass *Spartina patens*	**Hibiscus** *Hibiscus moscheutos*
	Marsh Mallow, Seashore Mallow *Kosteletzkya virginica*

Source: http://ccrm.vims.edu/livingshorelines/documents/HowTo/Native_plants_shorelines.pdf

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https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=nrcs143_023553

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Andersen Horticultural Library. https://arb.umn.edu/

Bird Watcher's Digest. https://www.birdwatchersdigest.com/bwdsite/

Butterflies and Moths of North America. https://www.butterfliesandmoths.org/

Chesapeake Bay Foundation. https://www.cbf.org/join-us/more-things-you-can-do/in-your-yard/native-plants.html

Cornell Lab of Ornithology. https://www.birds.cornell.edu/home

Crossley Books. https://crossleybooks.com/

Digital Atlas of the Virginia Flora. http://vaplantatlas.org/

John Clayton Chapter Virginia Native Plant Society. https://vnps.org/johnclayton/

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https://www.gloucesterva.info/DocumentCenter/view3819/Habitat-Northern-Neck-Native-Plants.pdf

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The Butterfly Society of Virginia, Inc. https://www.butterflysocietyofva.org/

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USDA Plants Database. https://plants.sc.egov.usda.gov/home

Virginia Native Plant Society. https://vnps.org/

The Xerces Society. https://www.xerces.org/

Where to Buy Native Plants:

Gloucester Extension Master Gardeners Plant Extravaganza,
https://www.gloucesterva.info/639/Master-Gardeners - plant sale held every September
Local nurseries in Gloucester
Lewis Ginter Botanical Garden, https://www.lewisginter.org/
- plant sales held spring and fall
Norfolk Botanical Garden, https://norfolkbotanicalgarden.org/
- plant sale held Mother's Day weekend
Northern Neck Extension Master Gardeners, https://nnmg.org/
- check website for upcoming sales
Virginia Department of Forestry (tree seedlings only),
https://dof.virginia.gov/forest-management-health/seedling-nurseries/
Virginia Living Museum, Newport News, VA,
https://thevlm.org/ - plant sales held April & September
Virginia Native Plant Society, www.vnps.org
check local John Clayton Chapter link
(https://vnps.org/johnclayton/) for upcoming sales
Williamsburg Botanical Garden, https://williamsburgbotanicalgarden.org/
- check website for upcoming sales

Aquilegia canadensis

Notes:

INVASIVE PLANTS

WHAT ARE INVASIVE PLANTS?

Invasive plants are non-native species that have been introduced by humans either intentionally or unintentionally and have become serious threats to natural ecosystems, economic activity, and humans. Many of these exotic plants were brought to North America during the 19th and early 20th centuries as garden ornamentals or for medicinal use. Others were imported as livestock feed, to forestall erosion, and for surface mine reclamation. A few plants were used in manufacturing tools, musical instruments, or cane fishing poles. Today a few species are still sold for home planting.

Invasive plants don't always originate in another country or on another continent. Some plants that are important contributors to one North American environment as food source and habitat may prove invasive in another. Black locust *Robinia pseudoacacia* is a United States native that has invaded the Cape Cod National Seashore and is threatening areas in several other states.

What Makes Plants Invasive

Plants with the highest invasive potential tend to share some or all of these characteristics:

- A lack of natural predators, i.e., competition with other plants, soil conditions, weather, an insect or disease, and herbivores outside their native range
- Prolific seeders – a single mature female Tree-of-Heaven *Ailanthus altissima* can produce over 300,000 seeds per year
- Multiple reproductive capabilities – English Ivy *Hedera helix* grows viogorously from the tip of stems; new plants grow from cuttings or stem fragments that make contact with the soil, and by seeds eaten and dispersed by birds
- Vigorous growers or aggressive root systems that dominate and push out surrounding vegetation – Bradford or Callery Pear *Pyrus calleryana* spreads rapidly by seed and vegetatively to form dense thickets; once established, Kudzu *Pueraria lobata* can grow up to one foot a day and 60 feet annually
- Disperses readily by wind, water, wildlife, or human activity – seeds of Japanese Stiltgrass *Microstegium vinimeum* are easily spread by adhering to clothing, shoes, equipment, and animal fur; Autumn Olive *Elaeagnus umbellata* produces berries that are eaten and dispersed by wildlife
- Adaptability – Multiflora Rose *Rosa multiflora* grows aggressively in a wide range of soil, moisture, and light conditions and can invade forests, fields, and wetlands
- Pioneer species – Japanese Stiltgrass *Microstegium vinimeum* is one of the first species to establish in areas subject to regular disturbance such as flooding, mowing, tilling, and heavy foot traffic and is often found along hiking trails, roadways and ditches, powerline rights-of-way, moist woodlands, and home gardens
- Chemicals produced in leaves or root systems which inhibit growth of other plants around them – the roots of Common Reed *Phragmites australis* secrete powerful toxins that destroy the structural proteins of roots in neighboring plants

Negative impacts of invasive species:

- Direct competition with native species for moisture, sunlight, nutrients, and space
- Reduction or extinction of native species when invasive species outcompete slower-growing, rare or vulnerable plant populations
- Loss of biodiversity in areas where natives have been pushed out and exotic species have taken over
- Destruction of vertical forest structure – ground cover vegetation, understory shrubs and young trees, and mature tree canopy layer are needed to sustain diversity of both plants and animals
- Altered ecosystem function such as change in water flow or soil chemistry, or loss of forest layer
- Habitat degradation caused by establishment and spread of invasive species
- Increased soil erosion
- Degraded water quality
- Decreased recreational value – Common Reed *Phragmites australis* can reduce native fish and wildlife populations, limiting recreational values for birdwatchers, walkers, naturalists, boaters, and hunters
- Decreased timber and wildlife productivity due to poor quality agriculture lands
- Economic damage due to costs from decreased productivity and significant resources and expenses required for management and control

Management and Control

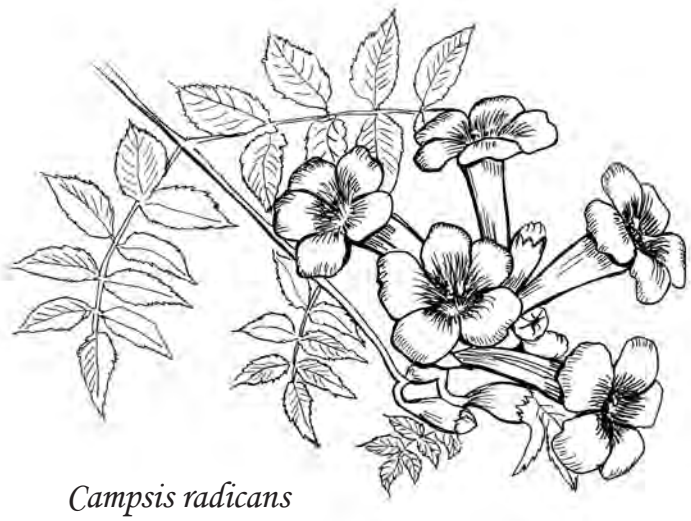
Several methods of control are available to slow down or eradicate the damage caused by invasive plants. Mechanical control includes hand-pulling, digging, mowing, disking, grazing, and burning but repeat mechanical applications and chemical follow-up are likely needed to manage many species. Biological control introduces natural predators to control pests; however, there is risk of the predators becoming invasive themselves. Chemical control involves the use of herbicides, pesticides or fungicides but chemicals vary in their selectivity for killing species. Some chemicals can leach into the soil and run into waterways while others can remain in the soil for extended periods of time.

Knowing how a particular species grows, spreads and reproduces will help determine the most appropriate method for control. But keep in mind: once an invasive plant is contained or removed from a site, the area must immediately be reestablished with native species or it will be reclaimed by invasive plants again. The easiest and most effective method for managing and controlling invasive species from spreading in the landscape is prevention. Stop planting them. If people stop buying invasive plants, nurseries and garden centers will stop carrying them. Many resources are available online and through Virginia Cooperative Extension to help identify invasive species and suggest native alternatives to plant instead. A list of resources is also included with this chapter.

INVASIVES OF PARTICULAR CONCERN IN SOUTHEAST VIRGINIA*

Invasive, non-native plants do not provide the same ecosystem services as natives and have a harmful effect on our environment, not only in the suburban community but also in our forests, parks, and other natural areas.

The non-native species listed in the following chart are of particular concern to Southeast Virginia, and are currently ranked on the Virginia Invasive Species List as exhibiting high (***), medium (**) or low (*) based on their threat to natural communities and native species.



Campsis radicans

Invasive Species	Southeast Virginia Native	Alternatives
Autumn Olive *** *Elaeagnus umbellata*	**Groundsel** *Baccharis halimifolia*	**Buttonbush** *Cephalanthus occidenatalis* **Sweet Pepperbush** *Clethra alnifolia* **Yaupon Holly** *Ilex vomitoria* **Gallberry or Inkberry** *Ilex glabra* **Virginia Sweetspire** *Itea virginica* **Elderberry** *Sambucus canadensis* **Mapleleaf Viburnum** *Viburnum acerifolium* **Smooth Witherod** *Viburnum nudiflorum* **Black Haw** *Viburnum prunifolium*
Bradford or Callery Pear ** *Pyrus calleryana*	**Serviceberries** *Amelanchier spp.*	**Common Pawpaw** *Asimina triloba* **Hawthorns** *Crataegus spp.* **Eastern Redbud** *Cercis canadensis* **Flowering Dogwood** *Cornus florida* **Common Persimmon** *Diospyros virginiana*
Chinese Silvergrass ** *Miscanthus sinensis*	**Switchgrass** *Panicum virgatum*	
Chocolate Vine or Five-leaf Akebia ** *Akebia quinata*	**Carolina or Yellow Jessamine** *Gelsemium sempervirens*	**Trumpet creeper** *Campsis radicans* **Trumpet or Coral Honeysuckle** *Lonicera sempervirens* **Crossvine** *Bignonia capreolata*
English Ivy ** *Hedera helix*	**Wild Ginger** *Asarum canadense*	**Crossvine Galax urceolata, Galax** *Bignonia capreolata* **Carolina or Yellow Jessamine** *Gelsemium sempervirens* **Partridge-berry** *Mitchella repens* **Virginia-creeper** *Parthenocissus quinquefolia* **Golden Ragwort** *Packera aurea*

Invasive Species	Southeast Virginia Native	Alternatives
Japanese Honeysuckle *** *Lonicera japonica*	**Crossvine** *Bignonia capreolata*	**Trumpet creeper** *Campsis radicans* **Virginia-creeper** *Parthenocissus quinquefolia* **Carolina or Yellow Jasamine** *Gelsemium sempervirens* **Trumpet or Coral Honeysuckle** *Lonicera sempervirens* **Purple Passionflower or Maypop** *Passiflora incarnata*
Japanese Stiltgrass *** *Microstegium vimineum*	**Saltgrass** *Distichlis spicata*	**Narrowleaf Blue-Eyed Grass** *Sisyrinchium angustifolium*
Japanese Wisteria * Wisteria floribunda, and **Chinese Wisteria **** Wisteria sinensis,	**Crossvine** Bignonia capreolata	**Trumpet creeper** Campsis radicans **Carolina or Yellow Jessamine** Gelsemium sempervirens **Trumpet or Coral Honeysuckle** Lonicera sempervirens **Virginia-creeper** Parthenocissus quinquefolia **Purple Passionflower or Maypop** Passiflora incarnata **American Wisteria** Wisteria frutescens
Mimosa Silk Tree ** *Albizia julibrissi*	**Serviceberry** *Amelanchier arborea* and *A. canadensis*	**Eastern Redbud** *Cercis canadensis* **White Fringetree** *Chionanthus virginicus* **Silky Dogwood** *Cornus amomum* **Northern Spicebush** *Lindera benzoin* **River Birch** *Betula nigra*
Multiflora Rose *** *Rosa multiflora*	**Carolina or Pasture Rose** *Rosa Carolina*	**Swamp Rose** *Rosa palustris*
Porcelain-Berry *** *Ampelopsis brevipedunculat*	**Crossvine** Bignonia capreolata	**Carolina or Yellow Jessamine** Gelsemium sempervirens **Trumpet or Coral Honeysuckle** Lonicera sempervirens
Tree of Heaven *** *Ailanthus altissima*	**Eastern Redbud** *Cercis canadensis*	**Common Persimmon** *Diospyros virginiana* **Winged or Shining Sumac** *Rhus copallinum*

Learn More About Invasive Plants and How You Can Help

Virginia Department of Conservation and Recreation, Division of Natural Heritage:
https://www.dcr.virginia.gov/natural-heritage/invspinfo

USDA National Invasive Species Information Center:
https://www.invasivespeciesinfo.gov

Center for Invasive Species and Ecosystem Health:
https://www.invasive.org/species/weeds.cfm

Mistaken Identity – Invasive Plants and their Native Look-Alikes (Pub):
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_024329.pdf

Plant Invaders of Mid-Atlantic Natural Areas (Pub):
https://www.invasive.org/alien/pubs/midatlantic/midatlantic.pdf

* Invasives of Particular Concern in Southeast Virginia and Learn More About Invasive Plants and How You Can Help reprinted with permission from Virginia Witmer. Source: Plant Hampton Roads Natives. (2017). Native plants for Southeast Virginia, including Hampton Roads region. pp. 66-67. [PDF document]. Retrieved from: https://static1.squarespace.com/static/58e25c41e6f2e17ea4cb7766/t/5964020c-099c0166cbe4f826/1499726352177/Native-Plants-for-Southeast-Virginia-Guide-reprint-July-2017.pdf

This content also is online - https://www.plantvirginianatives.org/nonnative-invasive-plants-of-concern-in-southeast-virginia-and-regional-native-alternatives

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Swearingen, J., Reshetiloff, K., Slattery, B., and Zwicker, S. (2010). *Plant Invaders of Mid-Atlantic Natural Areas, 4th ed*. National Park Service and U.S. Fish and Wildlife Service. Washington, DC. 168pp. [PDF document]. Retrieved from: https://www.invasive.org/alien/pubs/midatlantic/midatlantic.pdf

USDA. U.S. Forest Service. (2021). *Invasive Plants*. https://www.fs.fed.us/wildflowers/invasives/

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Virginia Department of Conservation and Recreation. (2021). *Virginia Invasive Plant Species List*. https://www.dcr.virginia.gov/natural-heritage/invsppdflist

RESOURCES

Related Topics–Publications:

Miller, J. H., Manning, S. T., Enloe, S. F. (2013). *A management guide for invasive plants in southern forests. (slightly revised 2013 and 2015)*. General Technical Report SRS–131. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 120 pp.

Sarver, M. J., Treher, A., and Wilson, L., Naczi, R., Kuehn, F. (2008). *Mistaken identity? Invasive plants and their native look-alikes*. Dover, DE: Delaware Department of Agriculture and USDA Natural Resources Conservation Service. [PDF document]. Retrieved from: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_024329.pdf

U.S. Fish and Wildlife Service, Chesapeake Bay Field Office. (2003). *Native plants for wildlife habitat and conservation landscaping: Chesapeake Bay watershed*. [PDF document]. Retrieved from: https://www.fws.gov/chesapeakebay/PDF/resources/Native-Plants-for-Wildlife-Habitat-and-Conservation-Landscaping.pdf

Virginia Tech Landowner Education Program. (2020). *Challenges to sustainable forestry: Exotic invasive plants*. [PDF document]. Retrieved from: https://forestupdate.frec.vt.edu/content/dam/forestupdate_frec_vt_edu/real-estate/resources/presentations/exotics.pdf

Related Topics--Websites:

The Biota of North America Program. North American Vascular Flora. http://www.bonap.org/

Blue Ridge PRISM. Partnership for Regional Invasive Species Management. https://blueridgeprism.org/

Chesapeake Bay Foundation. https://www.cbf.org/join-us/more-things-you-can-do/in-your-yard/native-plants.html

Digital Atlas of the Virginia Flora. http://vaplantatlas.org/

Invasive Plant Atlas of the United States. https://www.invasiveplantatlas.org/list.html?id=176

NatureServe. http://natureserve.org/

Plant Virginia Natives. https://www.plantvirginianatives.org/

USDA Plants Database. USDA Plants Database

Virginia Department of Forestry. Invasive Plants in Virginia : Virginia Department of Forestry

Virginia Invasive Species. http://www.invasivespeciesva.org/

Virginia Native Plant Society. https://vnps.org/Virginia Tech Landowner Education Program. https://forestupdate.frec.vt.edu/landownerprograms.html

Where to Buy Native Plants:

Gloucester Extension Master Gardeners Plant Extravaganza, https://www.gloucesterva.info/639/Master-Gardeners - plant sale held every September

Local nurseries in Gloucester

Lewis Ginter Botanical Garden, https://www.lewisginter.org/ - plant sales held spring and fall

Norfolk Botanical Garden, https://norfolkbotanicalgarden.org/ - plant sale held Mother's Day weekend

Northern Neck Extension Master Gardeners, https://nnmg.org/ - check website for upcoming sales

Virginia Department of Forestry (tree seedlings only), https://dof.virginia.gov/forest-management-health/seedling-nurseries/

Virginia Living Museum, Newport News, VA, https://thevlm.org/ - plant sales held April & September

Virginia Native Plant Society, www.vnps.org - check local John Clayton Chapter link (https://vnps.org/johnclayton/) for upcoming sales

Williamsburg Botanical Garden, https://williamsburgbotanicalgarden.org/ - check website for upcoming sales

Notes:

VEGETABLES

The ability to grow your own food--vegetable gardening--is the skill that built civilization. Without this basic skill man was destined to be a hunter gatherer, unable to stay in one place and create homes, villages, towns, cities, and nations.

No one can tell you exactly how to garden; there are too many variables involved. No one's garden has the same soil, water, sunlight, climate, drainage, terrain, wind, weather, or resources. Add to this the fact everyone likes different vegetables, of which there are thousands of varieties, has different skill levels and time to spend in the garden. You see that the odds of two gardens being the same are very low. In this chapter we tell you what has worked in Gloucester County based on the best advice from the Master Gardeners and the Virginia Cooperative Extension (VCE).

Vegetables can be raised throughout the spring, summer, and fall in Gloucester. With succession planting you can be eating your own produce year round. Spring plantings can include asparagus, beets, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, Swiss chard, collards, lettuces, onions, peas, radishes, spinach, and turnip greens. Summer plantings after the average last frost date in Gloucester—usually April 21--can include tomatoes, okra, corn, potatoes, beans, cucumbers, eggplant, melons, peppers, squash, and pumpkins. In August plant cabbage, cauliflower, collards, beets, lettuce, carrots, beans, radishes, spinach, chard, and onions.

Your gardening can extend in to the winter with the use of green houses, cold frames, hoop tunels, and row covers. Your cool weather plants will grow with protection from the weather as long as they have ten hours of light, with less then ten hours they will still survive but their growth will slow greatly. Planting these plants early in the fall so they are good size then the ten hour of light is past will allow you to have fresh vegetables all winter.

PLANNING YOUR GARDEN GUIDELINES

When planning your garden, it is important to ask yourself a few basic questions:

How much time will you be able to devote to your garden on a regular basis? The answer to this question will dictate the size of your garden. You must remember that, once planted, the garden will have to be weeded once a week, irrigated during droughts, and vegetables harvested when ripe. Depending on the type of vegetables, you may also need to undertake pest control measures.

What vegetables do you like to eat and how do you plan to use the harvested produce? The answer to these questions will dictate what vegetables to plant and how many seeds/transplants of each vegetable to plant. In addition to eating freshly harvested vegetables, you will want to determine how much produce you want to can, freeze, dry, or store. Successive plantings of certain crops, such as beans, will give a longer harvest period and increase your yield. Make a list of recommended varieties and their planting dates. Use care in choosing the seeds, making sure the varieties you select are adapted to your area and intended use.

How much space is available? That is, how much area can be converted into usable garden space, not simply how much empty ground is available.

Some Additional Planning Hints

Summer is the best time to plan next year's garden so you have the fall to prepare the soil and winter to order the seeds.

Plan the garden on paper first. Draw a map showing the arrangement and spacing of your crops. To keep the garden growing all season, make a spring, summer, and fall garden plan. There are many online programs to layout and plan your garen a lot of them are free.

Plan the garden and order seeds by January or February. Some plants may be started indoors as early as January.

In your plan, place tall and trellised crops on the north side of the garden so they won't shade the sun loving vegetables. Use the shade for vegetable that can take the strong summer sun.

Group plants by the length of their growing season. Plant spring crops together so later crops can be planted in there area when the early crops mature. Consider the length of harvest as well as time to maturity. Place perennial crops to the side of the garden where thy will not be disturbed.

Locating the Garden

Vegetables grow best in a level area with loose, well drained soil and at least six hours of sun. Eight to ten hours is ideal and afternoon sun is better than morning sun.

Use contour rows, terraces, or raised beds on sloped sites to avoid erosion. South facing slopes are warmer and less subject to frost damage.

Avoid placing the garden in a low spot, at the base of a hill, orat the foot of a slope bordered by a solid fence. Such areas are slow to warm up in spring, and frost settles in these places since cold air naturally drains to low areas.

Avoid windy locations; if you must plant in a windy spot, build or grow a windbrack.

Locate the garden near a good and easily accessible supply of water.

Choose a garden location near your home so it is convenient to work in the garden when you have a few minutes.

Avoid planting near trees and shrubs; they compete for nutrients and water and may cause excessive shade.

Sites too close to buildings may result in plants not receiving enough sunlight. Observe shading patterns through a growing season before starting the garden. If you have a shaded area you wish to use anyway, plant shade-tolerant crops.

Avoid locations for the garden where buildings with lead paint have stood. Lead may be present in the soil in toxic amounts.

Gardening where sod has long been established requires a great deal of preparation to eliminate sod, weeds and soil insects.

Keep the garden away from areas that are likely to flood, especially with salt water.

Don't discount planting vegetables in containers if you are short on gardening space. Vegetables are beautiful and some lend an exotic touch when planted among your flowers.

Dig a few test holes where you plan to put your garden to see how deep the top soil is, how hard the soil is, and you can put water in the holes to see how well it drains

Do a soil test on the area you are planing for your garden. This can tell you how suitable the area is and what you may need to add to the soil. You can also have it tested for toxicens that may be in the soil from the past.

TYPE OF GARDENING METHODS

There are many ways of gardening and they can be used togeather as you planing your garden.

Raised Beds

Building your beds 12 or more inches off the ground and 3 to 4 feet wide will improve drainage and raise soil temperature in fall and spring. Since you fill the

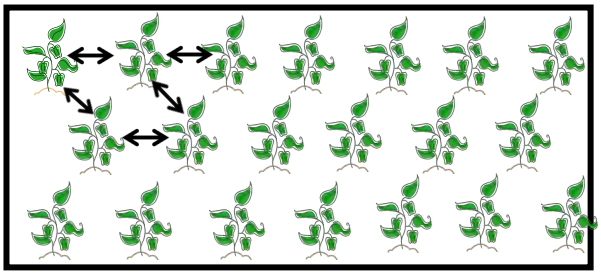
bed, you can make a fertile soil mix that will ensure you get the very best produce. You can plant earlier and harvest later, extending your producing season. Physically, it is easier to work in raised as you do not have to bend over so far and you can reach all areas from the sides of the beds.

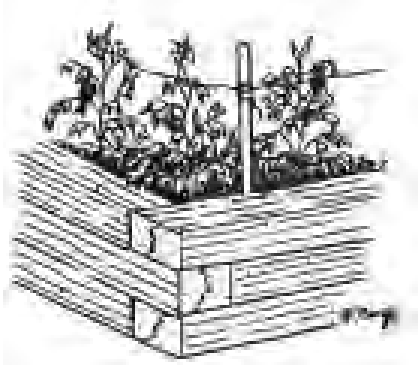
Succession Plantings
To obtain a succession of crops, plant something new in the spots vacated by spent plants. After you harvest turnips or beets in late spring, then plant tomatoes. After the spinach, lettuce, chard or sugar snap peas are harvested in early summer, you can then plant potatoes. You just do not follow root vegetables with other root vegetables, or fruits with fruits. As you get into fall you can plant lettuce and spinach again where your potatoes or tomatoes had been.

Vertical Gardening
Use trellises, nets, strings, cages, or poles to support growing plants. As you know pole beans take up less space than bush beans. Plants like cucumbers are climbers; summer squashes can be taught to climb with a trellis and some string. Growing these plants vertically, you can see them easily before they balloon in size. You can double your produce by planting vegetables that cannot take the hot summer sun, such as lettuces and chard, underneath the vertically growing plants which will shade them.

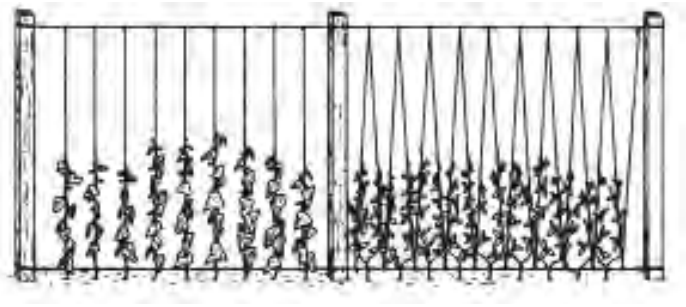
Intensive Plantings
Seed packages tell you to plant/space seeds/seedlings 3 inches apart and 10-12 inches between rows. If the seedlings can be happy 3 inches apart, why use up extra space between rows? You don't have to. Plant or thin seedlings so they are in a cross-hatched design as shown below:

Each doubled pointed arrow is 3 inches long and each seed/seedling is planted that distance from the next seed/seedling. This reduces the space available for weeds to grow.





Raised Bed Gardening



Verticle Gardening

Interplantings
Growing two or more types of vegetables in the same place at the same time is known as interplanting. Long-season (slow-maturing) vegetables such as carrots and short-season (quick-maturing) vegetables such as radishes can be planted together. Filling your space with vegetables reduces the room for weeds to grow and reduces insect and disease problems as no one pest-specific plant is massed.

Square Fool Gardening
In this method your gardening space is divided in to 1-foot by 1-foot squares. The number of seeds that can be planted within each square is based on the size of the plant. For example, one tomato plant will fill a square or 16 carrot will fill the same size space.

Wide Row Gardening
Growing in wide rows in the vegetable garden basically means that instead of planting an individual row of seed or plants, you set them out in strips that are 1 - 4 feet in width. The row can be any length you like. Wide rows allow you to squeeze more vegetables into less space. Planting single rows require that you have to leave space to walk between them. A wide row still allows you to reach into the center of the row to seed, weed or harvest, but you won't be walking in between the plants.

No-Till Gardening
No-till gardening is a way of growing crops from year to year without disturbing the soil through tillage. No-till is an agricultural technique which increases the amount of water that infiltrates into the soil, the soil's retention of organic matter and its cycling of nutrients.

Lasagna Gardening
Lasagna gardening is a no-dig, no-till organic gardening method that results in rich, fluffy soil with very little work from the gardener. It incorporates 5 or more distinctive layers of various organic materials that will decompose quickly. The name "lasagna gardening" has nothing to do with what you'll be growing in this garden.

Soil Bag Gardening
The primary benefit of growing directly into a bag of soil is speed. Convenience and cost savings are also big benefits of this method. With this method, the container, soil preparation, and so forth are all taken care of and only the plant or seeds are needed to complete it. A small garden (or part of one) can be planted in less than a minute – literally.

CORE Gardening
The method is simple. The idea is to incorporate organic material down the core, or center, of your raised bed before planting. As this material breaks down it will release vital nutrients to your plants while enriching the soil and raising the moisture retention ability in your soil bed. Most of the time this is done with rotted straw, but we're using rotted grass clippings and mulched leaves.

Wood Chip Gardening
The most common way of using woodchips for gardening is to spread them on the ground as mulch. The functions which woodchips as mulch can have is to provide moisture retention, smother weed and will moderate summer soil temperatures by serving as insulation.

Straw Bale Gardening
Straw Bale Gardening is a simply a different type of container gardening. The main difference is that the container is actually the straw bale itself, held together with two or three strings, the outside crust of the bale serves as the container.

Ruth Stout No-Work Garden
My no-work gardening method is simply to keep a thick mulch of any vegetable matter that rots on both my vegetable and flower garden all year round. As it decays and enriches the soil, I add more. The labor-saving part of my system is that I never plow, spade, sow a cover crop, harrow, hoe, cultivate, weed, water or spray. I use just one fertilizer (cottonseed or soybean meal), and I don't go through that tortuous business of building a compost pile.

PREPARING THE SOIL

Once the location is selected, then you need to prepare the soil. Be safe and have your soil tested. Get a soil test kit, directions, and application from the Gloucester County VCE Office. Send your soil sample to Virginia Tech and follow the advice you receive to ensure that your soil produces the best vegetables possible. A good time to get a soil test is in the fall as you can get the results back and amend the soil as needed, and it will be ready in the spring when you put in your seeds and transplants. Most vegetables grow well with a soil pH of 6.0 to 7.0. The addition of lime or sulfur will correct the pH. Heavy spring rains can be a problem in preparing the soil. You should never work the soil when it is excessively wet—soil sticks to the shovel—as you can destroy the soil structure. Organic matter like manure, leaf mold, sawdust, straw, and compost improves both clay and sandy soils.

At the end of the summer, you can prepare the soil for the following summer by planting annual rye grass, red clover, hairy vetch, or other cover crops that prevent soil erosion and enhance the nitrogen content of the soil. These should be planted in September or October—early enough to allow for the cover crop to take hold before the first killing frost (November 8 to 28). Come spring, till in the cover crop as you prepare for the spring planting.

APPLICATION OF TEA AND COFFEE IN THE GARDEN

When first starting your garden to the final harvest the most effective and most important of all practices is careful observation in the garden. Many serious weed, disease, or insect problems can be halted or brought under control early by an observent gardener. So grab your cup of tea or coffee, your phone with camera and pad and pen and walk the garden. Pull a weed, pick a bug but do not try to correct everythings you see, if you do this you will not make it to all the garden and will miss a problem. You should observe, take notes and pictures of the whole garden then make a work plan. The following is a list of some things to help you start your garden and keep it in good shape.

Water in the morning so plants have time to dry before the cool evening. Drip irrigation systems prevent foliage from getting wet when watering.

Use interplantings in the vegetable garden as opposed to solid plantings of a crop. This can slow the spread of diseases and insects, giving you more time to deal with them if they occur.

Space plants properly and thin young vegetables to a proper stand. Overcrowding causes weak growth and reduces air flow, resulting in increased insect and disease problems.

Keep down weeds and grass by cultivating early and often. When they are small they are much easer to control and there is less of a chance of damaging the roots of your crop.

Use a mulch to reduce soil splash, which brings soil and soil-borne diseases into contact with lower leaves. Leaf and other organic mulches are extremely effective for weed control, as are inorganic weed mats, plastic, and other fabrics.

Avoid injury to plants. Brroken branches, cuts, bruises, cracks and insect damage are often the site for infection by disease-causing organisms.

Do not work the garden when the plants are wet with rain or dew to prevent spreading diseases.

"If temperatures go above 90°, snap bean, tomato and peper flowers can fail to develop fruit."
– Virginia Cooperative Extension

Do not use tobacco products when working in the vegetable garden. Tomato, pepper and eggplant are susceptible to a mosaic virus disease common in tobacco and may be spread by your hands.

Remove and dispose of infected leaves from diseased plants as soon as you observe them. Remove severly diseased plants before they contaminate others.

Clean up crop refuse as soon as you are finished for the day.

Sanitize stakes and wire cages prior to use with a light bleach solution.

Keep old sacks, baskets, wooden stakes, decaying vegetables, and other rubbish, which may harbor insects and diseases, out of the garden.

Staking tall vegetable plants or planting them in wire cages prevents the leaves, blossoms, and fruit from coming in contact with the soil where they may pick up diseases.

Time plantings in such a way that the majority of your crops will avoid the peak of insect infestations. For example, plant squash as early as possible to avoid borers, which lay eggs in July. Keeping a record of the dates that insect problems occur will help in planing next year's garden.

Inspect plants for egg clusters, beetles, caterpillars, and other insects as often as possible. Hand-pick as many pests as you can. Avoid sprays untill the population of insects has reached a critical threshold level. Remember not all insects are bad, some are our best help in controling problems, know your bugs.

Where slugs are a problem, use approved baits and traps and try to creat drier conditions. Heavy mulches may encourage slugs. Diatomaceous earth, crushed eggshells, and hydrated lime near plants may help deter slug activity.

SEED AND PLANT SELECTION

During the winter order your seeds from a reliable seed catalog. Choose disease resistant varieties whenever possible. Start your own seedlings indoors according to directions on each seed packet. Vegetables that do well as transplants are broccoli, cabbage, cauliflower, sweet potatoes, tomatoes, and peppers. Onions, lettuce, spinach, peas, cucumbers, watermelons, beans, carrots, melons, squash, corn, and radishes do well if seeds are directly sown in soil.

When you sow your seeds, either indoors in pots, Styrofoam cups, or other containers or outdoors in the prepared garden bed, think about the size of the plant that can grow from one seed and plant that one seed so that you do not need to thin out the seedlings once they start. Many seeds are wasted when a single seed will do.

"Invest in a soil thermometer and use it! If you plant seeds too early, many won't germinate if the soil is too cold—and many kinds actually rot."

– Alma Eacho, GEMG Emeritus

"If temperatures go above 90°, snap bean, tomato and peper flowers can fail to develop fruit."

– Virginia Cooperative Extension

SPRING AND FALL PLANTING DATES

The table below shows spring and fall vegetable planting dates. The earlier dates will be for areas not close to tidal creeks or bays, but that do have fairly sandy soil. The further you are away from tidal bays, rivers or creeks, the earlier you plant. For example, a Naxera resident would plant later than a Hayes resident.

Vegetable	Spring Plant Date	Harvest Date	Fall Plant Date	Harvest Date
Asparagus	2/09 - 3/31	3/31 - 6/09		
Beans - Bush	4/20 - 6/29	5/20 - 10/20	7/19 - 8/30	9/19 - Freeze
Beans - Pole	4/20 - 6/14	6/14 - 10/2		
Beans - Lima	4/25 - 6/29	7/09 - 10/20		
Beans - Wax	4/20 - 7/09	6/09 - 10/20	7/19 - 8/30	9/19 - Freeze
Beet	3/05 - 4/20	4/30 - 6/29	8/10 - 9/12	9/29 - 12/8
Broccoli	3/11 - 4/30	5/20 - 7/19	7/31 - 8/20	10/9 - 12/18
Brussels Sprouts	3/11 - 4/30	5/30 - 8/08	7/21 - 8/20	10/9 - Jan.
Cabbage	3/01 - 4/15	4/30 - 6/24	7/31 - 8/23	10/9 – Freeze
Chinese Cabbage	3/11 - 3/31	5/20 - 6/29	8/20 - 8/28	10/19 - 12/28
Carrot	3/01 - 4/10	4/30 - 6/29	8/20 - 9/29	10/17 - Jan.
Cauliflower	3/11 - 4/10	4/30 - 6/09	8/30 - 9/19	11/8 – Freeze
Chard, Swiss	3/10 - 4/30	4/30 - 10/27	8/20 - 9/29	10/29 – Freeze
Collards	2/15 - 3/31	4/30 - 6/19	8/20 - 9/19	11/8 - Jan.
Cucumber	4/20 - 5/10	5/30 - 8/8	8/20 - 9/22	10/9 – Frost
Eggplant	5/05 - 5/10	6/29 - 9/17		
Endive	3/11 - 4/10	5/20 - 6/29	9/09 - 9/29	11/28 - Jan.
Kale	3/05 - 4/15	4/20 - 6/04	8/30 - 10/09	10/24 – Freeze
Kohlrabi	3/01 - 4/30	4/20 - 6/29	9/19 - 10/24	11/26 - Jan.
Leek	2/19 - 4/10	6/29 - 10/27	7/01 - 8/20	11/08 - Jan.
Lettuce - Bibb	3/01 - 4/20	5/10 - 6/19	9/19 - 10/04	10/13 - 12/28
Lettuce - Leaf	3/01 - 4/20	4/15 - 6/09	8/19 - 10/24	9/27 - 12/18
Muskmelon	5/05 - 6/05	6/29 - 8/28		

SPRING AND FALL PLANTING DATES (*continued*)

Mustard	2/19 - 3/26	3/21 - 5/20	9/29 - 10/29	11/06 - Jan.
Okra	5/20 - 6/10	7/09 - 9/17		
Onion (Seed)			9/29 - 11/08	Next Spring
Onion (Sets)	2/09 - 5/10	3/21 - 10/27		
Peas	2/09 - 3/21	4/10 - 5/30		
Pepper	4/20 - 5/20	6/19 - 9/27		
Potato	3/05 - 3/31	5/20 - 10/07		
Pumpkin	5/10 - 6/05	6/24 - 10/07		
Radish	3/01 - 4/10	3/06 - 5/20		
Rutabaga			9/09 - 10/09	11/28 - Jan.
Southern Pea	5/20 - 6/30	7/14 - 10/7		
Spinach	3/01 - 3/21	3/21 - 5/20	9/09 - 10/14	10/19 – Freeze
Squash, Summer	4/21 - 5/20	8/19 - 9/19		
Squash, Winter	4/21 - 6/29	7/19 - 9/27		
Sweet Corn	4/10 - 6/09	6/19 - 9/07		
Sweet Potato	5/20 - 6/20	8/08 - 9/17		
Tomato (Trans-plants)	4/20 - 6/05	6/09 - 9/27		
Turnip	2/09 - 3/21	3/21 - 5/30	9/09 - 10/19	10/9 - Jan.
Watermelon	5/20 - 6/10	7/09 - 9/07		
Adapted from Virginia Cooperative Extension Publication, Vegetable Planting Guide & Recommended Planting Dates, Revised December 2006, Publication 426-331				

VEGETABLE PLANTING DISTANCES AND YIELDS

The table on the next page shows the planting distances in and between rows as well as the approximate yields you can expect for each 10-foot row.

Vegetable	**Planting Distances in Feet and Inches**		**Approximate Yield per 10 ft. of row**
	In Rows	**Between Rows**	
Asparagus	L8″	48-60″	3-4 lbs.
Beans, bush	1-2″	24-36″	3-5 lbs.
Beans, pole	4-12″	36-48″	6-10 lbs.
Beans, lima	3-4″	24-36″	3-5 lbs.
Beans, wax	2″	24-36″	3-5 lbs.
Beet	2-3″	12-24″	8-10 lbs.
Broccoli	15-24″	24-36″	4-6 lbs.
Brussels Sprouts	18-24″	30-36″	3-4 lbs.
Cabbage	12-18″	30-36″	10-25 lbs.
Chinese Cabbage	12-24″	18-36″	20-30 lbs.
Carrot	1-2″	15-30″	7-10 lbs.
Cauliflower	12-24″	24-36″	8-10 lbs.

VEGETABLE PLANTING DISTANCES AND YIELDS (*continued*)

Vegetable	Planting Distances in Feet and Inches		Approximate Yield per 10 ft. of row
Chard, Swiss	6-12″	18-30″	8-12 lbs.
Collards	12-24″	24-36″	8-15 lbs
Cucumber	12-18″	48-72″	8-10 lbs.
Eggplant	18-24″	30-42″	10-12 lbs.
Endive	9-12″	18-30″	3-6 lbs.
Kale	6-18″	18-36″	4-8 lbs.
Kohlrabi	4-6″	12-36″	4-8 lbs.
Leek	2-6″	12-30″	10-20 lbs.
Lettuce (Bibb)	6-10″	12-24″	4-8 lbs.
Lettuce (Leaf)	3-6″	12-18″	5-10 lbs.
Muskmelons	24-36″	60-90″	15-25 lbs.
Mustard	2-4″	18-30″	3-6 lbs,
Okra	12-18″	36-48″	5-10 lbs.
Onions (sets)	2-4″	12-24″	7-10 lbs.
Peas (English)	1-3″	12-30″	2-6 lbs.
Pepper	12-24″	30-36″	5-18 lbs.
Potato, Irish	10-18″	24-42″	10-20 lbs.
Pumpkin	2-4′	5-8′	10-20 lbs.
Rutabaga	3-6″	15-30″	8-12 lbs.
Southern Peas	3-4″	24-36″	5-18 lbs.
Sweet Corn	6-12″	24-36″	7-10 lbs.
Spinach	3-6″	15-30″	4-6 lbs.
Squash, summer	18-36″	36-60″	20-80 lbs.
Squash, winter	2-4′	3-10′	10-80 lbs.
Sweet Potato	12-18″	36-48″	8-12 lbs.
Tomato	18-36″	50″	15-45 lbs.
Turnip	2-3″	12-24″	8-12 lbs.
Watermelon	3-4′	5-10′	8-40 lbs.

Adapted from Virginia Cooperative Extension Publication, Vegetable Planting Guide & Recommended Planting Dates, Revised December 2006, Publication 426-331

VEGETABLE VARIETIES BEST SUITED TO VIRGINIA

In the chart below are vegetable varieties recommended by VCE for Virginia. In addition, varieties that the Master Gardeners have grown successfully are included. Don't, however, let yourself be limited by these varieties. Be adventuresome and try new varieties, especially the disease-resistant ones.

Vegetable	Variety
Numbers in parentheses indicate number of days till beginning of harvest period.	
Asparagus	Jersey Giant F1 (2-3 yrs) Jersey Gem F1 (2-3 yrs)
Bean, Bush	Blue Lake Roma II (59) Dwarf Horticultural (65) Derby (55) Slenderette (55) Kentucky Wonder 125 (60)
Beans, Lima	Bridgeton (65) Jackson Wonder (65) Fordhook 169 (75)
Beet	Ruby Queen (65) Detroit Dark Red (60)
Broccoli	Packman (60) Windsor (66) Green Goliath (80)
Brussels Sprouts	Jade Cross (110)
Cabbage	Gourmet (70) Stonehead (75) Dynamo AAS (68) Guardian (80) Two Season (85)
Carrot	Gold King (72) Danvers (72) Imperator (78)
Cauliflower	Candid Charm (65) White Sails (55)
Corn, Sweet	Silver Princess (73) Breeders Choice (68) Silver King (82) Argent (86) 'Improved Silver Queen' Golden Queen (95) Silver King (82)
Cucumber	Dasher II (60) Everslice (60) Bush Whopper (68) Sweet Slice (65) County Fair (55)
Eggplant	Mission Bell (95) Black Knight (110) Little Fingers
Kale	Vates Dwarf Blue (55) Dwarf Siberian (80)

Vegetable	Variety
Lettuce	Mission (80) Dark Green Boston (70) Parris Island Cos (75) Buttercrunch (65) Salad Bowl (50) Summer Time (72)
Muskmelon	Ambrosia (82) Apollo Short'n Sweet (85) Athena (87)
Mustard	Tendergreen F1 (40) Southern Giant Curled (45)
Okra	Annie Oakley (50) Clemson Spineless (56)
Onion	White Portugal (100) Mustand (110) Sweet Sandwich (105) Ebenezer (110)
Peas	Knight (56) Sugar Snow (70) snap Wando (68) Green Arrow (70) Dwarf Gray Sugar (68) Super Sugar Snap (62-66)
Peas, Southern	Queen Anne (56) Purple Hull Crowder (60-70)
Pepper	Lady Bell (110) Boydton Bell Mucho-Nacho (100) Hugh Jalapenos Red Cayenne (110)
Potato, Irish	Steuben (100) Superior (100) Pontiac (100)
Potato, Sweet	Beauregard (100) Centennial (120) Jewel (120) Baker (120)
Pumpkin	Magic Lantern (100) Merlin (100) Howden Biggie We-Be-Little Jack-Be-Little
Radish	Cherry Belle (24) Icicle (30)
Spinach	Melody (50) Vienna (80)

VEGETABLE VARIETIES BEST SUITED TO VIRGINIA (*continued*)

Vegetable	Variety
Squash, Summer	Butterbar (50) Superpik (50) Goldrush (50) Puma F1 (50)
Squash, Winter	Table Ace (80) Waltham Butternut (96) Buttercup (100) Butterbush (96)
Swiss Chard	Rhubard (50) Lucullus (45-55)
Tomato	Big Beef (AAS) (73) Mountain Spring Celebrity (70) Better Boy VFN (105) Sweet 100 (65) Plum Dandy (Roma)
Turnip	Tokoyo Cross (40) Purple Top White Globe (55) All Top F1 (45)
Watermelon	Petite Sweet (80) Sugar Bush (75) Starbrite (90) Chifton Seedless Yellow (86) The Heart Series (Jack, Queen, and King of Hearts) (80)

Adapted from Virginia Cooperative Extension Publication, Vegetables Recommended for Virginia, May 1, 2009, Publication 426-480

COMPANION AND BENEFICIAL PLANTS FOR VEGETABLES

Over time we Master Gardeners have experimented with companion planting—grouping plants together to increase production and to ward off the bad insects. The table below, although not based on scientific research, does summarize our experiences as well as our reading about selected vegetables.

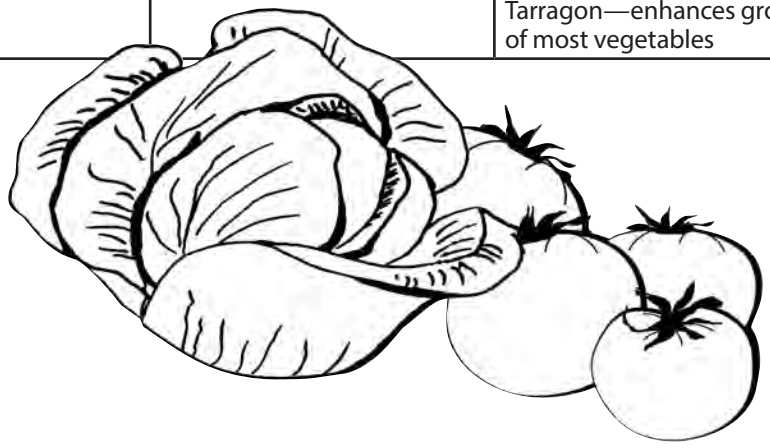
Vegetable	Companion Plant	Beneficial Plant	Enemies
Asparagus	Lettuce, tomatoes	Basil Parsley	Onions, garlic, gladiolus
Beans—Bush	Beets, cabbage, carrots, celery, corn, cucumbers, eggplant, lettuce, peas, radishes, strawberries	Garlic—repels aphids Marigold (French and African)—deters Mexican bean beetles, nematodes, and other insects Rosemary—deters cabbage moth, bean beetle, and carrot fly Summer Savory—deters bean beetles	Onion family, gladiolus, fennel
Beans—Pole	Carrots, corn, cucumbers, eggplant, lettuce, peas, radishes	Marigold (French and African)—deters Mexican bean beetles, nematodes, and other insects Rosemary—deters cabbage moth, bean beetle, and carrot fly Summer Savory—deters bean beetles	Beets and cabbage family, kohlrabi, sunflower, gladiolus, fennel
Beet	Kohlrabi, bush beans, cabbage, onions, sage		Pole beans

COMPANION AND BENEFICIAL PLANTS FOR VEGETABLES (*continued*)

Vegetable	Companion Plant	Beneficial Plant	Enemies
Cabbage	Bush beans, beets, celery, onions, sage, tomatoes	Hyssop—deters cabbage moth Lavender—repels slugs and moths Marigold (French and African)—deters Mexican bean beetles, nematodes, and other insects Mint—deters white cabbage moth Nasturtium—deters aphids, squash bugs, striped pumpkin beetles Sage—enhances growth and deters cabbage moth and carrot fly Thyme—deters cabbage worm	Strawberries, tomatoes, pole beans
Carrot	Onions, radishes, bush beans, pole beans, lettuce, peas, leeks, sage, tomatoes	Rosemary—deters cabbage moth, bean beetle, and carrot fly Sage—deters cabbage moth and carrot fly	Dill, celery, parsnips
Cucumber	Bush beans, pole beans, corn, lettuce, onions, peas, radishes	Marigold (French and African)—deters Mexican bean beetles, nematodes, and other insects Nasturtium—deters aphids, squash bugs, striped pumpkin beetles Tansy—repels ants, cucumber beetles, Japanese beetles, squash bugs, and some kinds of flying insects, among others.	Potatoes, aromatic herbs, sage
Eggplant	Bush beans, pole beans, spinach	Catnip—repels flea beetles	None
Leeks	Bush beans, carrots		Peas, beans
Lettuce	Asparagus, bush beans, pole beans, carrots, cucumbers, onions, radishes, strawberries		None
Lima Beans	Beets, radishes		None
Muskmelon	Corn, radishes	Nasturtium—deters aphids, squash bugs, striped pumpkin beetles	None
Onion (set)	Carrots, radishes, beets, cabbage, celery, cucumbers, lettuce, peppers, squash, strawberries, tomatoes	Savory—enhances growth Summer Savory—deters bean beetles	Beans, peas, asparagus
Peas—Garden	Bush bean, pole bean, carrots, corn, cucumbers, radishes		Onion family, gladiolus

COMPANION AND BENEFICIAL PLANTS FOR VEGETABLES (*continued*)

Vegetable	Companion Plant	Beneficial Plant	Enemies
Pepper	Basil, onions		None
Potato		Dead Nettle—deters potato bug	Pumpkin, squash, cucumbers, turnips, rutabagas, tomatoes, sunflowers, raspberry
Radish	Onions, bush bean, pole bean, carrots, cucumbers, lettuce, melon, peas, squash	Chervil—enhances growth Nasturtium—deters aphids, squash bugs, striped pumpkin beetles	None
Spinach	Celery, eggplant, cabbage, strawberries		None
Summer Squash	Corn, onions, radishes	Borage—deters tomato worm Nasturtium—deters aphids, squash bugs, striped pumpkin beetles Tansy—repels ants, Japanese beetles, squash bugs, and some kinds of flying insects, among others.	Potatoes
Sweet Corn	Bush beans, pole beans, cucumbers, melon, peas, squash		None
Sweet Potato			None
Tomato	Cabbage, carrots, celery, onions, parsley	Basil or Thyme—enhances growth Bee Balm—improves growth/flavor Borage—deters tomato worm Dill or Lovage—lures hornworms away Marigold (French and African)—deters Mexican bean beetles, nematodes, and other insects Nasturtium—deters aphids, squash bugs, striped pumpkin beetles Tarragon—enhances growth of most vegetables	Dill, potatoes, cabbage, kohlrabi, fennel



VEGETABLE CROP ROTATION

A good vegetable crop rotation plan is this simple rule: Do not plant the plants within a particular family in the same location as last year, since they share many of the same insects and diseases.

Mustard Family (Crucifers) Broccoli, Brussel Sprouts, Cabbage, Cauliflower, Collards, Garden Cress, Horseradish, Kale, Kohlrabi, Mustard, Radish, Rutabaga, Turnip, Watercress	**Gourd Family (Cucurbits)** Cantaloupe, Cucumber, Gourd, Pumpkin, Squash, Watermelon	**Composite Family** Globe Artichoke, Jerusalem Artichoke, Lettuce, Endive, Chicory, Salsify
Parsley Family Carrot, Celery, Chervil, Parsley, Parsnip	**Nightshade Family (Solanaceous plants)** Eggplant, Pepper, Irish Potato, Tomato	**Goosefoot Family** Beet, Chard, Spinach
Legume Family Bean, Cowpea, Lentil, Peanut, Soybean	**Lily Family** Asparagus, Chives, Garlic, Leek, Onion, Shallot	**Grass Family** Corn
Morning Glory Family Sweet Potato	**Mallow Family** Okra	

KEEPING THE WEEDS OUT

The really hard part of vegetable gardening is managing the weeds. As you know, if there is bare soil, the weeds will occupy it. The best way to keep weeds at bay is to keep the soil covered with mulch. In addition, mulch will prevent moisture loss through evaporation and will moderate summer soil temperatures by serving as insulation.

Garden mulches include straw (not hay), grass clippings, shredded leaves, newspapers, black or red plastic, and even burlap coffee bags. Kathy LaLiberte, writer, and active gardener, suggests that the mulch used should be matched to the crop, weather conditions and soil type. As regards the crop, not all vegetables enjoy the same growing conditions. The heat lovers—tomatoes, peppers, melons, and eggplant—do well with plastic mulch. Plastic mulch, however, is not water permeable; therefore, extra care in mid and late summer must be taken to ensure these plants have sufficient water. Woven weed barrier fabric is an alternative to plastic as water does flow through it; however, it does tend to make plants shallow-rooted.

Cool-weather crops such as broccoli, lettuces, and other greens cannot take the extra heat generated by plastic and do better with shredded leaves, straw, or newspapers which lower the soil temperature.

As we have hot summers here in Gloucester, plastic mulches can stress plants and burn up organic matter. Conversely, in northern states where summers are cool and wet, soil cooling mulches such as straw and newspapers could further cool the plants and stunt their growth. In addition to crop and weather, you need to consider your soil type. Don't cover heavy, wet soil with moisture-retentive mulches and don't cover dry, sandy soil with plastic.

Some recommends mulching the vegetable garden with wet newspapers (4 or more sheets thick), topped with a good, thick layer of straw. There must be sufficient straw on top of the newspaper so that weeds do not grow up through it. At the end of growing season, the straw and newspapers can be turned under to improve the soil quality.

VEGETABLE HARVEST AND STORAGE

Good eating is the ultimate reward of growing vegetables – BUT – good eating depends on good quality. And food quality depends on timely harvest and proper storage (http://ccesuffolk.org/assets/Horticulture-Leaflets/Vegetable-Harvest-and-Storage.pdf).

Cold, Moist (32 - 40 Degrees F, 90 - 95% Relative Humidity

ROOT CROPS

Beet

- Begin harvest when beet is one inch in diameter. Beet tops at this time make excellent tender greens.
- Do main harvest when beets are two to three inches.
- Harvest spring-planted beets before hot weather (July).
- Harvest fall beets before the first moderate freeze.
- For storage, wash roots, trim tops to one-half inch, place in perforated plastic bags, and store in refrigerator, cold moist cellar, or pit.
- Storage life—two to four months.

Carrot

- Harvest spring carrots before hot weather (July).
- Harvest fall-planted carrots before the first moderate freeze.
- For storage, wash roots, trim tops to one-half inch, place in perforated plastic bags and store in refrigerator, cold moist cellar, or pit.
- Storage life—two to four months.

Horseradish

- Harvest after several severe freezes.
- Store in the ground all winter; mulch with straw or leaves and dig when needed. Can also be stored in cool cellars.

Parsnip

- Harvest in late fall after several moderate freezes. Exposure to cold develops the sweet flavor.
- Same storage requirements as for carrots.

Potato, Irish

- Harvest when the tops have yellowed and/or died.
- Do not leave in ground exposed to high soil temperatures from sun because this will accelerate over-ripening.
- Wash potatoes and remove those diseased or damaged
- Cure for about a week in a shaded, well-ventilated place (open barn, shed, or garage). Avoid exposing tubers to light. They will turn green with even small amounts of light.
- Store in as cool a place as possible. Ideal storage conditions are hard to find at this time of year other than commercial cold storage (40 degrees F). Cool basements are probably the best storage available. Keep humidity high and provide good ventilation.
- Storage time—two to four months.

Radish

- Harvest when one-half to one inch in diameter.
- Wash roots; trim both tap root and tops, store in plastic bags in refrigerator for up to one month.
- Winter or black radishes are stored the same as carrots.

Salsify

- Same harvest and storage as for parsnips.

Turnip

- Harvest from the time they are one inch in diameter.
- Are best as a fall crop and can withstand several light freezes
- Store same as carrots.

COLE CROPS

Broccoli

- Harvest terminal head while florets are still tight and of good green color. Smaller size heads will develop.
- Store in perforated plastic bags for up to one week in the refrigerator.
- Freeze any surplus.

Brussel Sprouts

- Harvest the sprouts (small heads) when they are firm; begin from the bottom of the plant.
- Sprouts can stand several moderate freezes.
- Harvest all sprouts prior to the first severe freeze and store in the refrigerator in perforated bags

for up to three weeks.
- Freeze any surplus.

Cabbage
- Harvest when heads are solid.
- Store cabbage in refrigerator or cold cellar in plastic bags or in outdoor pit for up to two months.

Cauliflower
- Tie outer leaves above the head when curds are about one to two inches in diameter (except purple types).
- Heads will be ready for harvest in about two weeks.
- Cauliflower may be stored in perforated plastic bags in the refrigerator for up to two weeks.
- Freeze any surplus.

Chinese Cabbage
- Grow only in the fall.
- Harvest heads after the first moderate frost in the fall and store in perforated plastic bags in the refrigerator, cold cellar, or outdoor pit.
- Will keep for up to two months.

Kohlrabi
- Harvest when the swollen stems are two to three inches in diameter. Stems become woody if left too long before harvest or if grown under poor conditions.
- Cut off root and leaf stems and store in plastic bags as indicated for carrots.
- Storage life—two to four weeks.

GREENS

Chard (Swiss)
- Harvest continuously. Swiss chard is a beet developed for its top.
- Merely break off the outer leaves.
- A spring planting will provide greens from early summer to the first moderate freeze.
- May be stored up to two weeks in refrigerator.

Collards, Kale, Mustard, Spinach
- Harvest the leaves and leaf stems of greens when they reach suitable size.
- Either harvest the whole plant or the outer, larger leaves.
- Wash and trim.
- Greens do not store well, but may be kept in plastic bags in the refrigerator for up to two weeks.
- Freeze any surplus.

Endive (Escarole)
- Harvest whole plant.
- Wash thoroughly to remove soil and sand.
- Gather leaves together and tie with rubber band.
- Store in plastic bags in refrigerator for up to three weeks.

SALADS

Lettuce
- Head, semi-head, and leaf lettuce can be stored for up to two weeks in perforated plastic bags in the refrigerator.
- Refrigeration is highly desirable, but do not freeze.

Parsley
- Can continue growing in winter if planted in a protected place such as a cold frame.
- If planted in the open, it can be lifted carefully with a ball of soil just before the soil freezes, potted and taken into the house to a cool, sunny room, and harvested for several weeks.
- Parsley will keep in plastic bags in the refrigerator for one or more weeks.

Lima Beans
- Harvest when pods have filled. For tender limas, harvest when a bit immature; for "meaty" limas, harvest when mature.
- Shelled limas can be stored in perforated plastic bags in the refrigerator for about a week.
- Surplus limas can be canned or frozen.

LEGUMES

Garden Peas
- Harvest when pods have filled. For tender peas, harvest when a bit immature; for "meaty" peas, harvest when mature.
- Unshelled peas can be kept in a perforated plastic bag in the refrigerator for about a week.
- Freeze or can surplus.

Southern Peas (Crowder, Purple Hull, etc.)
- For fresh use, freezing or canning, harvest when

seeds are large and plump, but moist.
- Either shelled or unshelled peas may be stored in the refrigerator for several days.

VINE CROPS

Cantaloupe (Muskmelon)
- Harvest when the stem slips easily from the fruit. Lift the melon. If ripe, it should separate easily.
- Store ripe melons in the refrigerator in a plastic bag for up to ten days.
- Try freezing a few boxes of melon balls.

Squash, Summer
- Harvest when fruit is young and tender. Skin should be easily penetrated with the thumbnail.
- Can be stored for up to a week in a perforated plastic bag in the refrigerator.

OTHER VEGETABLES

Asparagus
- Harvest by snapping 10- to 12-inch spears off at ground level.
- Store in plastic bags in refrigerator for up to one week.
- Freeze or can any surplus.

Onion, Green
- Harvest green onions when they attain sufficient size.
- Wash and cut off roots; remove part of top leaving an inch or more of green.
- Place in plastic bags and store in refrigerator for up to two weeks.

Rhubarb
- Harvest leaf stalks when one-half to one inch in diameter.
- DO NOT USE LEAVES
- Rhubarb can be stored in perforated plastic bags for up to three weeks in the refrigerator.
- Freeze surplus.

Sweet Corn
- Harvest sweet corn when kernels are plump and tender. Silks will be dry and kernels filled.
- Check a few ears for maturity. Open top of ear, press a few kernels with thumbnail. If milky juice exudes, it is ready for harvest.
- Sweet corn has a very short storage life.
- Harvest at peak of quality, husk to conserve space, and store in plastic bags for no more than two days in the refrigerator.
- Freeze or can surplus corn.

Cool, Moist (45-50 Degrees F, 80-90% Relative Humidity)

Cucumber
- Harvest cucumbers before seeds become half-size. This will vary with variety. Most varieties will be one and a half to two and a half inches in diameter and five to eight inches long. Pickling cucumbers will be a bit more blocky and not as long as slicers.
- Store slicing cucumbers in the warmest part of the refrigerator in a plastic bag.
- Storage life is about one week.
- Pickling cucumbers should be cooled quickly in ice water and can be kept up to two days in a plastic bag in the refrigerator.

Eggplant
- Harvest when fruits are nearly full grown, but color is still bright.
- Eggplants are not adapted to long storage. Keep in warmer part of refrigerator for about a week.

Beans, Green
- Bean pods will be the most tender when the small seed inside is one-fourth normal size. From this stage the pods become more fibrous, as the beans mature.
- Store green beans up to one week in perforated plastic bags in the warmer part of the refrigerator.
- Can or freeze surplus.
- Cool cellar storage is also possible.

Okra
- Harvest okra pods when they are two to three inches long. Over-mature pods are woody.
- Store in plastic bags in the warmer part of the refrigerator for about one week.
- Freeze surplus.

Pepper, Sweet
- Harvest when fruits are firm and full size.

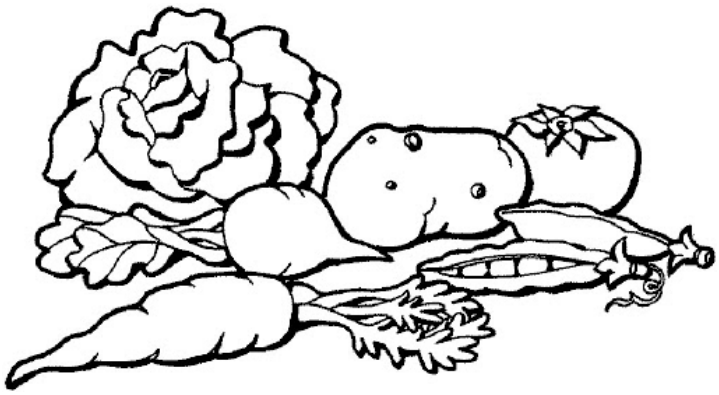
- If red fruits are desired, leave on plant until red color develops.
- Sweet peppers can be stored for two to three weeks in the warmer part of the refrigerator in plastic bags.
- Cool cellar storage is also possible.

Tomato

- Ripe tomatoes will keep for a week in the refrigerator at 45-50 degrees F.
- Green, mature tomatoes, harvested before frost, should be kept at a temperature between 55 and 70 degrees F. For faster ripening, raise temperature to 65-70 degrees F.
    - o Mature green tomatoes should approach normal size and have a whitish green skin color.
    - o Mature green tomatoes can be kept from three to five weeks by wrapping each tomato in newspaper and inspecting for ripeness each week.
    - o A cellar where temperatures are about 55 to 58 degrees F is satisfactory for holding mature green tomatoes.

Watermelon

- Harvest when underside of fruit turns from whitish to yellowish. The tendril at the juncture of the fruit stem and the vine usually dies when the fruit is mature. Thumping an immature melon gives a ringing metallic sound, while the mature melon gives a dull thud.
- Watermelons will store at room temperature for about a week; at temperature of 45-50 degrees F for two to three weeks.



Cool, Dry (45-55 Degrees F, 50-60% Relative Humidity)

Onion, Dry

- Harvest onions when the tops have fallen over and the necks have shriveled.
- Remove tops, place in shallow boxes or mesh bags, and cure in open garage or barn for three to four weeks.
- Store in mesh bags in as cool a place as can be found in midsummer.
- During humid (muggy) weather, keep ventilated.

Pepper, Hot

- Pull plants late in the season and hang to dry in the sun or a warm place.
- Store died peppers in dry, cool place (usually a basement).

Warm, Dry (55-60 Degrees F, 60-70% Relative Humidity)

Pumpkin and Squash (Winter)

- Harvest pumpkins and winter squash when the skin is hard and the colors darken. Both should be harvested before frost.
- Remove the fruit from the vine with a portion of the stem attached.
- Store fruit on shelves in single layer so air can circulate around them.

Warm, Moist (55-60 Degrees F, 80-85% Relative Humidity)

Sweet Potato

- Harvest in fall before frosts and freezing temperature. Handle carefully in the digging process.
  Cure for one week at a temperature of 80-85 degrees F.
  Ideal storage is at 55 degrees F and 85% relative humidity. (This might be accomplished in a basement with ventilated boxes covered with periodically moistened burlap sack.)

PLANTING ADVICE AND TIPS

"Clippings used as garden mulch should be sun-dried for a day or so. Do not use clippings from lawns treated with herbicides or toxic pest controls.

Use only leaves that have been aged at least nine months. This allows the growth-inhibiting phenols to be leached out."

– Kathy LaLiberte, Writer and Gardener

"Tomatoes won't grow in cold soil; their roots may rot. Wait until mid-May to plant outdoors. The plants you put in on Memorial Day will catch up to the earlier ones." **– Celeste Dudley. GEMG**

"Full summer heat in Gloucester is not kind to growing things. Plant tall crops like sunflowers (intermediate size) or corn on the south or west side of the garden to provide shade to bush beans, cucumbers, etc."

– Barbara Pleasant, Warm Climate Gardening

"Trellis all peas no matter what the planting instructions say. And when growing peas for the first time, inoculate the seeds with the appropriate nitrogen-fixing bacteria (order it with your seeds) to ensure fast, dependable growth."

– Barbara Pleasant, Warm Climate Gardening

"Mid-summer seed germination improves if you plant the seeds, water them well, and place a board over the row. Remove the board when the sprouts reach just below the soil surface."

– Virginia Cooperative Extension

"If temperatures go above 90 degrees, snap bean, tomato, and pepper flowers can fail to develop fruit." **– Virginina Cooperative Extension**

"Keep melon plants covered with floating row cover until the first female blossoms appear (about 35 days) to protect against destructive insects."

– Barbara Pleasant, Warm Climate Gardening

"When cantaloupes reach softball size, place them on an inverted coffee can with drainage holes punched in the top. This will increase air circulation and sunlight."

– Barbara Pleasant, Warm Climate Gardening

"Green peppers, eggplant, and Swiss chard are decorative enough to use in a large container garden with trailing annuals around."

– Celeste Dudley, GEMG

"I have had good luck using crushed egg shells around the stem of tomatoes to deter cutworms."

– Maxine Slone, EMG Emeritus

"Heritage or heirloom tomatoes are generally not as disease resistant as modern varieties."

– Wally Walters, PhD., Retired Organinc Chemist and Gloucester Tomato Grower

"When you are done with the garden for the winter, cover your rows with black weed fabric. The material will heat up during the day and lose all its heat at night. This drastic temperature change kills any weeds underneath. Remove the material when you are ready to start your spring garden, and there will not be a weed in sight." **– Jodie Sholtis, GEMG**

"Spray Neem oil on plants and veggies to prevent insects from eating plants. Neem is not harmful to humans." **– Celestine Brooks, GEMG**

"I have had good luck and enjoy the flavor and texture of Blue Lake beans. The bush bean variety comes in earlier, but slows/stops delivering when temperatures rise above 85o F. The pole variety comes in 2-3 weeks later but is more drought/ heat tolerant than the bush form and continues producing through August and into fall. If you can keep the bush beans alive through high temperatures, they will produce also in the fall. So plant both and you can have fresh beans throughout the growing season"

– Jim Newton, GEMG

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LaLiberte, K. (2009). Choosing mulch for vegetable gardens. *Gardener's Supply: The Innovative Gardener.* Retrieved from: http://www.gardeners.com/Choosing-Mulch-for-Vegetable-Gardens/5013,default,pg.html

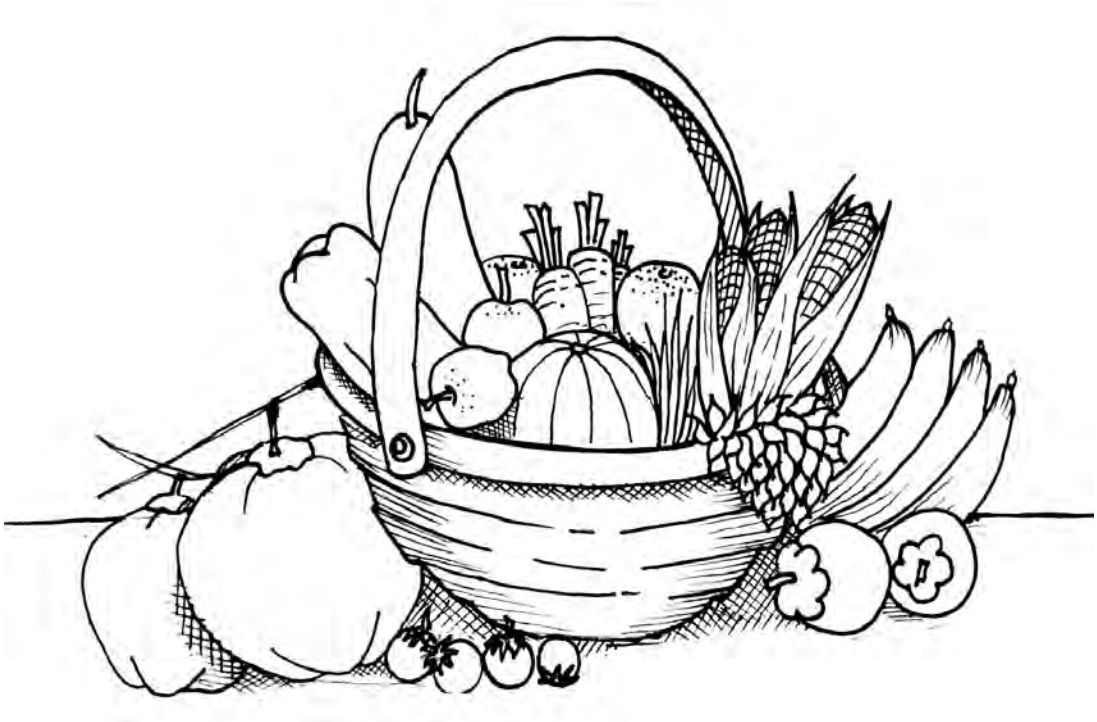
Lavender Fields Herb Farm. [Handout]. *The Organic Gardening Series: Companion Planting.*

Pleasant, B. (1993). *Warm climate gardening.* Pownal, VT: Garden Way Publishing.

Relf, D. (2009). The vegetable garden. In Relf, D. (Ed.), *Master gardener handbook: A guide to gardening in Virginia*. (pp. 239-316). Blacksburg, VA: Virginia Tech.

Below is a partial list of Virginia Cooperative Extension publications that address vegetables. These and other publications about specific vegetables can be found at https://Resources.ext.vt.edu or https://vtechworks.lib.vt.edu. Please note that Virginia Cooperative Extension has recently created a new site and is in the process of revising many of its publications. Therefore, some publications may be available at one site but not the other. (Type in the publication number [e.g. 456-018] in the search box.)

Intensive Gardening Methods, 426-335
Vegetable planting guide and recommended planting dates, 426-331
Vegetables recommended for Virginia, 426-480
Weeds in the home vegetable garden, 426-364



NOTES:

HERBS

ABOUT HERBS

What kind of plant is considered an herb? The narrow botanical definition of an herb is any seed-bearing, non-woody (fleshy or herbaceous) plant that dies back to the roots in winter. This definition omits woody shrubs like rosemary and lavender and a wide variety of annuals, biennials, perennials, trees, shrubs, and vines. For this reason, many herb gardeners and gardening authorities expand the definition of herb to include fleshy and woody plants that are useful or beneficial to people in one or more ways.

"Plant dill, parsley, and fennel as host plants for butterflies. The Swallowtail butterflies especially love these herbs."

– Joann Gallagher, GEMG

Herbs have a long history of use for culinary, medicinal, cosmetic, and magical purposes. In the western world, herbal use is traced as far back as the ancient Greeks. Evidence exists of cultivation of herbs within European castle and monastery walls as early as the 11th to 15th centuries. In Asian cultures, herbs have been used in Chinese and Ayurvedic medicine in India, as well as for cooking, for thousands of years.

Herbs delight us with their sweet, spicy, peppery, or bitter fragrances and flavors. In the kitchen, basic culinary herbs like basil, oregano, sage, and rosemary enhance our cooking and please our taste buds, but these herbs originally were used to improve or mask the taste of rancid food in the centuries before the development of food preservation processes and the invention of refrigeration. Some herbs like santolina, rue, and yarrow are not used in cooking.

Medicinal herbs have been used for centuries to treat diseases and injuries. Some medications we use today in Western medicine are derived from herbs. Foxglove (Digitalis purpurea) gives us digitalis, a powerful cardiac medication. Acetylsalicylic acid, the active ingredient in aspirin, used globally to treat fever and inflammatory pain, was derived from compounds found in meadowsweet (Filipendula ulmaria) and later synthesized in the laboratory. Herbal teas are popular today for a variety of conditions. We can drink chamomile tea to help us sleep; echinacea tea at the first sign of a cold; or elderberry tea to help strengthen the immune system. You should consult your medical doctor before using herbal products for health problems.

Some herbs are used to make fabric dyes. Parsley, purple sage, and pot marigold (*Calendula officinalis)* are three examples of herbs that can be used to dye fabric or wool. Lavender has long been used in the cosmetic industry for its lovely scent, but it also was utilized in earlier centuries to repel insects. Herbal essential oils are used in aromatherapy and massage. The oils also lend their fragrances to soaps, sachets, and potpourri.

Fragrant herbs add to the beauty of live and dried floral arrangements and wreaths. Herbal recipes and craft instructions abound online and in bookstores.

Some herbs were used in magic spells for love and protection. Herbs also helped to ward off evil spirits. We all know that garlic will keep vampires away!

So, why not grow your own herbs? Many herbs can be grown successfully in Gloucester with a minimum

"I plant herbs near the entrance of the garden to eliminate mosquitoes and flies, etc."

– Celestine Brooks, GEMG

of effort. The general climate of Gloucester County lends itself to successful propagation of herbs native to Mediterranean or Asian countries. Full sun, good air circulation, and well-drained soil are essential ingredients for the health of many popular herbs.

Each herb has a specific life cycle. An annual dies after the first growing season. A biennial sets seed and dies after the second growing season. A perennial dies to the ground each winter and grows back the following spring. Some herbs, such as basil and fennel, are perennials, but are grown as annuals in our USDA Hardiness Zone (7b for most of Gloucester County; 8a at Gloucester Point). It is helpful to know the life cycle of each herb you grow, so that you can know when to divide or replace it.

POPULAR HERBS FOR GLOUCESTER

Some of the more popular herbs that grow well in Gloucester County gardens are included in the following table. Local garden centers and online sites often carry unusual herbs that also will thrive in our area.

Hundreds of new cultivars are developed each year. All-America Selections (AAS) is an independent, not-for-profit organization that impartially tests and introduces the best new varieties of garden plants developed each year in North America. Some classic and new AAS award winners, as well as favorites of Gloucester Master Gardeners, are described in the table on the following pages.

Herb	Description / Use	Location and Soil	Life Cycle and Care
Aloe vera *Aloe barbadensis*	A succulent usually grown as houseplant; up to 2 feet tall by 2 feet wide. Gel inside leaves can be applied to minor scratches or burns. ALWAYS seek medical attention for serious burns.	Full sun or light shade in well-drained, gritty soil	Perennial, but not frost tolerant Do not over-water
Basil *Ocimum basilicum 'Dolce Fresca'*	Grows 15 to 24 inches tall with oval pungent green or purple leaves and bears spikes of whitish to purplish flowers throughout the summer and fall Use with all meats, fish, poultry, and vegetables. *O. basilicum* 'Genovese' is excellent for pesto. New for 2019: 'Amazel'™ 2015 AAS WInner, 'Dolce Fresca'	Needs 6 hours full sun in dry, light, medium rich soil that is evenly moist and well-drained	Tender annual Not frost tolerant. Plant in spring after all danger of frost. Fertilize at planting time, and pinch growing tips when plants are 4 to 6 inches to induce bushiness.
Bay, Sweet Bay, or **Laurel** *Laurus nobilis*	Evergreen tree. May grow to 20 feet in our region. Use dried or fresh-picked leaves in bouquet garnis for stews, soups, sauces, stock, and Spanish and Creole dishes.	Full sun; protect from wind. Average, well-drained soil	Not frost tolerant. If small, move inside for winter. Bay is a good tree for trimming and cultivating into a topiary design.
Bee balm, Bergamot, or **Oswego tea** *Monarda didyma*	Bushy, rapidly spreading clumps that can become invasive. Dark green leaves have pleasant, basil-mint fragrance. Infuse leaves to make tea with Earl Grey-like flavor. Native to North America, called "liberty tea" when used by colonists after the Boston Tea Party. Flowers are red or white in natural forms. Cultivars may have pink or lavender flowers.	Full sun to part shade in rich, moist soil Grow from seed or by division	Perennial Divide clumps in spring every 2-4 years. Prone to powdery mildew. Buy mildew-resistant cultivars. Attracts bees and hummingbirds

POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Calendula or Pot Marigold *Calendula officinalis*	Colorful, easy to grow, edible annual. "Poor person's saffron;" use in paella or polenta for color, not as a flavoring. Add petals to salads.	Full sun to part shade in moderately fertile soil with good drainage Moderate water	Cool-weather annual that blooms spring to early summer in our area Prone to powdery mildew
Catmint *Nepeta faassenii* **Catnip** *Nepeta cataria*	Mint family. 1 ½ to 3 feet tall. White, blue, or lavender flowers on spreading plants with downy, gray-green foliage. Volatile oils in leaves are attractive to about 2/3 of cats. Catnip species are more potent. Can be used in cat toys or food, also in tea for human consumption. New for 2019: *N faassenii 'Cat's Pajamas'* *'Walker's Low'* and *'Junior Walker'* are reliable catmint cultivars.	Full sun to light shade on hot afternoons Prefers dry soil with good drainage	Perennial, blooms late spring through early summer Prune back to prevent scraggly appearance
Chamomile *Chamaemelum nobile* (Roman chamomile) *Matricaria recutita* (German chamomile)	White or yellow, apple-scented flowers on 8- to 12-inch stems. Dried flowers and leaves used for potpourri. Chamomile tea is used as a general tonic and sedative.	Full sun in light, well-drained soil Roman chamomile does not thrive in hot, dry summers. German chamomile will tolerate drought and alkaline soil.	Roman chamomile is a hardy evergreen perennial. Harvest every 2-3 weeks German chamomile is an annual that reseeds prolifically.
Chervil or French Parsley *Anthriscus cerefolium*	A dainty plant with anise-flavored leaves. Flat clusters of white flowers bloom in mid-spring. The leaves are chopped like parsley and used in French cooking, soups, stews, sauces, and salads. Leaves may be picked any time and used fresh, dried, or frozen. Use with poultry, fish, and salad.	Partial to full shade and sandy, rich, moist, well-drained soil Does not like to be moved	Annual Cannot tolerate nights warmer than 55 degrees, so best grown in spring and fall, and even mild winter. Will shrivel or go to seed in full sun. Sow seeds every 2-3 weeks in spring and fall.

"An herbal bouquet makes a terrific hostess gift. Make a bouquet of mixed fragrant herbs, such as lavender, rosemary, basil, and marjoram. Tie with a pretty ribbon or twine, and wrap in colorful tissue paper for a gift that is aesthetically pleasing and practical." **– Susan Camp, GEMG**

"Chives are my favorite herbs. They are great for cooking, and the purple blooms complement many plants in the garden. The purple color adds a cool spot in the garden."

– Betty Durrette, GEMG

POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Chives and **Garlic Chives** *Allium spp.*	Dense clumps of slender hollow leaves with a delicate onion flavor. Chives have purple to pink flowers. Flowers can be used in recipes, as a garnish, or mixed with white vinegar to form rosy-hued, onion-flavored vinegar. The leaves can be mixed with sour cream, added to soups, or substituted for onions in any recipe. Leaves do not dry well, but they retain their flavor when frozen. Use with vegetables, pasta, and salad. Garlic chives grow to 16 inches with white flowers in late summer. Leaf has a sweet garlic flavor when young. Same use as chives. 2015 AAS Winner, 'Garlic Geisha'	Full sun or light shade in rich, moist, well-drained soil	Perennial herb Self-seeds and can become invasive
Coriander, Cilantro, or **Chinese Parsley** *Coriandrum sativum*	A large coarse plant with clusters of white or pink flowers on 12 to 30 inch stems in late summer. Lemon-flavored seeds follow the flowers. Seeds are used in Indian curries, Asian stir-fry dishes, and Scandinavian breads. To harvest seeds, cut the flowering stalks containing seeds and hang upside down in a paper bag. When the fresh or dried leaves are used in salads, soups, and ethnic dishes, they are called cilantro or Chinese parsley. Cilantro is used in Asian, Indian, and Tex-Mex dishes.	Full sun to light shade in average, well-drained soil As roots do not like to be disturbed, it is best to plant seeds directly outdoors.	Annual Will "bolt" and go to seed in summer heat. May want to plant in the fall. Plan to sow seeds every 3 weeks in summer, unless you are growing it to use as coriander seeds.
Dill *Anethum graveolen*	Light green, feathery foliage and delicate yellow flowers that bloom in midsummer. Foliage is used either fresh or dried to season eggs, vegetables, fish, and sauces. Dill seeds, which form after the plant flowers, are used for flavoring and pickling. Removing the flowers will extend the harvest period of the leaves. To harvest seeds, hang flowering stems upside down in a paper bag after the seeds start to turn brown. Use with poultry, fish, vegetables, and salad.	Full sun and slightly acid, average, sandy, well-drained soil	Annual. Grows 2 to 3 feet tall Protect plants from wind Does not like to be transplanted Self-seeds easily and can be invasive Plant enough dill to share with the caterpillars of the Swallowtail butterfly

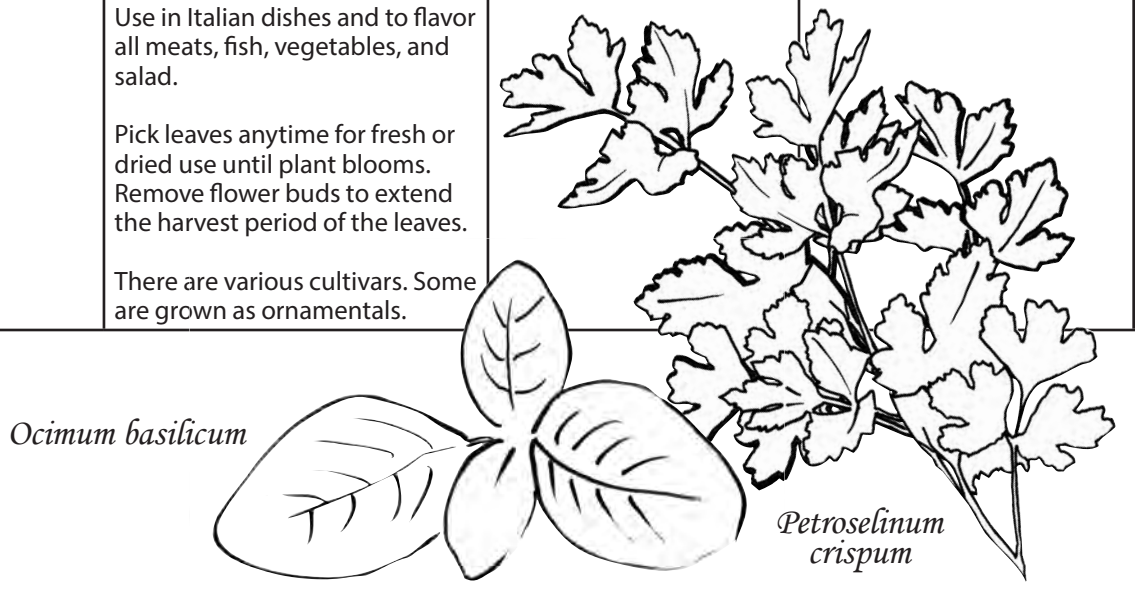
POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Fennel (Sweet or **Common)** *Foeniculum vulgare var. dulce*	Looks like a dill plant and tastes like anise. Grows 4 to 6 feet tall and has clusters of yellow flowers in summer. Grown primarily for seeds and foliage. Pick leaves before flowers open. To harvest seeds, hold flower heads over paper bag and tap off ripe seeds. *F. vulgare var.* azoricum is finocchio, or Florence fennel, the bulbous vegetable you see in the produce department. 2017 AAS Winner, 'Antares F1'	Full sun in rich, alkaline, well-drained soil	Perennial. Grow fennel in Zone 7b as an annual. Needs little or no fertilizer Grow in an isolated spot because, like dill, fennel self-seeds easily and can become invasive. Handle gently; does not like to be transplanted Attracts larvae of Swallowtail butterfly
Garlic *Allium sativum*	Lily family, along with onions, chives, shallots, and leeks. Used in Mediterranean, French, Mexican, and Asian cooking. May have health benefits of decreasing blood pressure and helping to prevent cardiovascular disease.	Full sun to part shade in rich, sandy loam Water regularly during growth and blooming period. Do not plant supermarket garlic. Chooose from softneck or hardneck varieties.	Plant in fall in rich, sandy loam. Weed area before planting and plant individual cloves deeply, with pointed end up. Dig garlic when leaves turn brown.
Lavender (English) *Lavandula angustifolia*	A mounded, fragrant plant with gray-green needle-like foliage and narrow 18 to 24 inch spikes of purple-blue flowers that bloom in summer. English lavender is most commonly grown. Flowers are used for garnishes, teas, sachets, potpourris, bath salts, and soaps. Pick flowers as they soon as they open and hang upside down to dry in a dark, airy place. Works well as a low hedge or border plant. Try 'Platinum Blonde' with variegated leaves and purple-blue flowers. Sweet fragrance.	Full sun in light, sandy, neutral to slightly alkaline, well-drained soil Buy plants, as seeds germinate slowly, and may not be true to species.	Perennial Fertilize lightly in spring as soon as new growth appears Prune back after flowering Divide plants frequently

Rosmarinus officinalis

POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Lemon Balm *Melissa officinalis*	Crisp, lemon-scented, deeply ridged leaves on low-bush plant with white flowers that bloom in summer. May be used fresh or dried in teas, jellies, fruit salads, and cold drinks. Can rub fresh leaves on wooden surfaces to impart fragrance and gloss. To harvest leaves, cut stems to the ground before the plant blooms and hang upside down in a hot room; avoid bruising leaves.	Midday shade in poor to moderately fertile soil that is sandy and well drained. Start from cuttings or divide mature plant.	Perennial Can be invasive After plants have flowered, shear back to keep them compact. Attracts bees
Lemon Verbena *Aloysia triphylla*	An open-growing, deciduous shrub from South America with insignificant white to pale lavender flowers in late summer. The lemon-scented foliage retains its full scent after drying. The leaves are used fresh for teas and salad dressings or dried for potpourris and sachets.	Full sun in organically rich, sandy, moist, well-drained soil Purchase plant or grow from cutting, as plants rarely produce seed.	Drops leaves and remains dormant in winter. Move inside. Do not fertilize; water only occasionally while dormant. Attracts whiteflies and other insect pests
Marjoram (Sweet) and Oregano *Origanum spp.*	Native to Mediterranean countries, marjoram and oregano are in the same genus. Both can grow to 2 feet tall with fragrant 1-inch leaves and tiny pinkish-white flowers that bloom in midsummer. Marjoram has a sweeter, more delicate flavor. Oregano is more robust. Use in Italian dishes and to flavor all meats, fish, vegetables, and salad. Pick leaves anytime for fresh or dried use until plant blooms. Remove flower buds to extend the harvest period of the leaves. There are various cultivars. Some are grown as ornamentals.	Full sun in light, slightly rich, sandy, and well-drained soil Buy plants, rather than starting from seed, to insure you have planted the oregano with the pungency you want.	Perennial Keep slightly moist at all times. Weed out volunteers that aren't as flavorful as the parent plant. Attractive in beds and borders



POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Mint *Mentha ssp.*	About 20 species and more than 1000 hybrids. Spearmint (Mentha spicata) and peppermint (M. x piperita) are most commonly grown. Spearmint has white flowers; peppermint flowers are pink or lavender. Peppermint has a sharper taste. Use in Middle Eastern dishes, with lamb or vegetables, such as peas or carrots, in iced tea and mint juleps.	Full sun to part shade Moist, rich, and slightly acid soil Buy plants or grow from divisions	Perennial Invasive. Spreads rapidly by runners. Grow in containers and divide every 3 years Prune regularly Recognize Mint family members by square stems.
Parsley *Petroselinum crispum*	Two common types are curly-leaf, used as garnish, and flavorful flat-leaf or Italian parsley. Cut leaves with scissors; dry leaves on a screen; wrap leaves in a paper towel and refrigerate; roll leaves in plastic wrap and freeze; or freeze with small amount of water in ice cube trays. Use fresh or dried to garnish almost any meat, egg, fish, or vegetable dish.	Full sun to light shade in rich, deep, moist, well-drained soil Best to purchase plants, as seeds germinate slowly	Biennial Grow as an annual as its foliage becomes bitter and tough in the second year. Fertilize when plants are 4 inches tall and again a month later. Plant enough to share with caterpillars of the Eastern Black Swallowtail butterfly.
Rosemary *Rosmarinus officinalis*	One to 3 foot plant with long, aromatic stems covered with fragrant, gray-green needlelike leaves. Pale blue flowers bloom in winter. Upright and prostrate varieties. Leaves, fresh or dried, are used in all types of meat, poultry, fish, and vegetable dishes, especially lamb, as well as in potpourris and teas. Use sparingly in cooking. Good in flower arrangements. 'Arp' is a good cultivar for our hot summers.	Full sun or partial shade in light, moist, well-drained soil	Perennial In Gloucester, keep protected from wind. Fertilize every spring when growth starts. Does not like to be moved
Rue or **Herb-of-Grace** *Ruta graveolens*	Grows up to 3 feet tall and wide. Powdery-coated, blue-green, club-shaped leaflets. Small yellow flowers. Used as ornamental in traditional knot gardens. Not used in cooking. Can cause severe gastric upset, hallucinations. Phototoxicity can cause burns and blisters.	Full sun in gritty, slightly alkaline soil with low fertility	Evergreen perennial Eaten by eastern black swallowtail caterpillars

POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Sage *Salvia officininalis*	A shrubby plant with woolly leaves and hairy stems. Spikes of blue-violet, pink, or white flowers bloom in late spring and early summer. Use in teas, poultry stuffing, and sausages. Pick leaves before plant blooms and again in late summer. Dry them on a screen. Harvest only the top 1/3 of the plant. Dry leaves on a screen. Green, Purple, and variegated varieties.	Full sun or light shade in slightly acid, sandy, and well-drained soil	Perennial Soil should be moist during the summer and dry in winter. In early spring, cut back to keep plants bushy and fertilize lightly.
Santolina or **Lavender Cotton** *Santolina chamaecyparissus*	Evergreen shrub with silvery leaves. Grows up to 2 feet tall and 2 feet in diameter. Strong camphor fragrance. Small yellow flowers early to midsummer. No culinary use. Often used in Elizabethan knot gardens.	Full sun in gritty, slightly alkaline soil with low fertility Water sparsely Does not tolerate wetness	Perennial Prune in early spring and after flowering to maintain round shape.
Savory (Winter and Summer) *Satureja ssp.*	A stiff, spreading, 6- to 12-inch plant with thick, narrow, gray-green leaves that have a strong peppery flavor. Summer savory flavor is more delicate. Use fresh or dried to flavor beans or other vegetables, as well as all meats and poultry. Summer savory is often used to reduce odor of cabbage and turnips. Pick leaves before the flowers open and dry them on a screen in a cool place.	Full sun in average, sandy, neutral to slightly acid, well-drained soil	Summer savory is an annual. Winter savory is a perennial. Fertilize in spring when growth starts. Pinch branch tips for bushiness; prune in fall or spring.
Sweet Woodruff *Gallium odoratum*	Creeping woodland herb, 8-9 inches tall, with whorled leaves and fragrant, white flowers from late spring to midsummer. Honey and vanilla scented herb is added to May wine, but not used in cooking. Ingesting large amounts can cause dizziness and vomiting.	Part to full shade in moist, humus-rich soil Grow from nursery plants or divisions.	Perennial Attractive ground cover, but can become invasive Self-seeds

POPULAR HERBS FOR GLOUCESTER (*continued*)

Herb	Description / Use	Location and Soil	Life Cycle and Care
Tarragon (French) *Artemisia dracunculus var. sativa*	A 3-foot tall woody perennial with dark green, narrow leaves; it rarely blooms. Light anise flavor. Use in béarnaise sauce, with fish, chicken, and vegetables, and to flavor vinegar. It is best if used fresh.	Full sun in rich, well-drained soil with average moisture in summer, but dry in winter Needs cold winter to grow well	Perennial Fertilize with fish emulsion in early spring and again in early summer
Thyme spp. *Thymus vulgaris* (most common)	A woody, spreading 6 to 18-inch tall plant of which there are more than 350 species and varieties. The gray-green leaves are joined in the spring and summer by lilac-colored flowers. Pick leaves any time for fresh use. Before the plants bloom, pick and dry leaves on a screen in a warm place. Use with all meats, fish, poultry, vegetables, and pasta. Try 'Wedgewood,' with variegated leaves and mild, sweet flavor. Less woody than common thyme.	Full sun in light, sandy, dry, well-drained soil	Perennial Prune back in spring to encourage bushiness and fertilize with cottonseed meal or bone meal. Divide when necessary. Will become woody after 2-3 years Creeping thymes can be used in pots, window boxes, and as ground cover.
Yarrow *Achillea millefolium*	Upright, 3-foot tall plant with feathery, 6-inch leaves. Flowers are white to pink, growing in flat clusters, up to 3 inches in diameter. Used for centuries to staunch bleeding. Not used in cooking. Attractive in live and dried flower arrangements. Many cultivars with variously colored flowers.	Full sun Average soil with excellent drainage Drought tolerant Grow from divisions	Perennial Deadhead to encourage more blooms Divide when plants become crowded May become invasive

"If you plant parsley, you need to plant much more than you need because the Swallowtail butterfly caterpillar loves parsley. This green with black stripes critter arrives uninvited to your garden to strip half of your parsley plants of their leaves."
– Marguerite Supler, GEMG

"To keep the feet of herbs dry, I place oyster shells around their base. The whiteness reflects the sun and the calcium is good for the herbs."
– Noel Priseler, GEMG Emeritus

"Most varieties of rosemary will do well if planted in a protected area with a southern exposure. Prostrate rosemary spreads, blooms all winter, and grows no more than 18 to 24 inches. Tuscan rosemary is tall (about 4 feet), sturdy, and has an intense aroma. Rosemary branches are lovely in floral arrangements. **– Florance Arnold, EMG Emeritus**

"Be sure to plant mint in a container unless you want it everywhere." **– Jan Price, GEMG**

GENERAL CARE OF HERBS

You can propagate herbs in several ways. Some herbs require partial sun for 3 to 6 hours per day and some grow best in shaded areas with no more than 3 hours of filtered sunlight daily. Most of Gloucester County lies within USDA Hardiness Zone 7b. Gloucester Point is in Zone 8a. Look for herbs that are labeled as hardy within your zone. The varieties of herbs you decide to plant may dictate the location of your herb garden or bed. A southeast-facing location for most herbs is desirable.

Most herbs require neutral to slightly alkaline soil with a pH of 6.0 to 7.5. If you are going to plant herbs directly into garden beds, soil testing is a necessity. You can obtain a soil test kit from the Gloucester Extension Office. Instructions for obtaining samples and a soil container are included. Return the sample to the Virginia Tech lab for testing. You will receive a report that tells you the soil pH (acidity or alkalinity) and the level of various nutrients in your soil so that you can amend it, if necessary. The cost may vary by a few dollars, depending on the soil tests you request. Whether your soil is primarily sand or clay, adding compost made from leaves, grass clippings, and other vegetable matter will improve soil structure and air and water movement within the soil. Commercially produced compost from a garden center also can be used. If you use compost generously, you probably won't need to fertilize your herb garden. If you feel that your herbs need a nutritional boost, try an organic fertilizer, such as fish or seaweed emulsion. Follow the package directions carefully. Too much fertilizer can be worse than too little. You can mix your own garden soil from 30% topsoil, 30% compost, 30% peat moss, and 10% perlite or pumice. (Gilbertie & Sheehan, 2012.)

Rich, fertile soil is not necessary for most herbs to grow successfully, but soil that drains well is important. Most herbs do not like wet feet, although there are a few exceptions noted in the table. Good drainage means that rainwater will soak into the soil in a relatively short time without running off or leaving your plants in a pool of standing water. You can ensure good drainage when planting herbs by digging to a depth of at least 12 inches and incorporating organic material into the soil.

"Over-watering kills more plants than under-watering." **– Gailon Friant, GEMG**

Herbs can be propagated in several ways. Most annual herbs are started from seed in late winter 4 to 8 weeks before the last frost date and transplanted to the garden after the soil has warmed. Start your seeds in a sterile potting medium, not garden soil.
You can take cuttings from perennial herbs and place them in a mixture of 1 part each sand, perlite, peat moss, and water. You can also divide the roots of perennials like mints to start new plants.
Some herbs, like dill, fennel, and cilantro, will self-seed. You may want to plant them in containers to keep them from spreading throughout the garden.

The fun begins with garden design, because herb gardens lend themselves to themes. You can plant informal beds or borders with simple rows or groupings or a formal bed with a complex Elizabethan knotwork design. Many commercial gardening books and magazines feature herb garden layouts, complete with the varieties and number of plants needed for each section. Your choice of herbs may dictate your design. If you like to use herbs in cooking, a kitchen garden filled with savory culinary herbs such as garlic, basil, and oregano is a necessity. Try to locate your garden near your kitchen door. Remember to check zone hardiness and hours of sunlight needed before investing in plants that may not work in your planned space.

An aromatherapy or cosmetic garden might contain lavender and rosemary. Herbs long used for medicinal purposes can be grown in a medieval monk's garden, although you should check with your doctor before self-diagnosing and consuming herbal medicinal preparations, as some herbs are toxic.
Parsley, dill, fennel, and rue attract caterpillars. If you are willing to share your plants with them, you will be rewarded with black swallowtail butterflies.
No matter which herbs you plant, bees, butterflies, hummingbirds, and other pollinators will feed in your garden, adding to your pleasure and helping the environment.

Raised beds are an ideal place to grow herbs. Raised beds give your back a break. In addition, soil in raised beds warms more quickly in the spring. Raised beds also help to protect your plants from rabbits, which enjoy munching on tender, green herbs.

Container gardening is another possibility if you have only a small area for planting, or if you wish to have culinary herbs close to your kitchen door. Attractive, fragrant herb plantings can decorate a deck or back porch. Boxes on windows or deck railings are another alternative, although sufficient drainage can be a problem. The opposite problem can occur, as herbs in containers dehydrate quickly in Tidewater summer heat. Container gardening is particularly effective for invasive herbs, like bee balm and mint.

"Ceramic chimney flues make good "in ground" containers to keep herbs, such as mints, from overtaking the entire garden.

– Mo Lynch, GEMG

HARVESTING, PRESERVING, AND COOKING WITH HERBS

If you plan to dry or freeze your herbs, harvest them between the end of May and the end of June. Around June 21, the summer solstice, is an easy date to remember for harvesting.

For the strongest flavor, harvest your herbs before they flower. Keep a dedicated knife or small pair of scissors for cutting your herbs. Harvest herbs in the morning before the heat of the day. Rinse them with a spray of cool water the day before you cut them or right after harvesting to remove dust and insects, and then lay them on paper towels until the excess water has dried.

You can lay herbs in a single layer on a tray, rack, or screen to air dry. Place the screen in a dark place that is free of dust and curious cats. You also can dry your herbs by tying the stems together and placing them upside down in brown paper lunch bags or wrapping them in cheesecloth. The coverings will protect the herbs from dust and insects. Hang them away from heat and direct sunlight in a room that has good air circulation. Both methods of drying will take up to several weeks.

You can dry them in a commercial dehydrator according to the product directions. Dry in the oven at less than 180° F for 2 to 4 hours, or until herbs are crumbly. To dry in the microwave, arrange a single layer of herbs on a paper towel, and cover with a second towel. Microwave in 30-second increments, turning them over each time until herbs are dry. Watch carefully to prevent burning the herbs. Microwave drying may destroy volatile oils.

Some herbs, including parsley, cilantro, basil, and chives, retain their color and flavor better when they are blanched in water in the microwave for about 30 seconds; immediately plunged into ice water; then frozen, either in plastic bags or in water-filled ice cube trays.

Store herbs in small, dark-colored glass jars, away from light and heat. When you cook with dried herbs, start with a smaller amount than you would normally use with fresh herbs, as the flavor of dried herbs is stronger. You can always add more flavoring, as needed.

"Drying herbs has been a fun thing for me to do for the last 30 years. When using fresh dried herbs, be careful because they are much stronger than those you buy in the store.

The first time I used sage it was so strong no one would eat the turkey dressing– not even the dog!

To dry herbs, hang them upside down in a shady and airy place. Most herbs can be dried in an oven set on warm. Personally, I use a dehydrator that works well for most herbs. Store dried herbs in a cool, dry place. I dry my herbs separately and then make a blend (all purpose) by mixing 8 or 9 different herbs.

Basil, mints, and chives freeze well."

– Mary Simpson, GEMG

CAUTIONS

Some herbs are poisonous and you should take extreme caution when planting or handling them. Always wear gloves, especially if you have a cut or abrasion on your hand. Avoid touching your eyes or mouth until you have washed your hands. Many toxic herbs have medicinal or homeopathic properties, but have no place in a garden where children and pets play.

Toxic herbs that will grow in Gloucester include black hellebore, deadly nightshade or bittersweet, foxglove, jimson weed or thornapple, lily-of-the-valley, and monkshood or aconite. Some of these plants grow wild along the roadsides or in fields.

Toxic Herb	Comments
Black Hellebore *Helleborus niger*	The root extract is used in homeopathic medicine. Can cause skin irritation, mouth ulceration, and gastrointestinal upset. Do not plant with kitchen herbs.
Bitter Nightshade or Bittersweet *Solanum dulcamara*	Traditionally used as a sedative and antispasmodic, and for its anti-bacterial properties. Causes headache, dizziness, gastrointestinal effects, seizures.
Deadly Nightshade *Atropa belladonna*	Long used in herbal and homeopathic medicine. Some plant compounds used in pharmacotherapy. Causes confusion, delirium, hallucinations.
Foxglove *Digitalis purpurea*	Contains powerful cardiac compounds that slow and strengthen heartbeat. Used in producing digoxin and digitoxin. Overdose causes nausea, vomiting, decreased heart rate, visual disturbances, and loss of appetite.
Jimson Weed or Thornapple *Datura stramonium*	Contains alkaloids. Leaves and seeds are poisonous and can cause hallucinations, coma, and death. No medical use.
Lily of the Valley *Convallaria majalis*	Contains cardiac compounds. Effects are similar to those of foxglove.
Monkshood or Aconite *Aconitum napellus*	All parts are poisonous. Acts as a cardiac and renal stimulant and may be subject to legal restrictions

Datura stramonium

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Notes:

HOUSEPLANTS

HOUSEPLANTS FOR OUR ENJOYMENT

Houseplants are good for our mental health. They help relieve some of our stress and anxiety, prolong attention span, and boost self-esteem. In addition, live plants have been shown to lower blood pressure in hospital patients. Studies have also shown that houseplants remove some toxins from the air and provide oxygen, though it would take an exceptionally large number of plants in most rooms to provide an appreciable effect.

SELECTION

When buying or sharing houseplants consider the following plant needs:

1. Light - from full sunlight to indirect light.
2. Humidity – many house plants are tropical and need moisture in the air.
3. Plant Condition – check for bugs and diseases.

CARE

Each family of plants has specific requirements (*see References & Resources*):

1. Acclimatizing - Does the plant need time to adjust to its new environment?
2. Container - Will the type of container material work for moisture retention, location, and decor?
3. Potting soil - Is the soil or mix appropriate for each plant's requirements?
4. Water – How much water does the plant need?

   OVERWATERING IS THE #1 KILLER OF HOUSEPLANTS!
5. Fertilizer - Plants are living things and each has certain nutritional requirements. How much food does the plant need?
6. Light – Does the plant require bright, natural light from a southern window, morning or afternoon sun from an east/west window, or will artificial light be enough?
7. Repotting and propagation - When and how should you divide, repot, or propagate your plant?

HOUSEPLANT ENVIRONMENT

Overwatering – Check soil moisture with your finger or a soil moisture meter and water only if dry. After watering, drain any water in the catch tray from under the plant. Some plants do better when watered from below (let plant absorb for 30 minutes, then discard excess). If your plants need extra humidity, try putting them on a pebble and water filled tray, keeping the bottom of the pot above the water level. The evaporating water will add moisture for the leaves.

Grooming – Remove any dead or fallen leaves and flowers. Plants breathe through their leaves and get dusty over time, so shiny leaves can be cleaned with a water dampened clean cloth and fuzzy leaves can be dusted with a soft brush. Most plant leaves can also be washed with warm tap water in the sink, just be sure to dry the leaves before putting them back in sunlight to prevent burn marks on the leaves.

Summertime – Most, but not all, indoor plants thrive in our humid outside summer environment. Once night temperatures are over 50°, place plants in full to part shade to prevent leaf scorch, leaf loss, and protect from wind. Be sure to check and/or treat for pests and diseases before bringing them back indoors for the winter.

"After your Amaryllis has bloomed, remove the stem and keep plant in a sunny window. If you plant the bulb outside in a sheltered, sunny location, it will re-bloom the next summer though smaller than the original."

– Deb Bartok-Newton, GEMG

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Fooling Mother Nature: Forcing Bulbs for Indoor Bloom - Virginia Cooperative Extension Pub/Hort/Hort76

Plant Societies:

1. African Violets - African Violet Society of America - avsa.org
2. Gesneriads - Gesneriad Society - gesneriadsociety.org
3. Orchids - American Orchid Society - aos.org
4. Cactus & Succulents - Cactus & Succulent Society of America - cactusandsucculentsociety.org
5. Begonias - American Begonia Society - begonias.org
6. Bonsai - American Bonsai Society - absbonsai.org
7. Bromeliads - Bromeliad Society International - bsi.org
8. American Horticultural Society - ahsgardening.org
9. American Rose Society - rose.org

Other websites:

1. Houseplant411.com
2. Houseplantsexpert.com
3. Better Homes and Gardens - bhg.com/gardening/houseplants

Plant Identification Apps for Android and iOS:

1. PlantNet
2. LeafSnap
3. PlantSnap
4. Google Lens
5. Seek
6. iNaturalist
7. PictureThis
8. Flora Incognita
9. Pinterest

Notes:

Gardening Activities for **January**

Lawn
For easier lawn maintenance, plan to get rid of hard-to-mow spaces by planting trees, ground covers, shrubs etc.

Shrubs
Water outside containers planted with evergreens. Apply miscible oil sprays to kill overwintering mites, aphids, and scale on shrubs.

Prune in January/February or in November/December summer blooming hydrangea, abelia, arborvitae, beautyberry, boxwood, butterflybush, chastetree, cherrylaurel, clethra, deciduous and evergreen cotoneaster, thorny eleagnus, deciduous and evergreen euonymus, gardenia, hibiscus, deciduous holly, juniper, osmanthus holly, photinia, deciduous and evergreen privet, potentilla, Rose of Sharon, yew, and althea. Prune chasetree, nandina, summer-blooming spirea, and St. Johnswort only in January/February.

Protect borderline hardy plants—aucuba, camellia, and gardenia—by mounding soil or compost over the crown after the ground surface freezes and by using windbreaks.

Trees
Apply miscible oil sprays to kill overwintering mites, aphids, and scale on deciduous trees.

Prune in January/February and November/December: redtwig dogwood, smoke tree, sumac, and any summer flowering trees that bloom on new wood: Prune January-March: crape myrtle and any summer flowering trees that bloom on new wood. Prune in January or December: mugo pine.

Orchard and Small Fruits
Sour cherry is a good fruit for the home garden. 'Montmorency' is a recommended variety as it pollinates itself and can be planted alone.

Herbs
Start thyme indoors from seed.

Perennials, Annuals, and Bulbs
Check to see if any perennials have been heaved by freezing and thawing of soil. Firmly press down any that have lifted and cover with 2 inches of organic mulch.

Mulch chrysanthemums with left-over Christmas tree branches.

To prolong bloom of poinsettias, protect from drafts and keep slightly moist.

Plant seeds of fibrous rooted begonia, alyssum, coleus, dusty miller, impatiens, marigolds, petunias, phlox, portulaca, salvia, vinca, gerbera, ageratum, baby's breath, statice, pansy, sweet pea, snapdragon, verbena, geranium, and petunia indoors now or in February for transplanting outdoors in spring.

Vegetables
Plant seeds of celery, celeriac, sweet Spanish onion, parsley, and anise indoors now for transplanting outdoors later in the spring.

Ground Covers and Vines
Cut and remove vines—bittersweet, wisteria, wild grape, poison ivy, Virginia creeper, and Japanese honeysuckle--that are strangling trees.

Houseplants
Turn and prune houseplants regularly to keep them shapely. To promote bushy plants, pinch back new growth.

Water houseplants only when the soil is dry to the touch.

Cut off the stalks of amaryllis close to the base once the bulb is no longer blooming. Keep bulb in pot and continue to water and fertilize. New foliage will grow.

Sterilize all tools, pots, and anything you use around your plants with one part household bleach to nine parts water. Soak about 15 minutes, rinse and air dry.

Gardening Activities for **February**

Lawns and Landscaping

Apply pre-emergence herbicide and crabgrass killer to tall fescue lawns before forsythia blooms fade—mid February to mid March.

Apply new grass seed during this period if do not use pre-emergence material which hinders germination of grass seed.

Apply crabgrass killer and pre-emergence herbicide to Bermuda/Zoysia grasses mid January-March 1.

Shrubs

Force branches of winter honeysuckle, viburnum, pussy willow, spirea, Japanese and mountain andromeda, rhododendron, and forsythia to bloom indoors for winter flower arrangements.

Prune roses in late February before buds start to swell, leaving 3-5 strong canes, each about 12-18 inches tall. Plant miniature roses now.

Check shrubs to see if freezing-then-thawing soil has pushed roots out of the soil. If so, place roots back in soil and mulch.

Prune pittosporum February-May. Refer to January for other shrubs to prune during this month.

Force branches of spicebrush, serviceberry, azalea, and mountain laurel to bloom indoors for winter flower arrangements.

Trees

Force branches of dogwood, red bud, quince, red maple, buckeye, birch, hickory, larch, and oak to bloom indoors for winter flower arrangements.

Prune deciduous trees to remove dead, dying, unsightly parts of the tree, sprouts growing at or near the base of the tree trunk, crossed branches, and V-shaped crotches.

Orchard and Small Fruits

Plant fruit trees while dormant and prune established ones before bloom.

Prune berry bushes now if not done in late fall.

Perennials, Annuals, and Bulbs

Cut back liriope close to ground level.

Cut back any dormant perennials, such as sedum 'Autumn Joy,' that have not been cleaned up yet.

Start indoors from seed gazania, geranium, alyssum, coleus, dusty miller, impatiens, marigold, phlox, portulaca, salvia, vinca, verbena, ageratum, begonia, and petunia if have not already done so.

Plant sweet peas and calendula now as they do not like heat.

Clean up and burn or destroy all debris around daylilies and iris. Divide daylilies if needed.

Pull back mulch around bulbs as foliage pokes through soil.

Feed iris 10-10-10 when crocus in bloom.

Vegetables

Plant spinach, early peas, onion sets, asparagus, radishes in late February and early March.

Destroy verticillium wilt fungus in garden soil by mixing broccoli pieces into your soil, watering and covering with plastic. Decaying broccoli produces a toxic gas that destroys the fungus.

Ground Covers and Vines

Prune vines--Clematis jackmanii, trumpet vine, etc., that bloom on new wood to lowest pair of strong buds.

Houseplants

Throw out Christmas poinsettias—and don't feel guilty.

Water gardenia, citrus and other acid-loving plants once a month using a solution of 1 teaspoon of vinegar to 1 quart of water.

Resume fertilizer schedules for houseplants; water all plants before.

Air layer dracaena, dieffenbachia, fatsia, and rubber plant in late February if they have grown too tall and leggy.

Wash leaves of philodendron, dracaena, rubber plant and other plants with large leaves and smooth foliage to keep leaf pores open.

Control pest problems organically. Put 20-25 drops essential oil of pine in a 32-oz. spray bottle. Spray plant, wipe bugs off, and spray again.

Clean plants using 2 tablespoons of baby shampoo to one gallon of water. Place in a spray bottle, spray leaves and wipe with soft cloth.

Gardening Activities for **March**

Lawns, Grasses, and Landscaping
Remove thatch and aerate lawn.

Apply pre-emergence herbicide and crabgrass killer to tall fescue lawns mid-March when forsythia drops its flowers.

Overseed during this period only if also not using pre-emergence material which hinders germination of grass seed.

Apply crabgrass killer and pre-emergence herbicide to Bermuda/Zoysia grasses to prevent weeds from mid January through March 1.

Apply pre-emergent weed control and add compost to ornamental beds.

Shrubs
Discard florist potted azaleas after blooming as most are not hardy enough to be established outdoors.

Pinch back new growth now on pyracanthas to make more compact.

Prune spring-flowering shrubs after flowering is complete.

Plant roses and bare-root shrubs while dormant, about mid March.

Prune hedges leaving the base of the plant wider than the top to allow sunlight to get to the bottom of the plant.

Move boxwoods now.

Spray horticultural dormant oil on shrubs and trees to smother fungal diseases and insect eggs such as scale.

Prune camellia (Sasanqua) and other shrubs not previously pruned in January/February.

Trees
Prune trees that bleed--River Birch and Maple--only after their leaves are fully developed.

Move dogwoods now.

Prune, if have not already, crape myrtle and dogwood.

Herbs
Plant garlic around roses to reduce aphids and other pests.

Ground Covers and Vines
Prune wisteria now.

Perennials, Annuals, and Bulbs
Let the weeding.begin!

Apply pre-emergent weed control and add compost to ornamental beds.

Divide and transplant summer and fall-blooming perennials--ajuga, astilbe, aster, bleeding heart, coral bells, daylilies, liriope, oxalis, phlox, chrysanthemums, and Shasta daisies.

Fertilize perennial beds with a timed-release, 10-10-10 or 8-8-8-, food.

Remove excess mulch from around perennials and bulbs.

Plant seeds of many perennials and annuals indoors in early March for transplanting outdoors after the last frost in mid April. Grow under grow lights or on sunny window ledge.

Cut back to almost ground level and divide ornamental grasses such as pampas grass and fountain grass.

Share with friends. Cut back shoreline plants to enjoy view in summer.

Plant pansies by mid March for bright shows.

Sow seeds of alyssum, California poppy, candytuft, larkspur, pansy, viola, phlox, pinks, Shirley poppy, snapdragon, stock and sweet pea as soon as the soil has thawed.

Fertilize spring flowering bulbs as leaves emerge.

Vegetables
Plant tomato and pepper seeds inside in early March for transplanting outside after last frost in mid April.

Grow under grow lights or on sunny window ledge.

Plant spinach, onions, radishes, broccoli, collards, cabbage, Brussels spouts, potatoes, carrots, Swiss chard, and peas now.

Purchase seeds for warm-weather plants, flowering vines, perennials, and vegetables.

Houseplants
Start fertilizing now for good growth.

Repot plants that are rootbound and cut back leggy plants to encourage compact growth

Water plants more frequently.

Gardening Activities for **April**

Lawns and Landscaping
Don't fertilize tall fescue lawns but apply annual weed control.

Plant grass seed in bare spots in lawn.

Fertilize Bermuda/Zoysia grasses this month, again in May and again in June.

Mow lawn only after it has grown at least two inches.

Leave first grass clippings of the season on the ground as they are rich in nutrients and contain fewer weed seeds than those collected later.

Shrubs
Fertilize azaleas and camellias only after they have finished blooming.

Prune forsythia, camellia (Japanese and Sasanqua), daphne, winter jasmine, pittosporum, privet (deciduous and evergreen), serviceberry, pussy willow, witch hazel, and mugo pine. Those that flower should not be pruned until after flowering.

Plant container-grown roses.

Prune roses to buds that point outward to encourage air and sunlight penetration. Dark colored canes denote dead wood—remove.

Feed roses monthly April through October.

Trees
Prune quince now.

Transplant trees and shrubs before hot weather arrives.

Houseplants
Give Easter lilies bright, indirect light and moist soil.

After blooming, plant in a sunny spot in the garden after danger of frost is over and they will bloom next year. To avoid transmitting a virus, plant Easter lilies away from other lilies.

Wait until warm weather—55 degrees--is definitely here before moving houseplants outdoors.

Begin to feed houseplants lightly.

Perennials, Annuals, and Bulbs
Harden off greenhouse plants before planting in the landscape.

Lift, divide, and replant chrysanthemums as soon as new shoots appear. Pinch out the tops frequently until July 4th to thicken the plant. Share with friends.

Plant snapdragons, cosmos, larkspur, calendula, dusty miller, bells of Ireland, aster, candytuft, cleome, cornflower, dianthus, and phlox.

Pull mulch back from emerging plants.

Buy annuals that have lots of buds but aren't in bloom. These plants are not root bound and will establish and grow faster.

Plant strawflower, money plant, hydrangea, statice, Chinese lantern, celosia, and globe amaranth to dry for arrangements.

Fertilize bulbs upon emergence of foliage with a 10-10-10 fertilizer and after the bulbs have bloomed. Let foliage die naturally.

Plant dahlias in late April and stake at the time of planting.

Plant gladiolus, lilies, cannas and other summer-flowering bulbs intermittently now through mid June to extend blooming period.

Label daffodils clumps that are too crowded; dig up and separate in July.

Vegetables
Add compost, not manure, to garden soil to improve it.
Also till into soil 10-10-10 fertilizer
Plant warm-season vegetables after April 21.

Herbs
Plant outside after April 21.

Plant oregano as a ground cover, parsley as an edging plant.

Ground Covers and Vines
Plant ground covers such as ajuga, small-leaved ivy, pachysandra, vinca minor, mondo grass, liriope and cast iron plant or ferns to cover barren spots under trees.

Orchard and Small Fruits
Plant strawberries now.

Average last killing frost in spring is April 4-April 21.

Gardening Activities for **May**

Lawns and Landscaping

Lengthen the time between waterings and increase the amount of water provided at one time to encourage root growth.

Apply broad-leaf weed killer to control summer annual weeds on fescue lawns.

Do not fertilize fescue lawn unless it was not fertilized in the fall.

Overseed Bermuda grass before July 1. Prepare soil by thatching or raking.

Fertilize Bermuda grass and Zoysia this month and again in June.

Apply second application of pre-emergence for crabgrass if needed

Shrubs

Prune rhododendrons and azaleas immediately after flowering, now or in
June.

Prune barbeery, bayberry, camellias (all), daphne, fothergilla, Indian hawthorn, mugo pine, mahonia, photinia, pieris, spring-blooming spirea, viburnum (deciduous and evergreen), winter jasmine, flowering almond, weigela, and yew.

Mulch to conserve water during summer.

Trees

Remove suckers and watersprouts on trees such as crape myrtles.

Mulch to conserve water during summer.

Prune maple, deodar cedar, hemlock, spruce, pine, buckeye, red bud, crabapple, and Harry Lauder's walking stick.

Herbs

Plant dill, lavender, fennel, yarrow, tansy, and parsley to attract beneficial insects to garden.

Plant garlic around tomatoes to reduce aphids and other pests.

Ground Covers and Vines

Prune honeysuckle and wisteria.

Perennials, Annuals, and Bulbs

Plant perennials such as columbine, cosmos, viburnum, and gaura.

Sidedress perennials and spring bulbs with 5-10-10 or 10-10-10 fertilizer.

Dig and divide dusty miller and replant the more vigorous, outside portions of the clump. Fertilize well while growing.

Pinch back zinnias, petunias, and salvia when 4 to 6 inches high to promote bushy growth. Pinch chrysanthemums until July 4.

Set out marigolds, petunias, ageratums, impatiens, salvia, vinca, and fibrous begonias and other annuals.

Plant Easter lilies outdoors, and they may flower again in late August.

Vegetables

Harvest peas, radishes, lettuce, and spring onions among other cool-weather vegetables.

Plant warm-weather veggies such as snap beans, okra, squash, sweet corn, lima beans, eggplant, peppers, sweet potato, cucumber, melon, tomatoes, etc.—either from seeds or transplants.

Houseplants

Divide indoor plants when new growth starts in spring and root cuttings during spring and summer when the plant is actively growing.

Move houseplants outdoors when night temperatures stay above 55° F. Progressively move them into their bright, summer locations so as not to sunburn them.

Move amaryllis, treated as an indoor plant, outside in shaded location and let continue to grow. If do not plan to bring back inside, plant it outdoors placing base of bulb 8 inches deep (top will be 3 inches deep). Protect over winter with 2-3 inches of mulch. Will bloom in late spring.

Plants that do not need deadheading include begonia, impatiens, coleus, alyssum, ageratum, lobelia, vinca, and salvia.

Gardening Activities for **June**

Lawns and Landscaping
Mow cool-season fescue lawns to 3 inches in height. If no rain, water at least one inch per week in a single watering. Watch for brown patch fungal growth; if present, apply fungicide.

Mow Bermuda/Zoysia grasses to 1 inch in height. Remove thatch greater than ½ inch by June 15. Aerate if soil compacted. If no rain, water heavily but not frequently.

Shrubs
Prune arborvitae, aucuba, beautybush, broom, deutzia, evergreen holly, Honeysuckle, spring-blooming hydrangea, kerria, leucothoe, lilac, mockorange, mountain laurel, osmanthus, pearlbush, pyracantha, rhododendron, serviceberry, and spring flowering shrubs not previously pruned as they complete blooming.

Take softwood cuttings of shrubs such as spirea, boxwood, and azalea.

Propagate miniature rose from stem cuttings. Take cuttings with four leaves, dip in rooting hormone, and insert into pots filled with moist potting soil. Place whole pot in a perforated plastic bag and place in a shady spot. Water as needed. By fall cuttings should be rooted.

Feed and prune azaleas by end of June as next year's buds will soon set. Feed camellias and rhododendrons with acid-loving food.

Shear hedges and screens after first flush of growth by tapering shape from narrow at top to slightly wider at bottom so light reaches foliage.

Watch for and control black spot and powdery mildew on rose foliage. Cut off old blooms at the second or third five-leaf leaflet.

Feed roses once this month; prune climbing roses after blooming.

Check evergreens for bagworms and remove by hand-picking them.

Trees
Continue to remove suckers from bases of trees.

Orchard and Small Fruits
Plant melons now that the soil is warm.

Houseplants
Keep indoor plants away from air conditioner drafts.

Perennials, Annuals, and Bulbs
Weed flower beds early in the morning.

Continue pinching back mums to reduce height and increase bushiness.

Take stem cuttings of woodies and perennials now.

Deadhead—remove faded blooms—and feed perennials and annuals to promote new flowers.

Divide spring and early summer flowering perennials after the blooms fade.

Feed annuals regularly or use timed-release fertilizer.

Dig and divide bearded irises immediately after the blooming season. Lift entire clump out of ground; cut off the side branches that have a cluster of leaves at the end; trim the leaves back to 8 inches; discard foliage and old center portion of the clump. Cut roots back to 3 inches long.

Remove yellow and dry foliage from spring bulbs and set out bedding plants to cover the bare spots.

Water container plants placed outside frequently.

Leach container soils to remove any mineral salts accumulated from fertilizer and hard water. Brown leaf edges and crusting on the sides of containers are indicators of salt problem. Water containers until they drain freely from bottom holes.

Group container plants together near a water source and out of the afternoon sun when going on vacation.

Control Japanese beetles in late June or early July by flipping off plants into a jar of soapy water or using a small, portable vacuum.

Vegetables
Plant pumpkins, gourds, beans, tomatoes, and squash if did not planted in May.

Keep tomatoes evenly watered for healthy fruit.

Herbs
Pinch herbs back regularly to keep them from getting leggy.

Pinch off flower buds on herbs used for aromatic foliage.

Gardening Activities for **July**

Lawns and Landscaping
Water lawns early in morning and water deeply (an inch) per week in a single watering.

Control broad-leaf summer weeds in Bermuda/ Zoysia grasses with herbicide ; fertilize Bermudagrass only.

Shrubs
Use garden hose to wash off spider mites on junipers and other plants.

Remove the azalea caterpillars from you azaleas by pruning the branches swarming with them and submerge them in soapy water. There is no control other than removal; they do harm the plants.

Prune Bigleaf or French hydrangeas (*H. macrophylla*—with large pink or blue snowball flowers) immediately after flowering.

Root holly, azalea, and camellia cuttings in a sand and peat moss mixture. Set in a cool, shady location.

Prune roses and sweetshrub lightly now.

Trees
Lightly prune shade trees, removing lower limbs to let light into gardens and lawn.

Take softwood cuttings of trees, shrubs, and perennials. Dip cuttings in rooting hormone and place in sand or vermiculite in a protected garden corner. Mist daily for several weeks until roots form. Transplant in small pots, then plant in garden in October.

Protect flowering dogwoods from drought stress by mulching in a wide ring with organic materials.

Houseplants
Monitor plants placed outdoors for pest problems and move to calmer spots if leaves are being wind damaged.

Protect indoor plants from strong sunlight that can cause foliage burn.

Root cuttings of coleus, fuchsia, geranium, poinsettia, shrimp plant, Swedish ivy, wandering Jew, wax plant, and others with succulent stems.

Perennials, Annuals, and Bulbs
Continue to deadhead perennials and roses.

Remove faded flower head and stem of yarrow down to second set of leaves.

Stop pinching back mums; fetilize them and let them develop flower buds for fall.

Pinch back snapdragons and cut back delphinium and phlox to promote a second blooming.

Propagate bleeding heart and oriental poppy after growth has stopped and foliage has disappeared. Dig up a root, cut it into inch-long pieces. Plant pieces in a mix of sand and rich loam, keeping them moist. Once tiny leaves shoot up, the plants will be ready to transplant in spring.

Sow seeds of hollyhocks, English daisies, foxgloves, violas, Canterbury bells, pansies, forget-me-not, and Sweet William now for next year's bloom.

Keep container plants well watered.

Lightly trim scraggly annuals and feed for flush of new growth and blooms.

Take cuttings of annuals and herbs you want to bring in the house for the winter; root them outdoors in shade.

Dig up crowded clumps of daffodils and separate bulbs.

Vegetables
Plant successions of vegetables such as beans and tomatoes midsummer for fall harvest.

Herbs
Preserve herbs by chopping them into an ice-cube tray, adding water, and freezing them.

Ground Covers and Vines
Prune wisteria to side buds on branches to keep vine under control and to promote flowering.

Root ivy and periwinkle now to fill bare spots in beds.

Gardening Activities for **August**

Lawns and Landscaping
Apply first fall fertilizer--1 pound of actual nitrogen per 1,000 sq. feet--to tall fescue lawn between August 15 and September 15.

Avoid deep cultivation in flower beds as loosening soil in hot dry days reduces water uptake by increasing loss of soil water and damaging surface roots.

Shrubs
Prune up to one third of the oldest canes on hydrangeas in late August to early September. Prune sumac.

Spray shrubs often with cold water to prevent heat-loving spider mites.

Remove 2-3 inches of mulch from base of shrub stems in mid-August to allow stems to harden for cold weather.

Water shrubs deeply once a week to prevent water stress which inhibits starting of buds for next season's bloom.

Fertilize roses; remove old, faded blossoms; destroy diseased leaves; prune lightly for fall blooms.

Trees
Prune beech and linden.

Check and remove suckers on crape myrtles, crab apples, snowbells and others prone to suckering.

Orchard and Small Fruits
Fertilize strawberries with 10-10-10.

Houseplants
Begin to repot those that have outgrown their containers.

Stop watering and feeding amaryllis. Store bulb in dry place and allow bulb to dry out in the pot. In early fall, remove bulb from pot and clean off dead scales. Clean pot and replace with new soil. Repot bulb. Move inside and in 8 weeks bulb will bloom again.

Herbs
Harvest herbs and dry for wintertime use.

Perennials, Annuals, and Bulbs
Deadhead both perennials and annuals for more blooms.
Cut back for the last time in early August fall flowers such as asters and dahlias so that they will not be too leggy when they bloom.

Order peony roots now for planting in September and bulbs for planting in late fall.

Take cuttings of annuals or sow seeds in pots for winter flowering indoors.

Don't let hybrid annual flowers go to seed as it weakens the plants and reduces blooms. Don't save the seeds as plants will be poor quality.

Remove all annuals that have finished blooming for the season.

Sow seeds of calendulas, Browallia, mignonette, ageratum, marigolds, snapdragons, and others indoors for winter flowering.

Plant fall-flowering bulbs such crocus, sternbergia, colchicum now.

Select flowers with petals in bright yellow, orange, pink and blue colors to preserve for dried winter arrangement.

Vegetables
Start fall garden with transplants of broccoli, greens, onions, cabbage, turnips, and spinach. Plant seeds of radishes, lettuce, beans, etc.

Stop vine crops from taking over the garden and lawn by pinching off fuzzy growing tips; this directs the plant's energy to ripening fruit.

Pinch off onion flower buds from top of plant to direct plant's energy into the developing bulb.

Plant a winter cover crop such as annual rye, red clover, and hairy vetch to enrich garden soil. Plant from August to November 1. If fall crops are growing, sow cover crop seeds between rows a month or less before expected harvest. By doing this cover crop gets a start and vegetables continue to grow.

Remove old plants that have stopped producing to eliminate shelters for insects and disease.

To determine when to plant vegetables in the fall, count back from date of first expected frost (11/8-11/28) the number of weeks a vegetable requires to mature.

Gardening Activities for **September**

Lawns and Landscaping
Be sure to apply first fall fertilizer to tall fescue lawn by mid September.

Lightly cultivate the lawn with a hoe as winter weeds emerge for a no-spray control. Alternately, apply a pre-emergent herbicide to prevent weed seeds from germination.

Seed fescue lawns by Oct. 15. Don't fertilize until seed has grown and new turf has been mown several times.

Don't overseed Bermudagrass lawns yet but wait until October.

Shrubs
Plant new shrubs now through October so they become well established before summer's drying heat.

Don't prune or fertilize shrubs any more this season. Stop feeding roses with granular fertilizers mid-month. Use liquid fertilizers until mid-October.

Prune and remove areas on roses containing black spot.

Disbud camellias japonica to get larger and better shaped blooms. To disbud, leave only the bud at the outer tip of the cluster, removing the mass of buds along the stem. Do this until November.

Trees
Plant new trees now through October so they become well established before summer's drying heat.

Don't prune or fertilize trees any more this season. Rake up debris under crabapple trees and dispose of it to control scab.

Orchard and Small Fruits
Check grapevines for dead-looking berries that have been attacked by black rot. Dispose of these berries in the trash.

Check ripeness of apples on trees by gently lifting an apple to see if the stem easily separates from the tree. If so, apples are ripe.

Houseplants
To avoid injury of indoor plants kept outside in summer, bring plants indoors when temperatures dip below 55 degrees.

Perennials, Annuals, and Bulbs
Continue deadheading perennials, but don't fertilize them any longer.

Divide canna lilies, daylilies, lilies-of-the-valley, violets, iris, and Shasta daisies now.

Plant outdoor ferns in early fall for best results.

Plant new perennials now through mid October so root systems establish before cold weather arrives.

Keep deadheading and fertilizing annuals until they begin to die.

Take cuttings of annuals—geranium, coleus, impatiens, begonias, and fuchsia--to overwinter indoors.

Sow annuals such as larkspur, nigella, calendula, sweet alyssum, pinks,sweet peas, Shirley poppies, annual scabiosa, and coreopsis now for early blooms in May and June.

Plant peonies now through October and no deeper than 3 inches below ground level.

Fertilize spring-blooming bulbs with a bulb booster type fertilizer.

Begin collecting wildflower and other flower seeds now through Oct.

Start collecting seeds from money plant, columbine, sweet pea, purple coneflower, larkspur, hollyhock, etc., for next year's plants.

Vegetables
Pick off tomato blossoms so plant nutrients go into existing tomatoes. Pick and wash green tomatoes each week. Store until gradually ripen.

Plant cold-resistant type lettuces, spinach, kale, turnip, radishes, cabbage, beets, carrots, cauliflower, snap beans, broccoli, and onion sets in early September.

Leave gourds on the vine until a light frost (early November) or until the stems turn brown. If must cut before frost, leave an inch or more of stem. Wash gourds in soapy water supplemented with household bleach; then apply light coat of non glossy floor wax. Let dry naturally in an area with good air circulation.

Plant asparagus crowns in a permanent garden spot.

Herbs
Plant parsley, summer savory, sweet marjoram, thyme, chervil, dill, oregano, basil, and chives indoor in pots for fresh herbs during the winter now through November.

Gardening Activities for **October**

Lawns and Landscaping
Overseed tall fescue no later than mid October.

Give a fescue lawn its second application of fertilizer this month.

To keep Bermudagrass looking good over the winter, overseed with annual ryegrass. Do not overseed Zoysia.

Shrubs
Leave old blooms on rose bushes to produce hips, which tell the bush to go into dormancy. Keep your rose bed free of weeds and foliage to reduce the hiding places for unwanted insects and fungal diseases.

Prepare new rose beds now for spring planting.

Tie up branches of climbing roses with broad strips of rags so that wind will not whip them against trellis and bruise them.

Pick bagworms from evergreen shrubs.

Prune potentilla.

Plant and transplant shrubs now. Keep well watered.

Trees
Plant and transplant trees now. Keep well watered.

Prune lightly weak or crowded branches of evergreens to help overcome any snow damage as winter approaches.

Prune elm, goldenrain, honeylocust, linden, poplar, sophora, sumac, and sourwood.

Do not mulch under trees until after ground freezes.

Orchard and Small Fruits
Harvest apples and pears.

Transplant most fruit trees and shrubs now.

Prune blackberries and raspberries now by removing stems that bore fruit. The non-bearing stems will produce fruit next year.

Ground Covers and Vines
Cut back herbaceous vines.

Perennials, Annuals, and Bulbs
Cut back perennials that have died back.

Move and divide crowded perennials.

Remove summer annuals and replace with cool-season plants like mums and snapdragons. Plant winter pansies, cabbages, and kales by end of month. Mulch plants to keep soil warm and deadhead pansies often.

Start planting spring bulbs now.

Dig out tender bulbs, dry them on a natural surface, and store them in a cool, dry place until next spring.

Vegetables
Thin cool-season greens, such as spinach and kale sown earlier.

Cut back asparagus plants as they start to yellow. Put a good layer of compost on your asparagus plants now or in November.

Plant seeds of carrots, beets, parsnips, and onions now so they will germinate and begin growth, finishing up next growing season.

Harvest root vegetables sown early this season.

Herbs
Clean up herbs. Remove old flower heads from woody and semi-woody plants. Prune only lightly. Add mulch, oyster shells, or stones under branches to keep from contact with soil.

Cut herbaceous herbs to the ground.

Continue to plant herbs indoor in pots for fresh herbs during the winter now through November.

Houseplants
Prune back large plants, especially tropical and semi-tropical plants, before bringing inside to save as indoor plants.

Spray plants with insecticidal soap to kill mites and insects.

Pare away some of the roots in root-bound plants and repot in pots one size larger. Fill in around the root ball with fresh potting soil.

Fertilize with a root-stimulating, water-soluble fertilizer. Don't fertilize again until new leaves are produced.

Start amaryllis bulbs for fall holidays.

Gardening Activities for **November**

Lawns and Landscaping
Apply third and final application of fertilizer to tall fescue lawns before December.

Apply winter weed control on fescue lawns.

Apply winter broadleaf weed control on Bermudagrass now through Dec. 15.

Shrubs
Prune roses back until they are waist high to prevent winter winds from whipping the canes. Mulch roses to protect during winter.

Continue to deep water evergreens until freezing weather occurs.

Protect roots of azaleas, camellias, laurel and rhododendrons by mulching with oak leaves or pine needles.

Trim hollies and other evergreens, such as magnolia, aucuba, boxwood, and pyracantha, to furnish material for Thanksgiving decorations.

Prune in November/December as well as January/February summer blooming hydrangea, abelia, arborvitae, beautyberry, boxwood, butterflybush, chastetree, cherrylaurel, clethra, deciduous and evergreen cotoneaster, thorny eleagnus, deciduous and evergreen euonymus, gardenia, hibiscus, deciduous holly, juniper, osmanthus holly, photinia, deciduous and evergreen privet, potentilla, Rose of Sharon, yew, and althea.

Remove and destroy bagworms and silvery egg masses of tent caterpillars from shrubs.

Trees
Select a live tree for your Christmas tree. Best selections for Virginia are Fraser fir, white pine, Norway spruce, and blue spruce. Plant outdoors after holidays.

Cut away suckers from the base of lilac, forsythia, and crape myrtle.

Remove and destroy bagworms and silvery egg masses of tent caterpillars from trees.

Prune in November/December as well as in January/February redtwig dogwood, smoke tree, sumac, and clethra (summersweet).

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Perennials, Annuals, and Bulbs
Add compost to the annual and perennial beds.

Cut back dormant perennials to about 3 inches after several killing frosts.

Cut chrysanthemums down near the ground after they have flowered.

Fertilize pansies.

Plant spring-flowering bulbs after the first fall frost—usually Nov. 11-28.

Tulips and Dutch iris need to be planted in cold soil. Plant tulips deep—8 to 10 inches—to produce large, uniform flowers.

Lightly fertilize bulb beds.

Plant paper-white narcissus in stones in a bulb pan in early November to have blooms for Christmas.

Vegetables
Till compost into vegetable garden or new gardens for next year.

Herbs
Plant parsley, summer savory, sweet marjoram, thyme, chervil, dill, oregano, basil, and chives indoor in pots for fresh herbs during the winter.

Ground Covers and Vines
Fertilize wisteria after leaves have fallen to avoid excess top growth and lack of bloom.

Houseplants
Reduce fertilization and water until late April/May when new growth resumes.

Remember cacti go dormant during the winter, so keep them cool (50F) and withhold water until they show signs of growth in spring.

Orchard and Small Fruits
Remove all mummified fruit from fruit tress and rake up and destroy fruit and leaves on the ground

Keep mulch pulled away from the base of trees to avoid mice chewing the bark.

Prune grapevines now and in December.

Average first killing frost in fall is 11/8–11/28.

Gardening Activities for **December**

Lawns and Landscaping
Apply lime now to add calcium to soil and to combat acidity.

Minimize walking on a frozen lawn to reduce winter damage.

Fill and grade around the yard now so soil will settle during winter.

Prepare soil in new rose beds for bare root planting in February. Double dig the soil adding compost or peat.

Shrubs
Prune in November or December the following: abelia, althea, arborvitae, beautyberry, boxwood, butterfly bush, cherry laurel, deciduous and evergreen cotoneaster, dogwood (redtwig), deciduous and evergreen euonymus, eleagnus (Russian Olive--Thorny), gardenia, hibiscus, Rose of Sharon, summer-blooming hydrangeas, juniper, osmanthus (holly), photinia, privet, sumac, and yew:

Propagate forsythia, spirea, Japanese quince, wisteria, mock-orange, trumpet vine, viburnum, and other deciduous shrubs by taking hardwood cuttings. Apply a rooting hormone to cuttings.

Trees
Keep your Christmas tree holder filled with water on a daily basis.

Prune in November or December clethra (summersweet), dogwood (redtwig), and smoke tree.

Orchard and Small Fruits
Prune fruit trees as long at the temperature is above 45 degrees.

Keep mulch away from tree trunks to prevent mice/rodents from chewing the bark.

Perennials, Annuals, and Bulbs
Cover tender perennials and annuals lightly with evergreen boughs (discarded Christmas tree branches) to protect from drying.

Protect first-year peonies with light mulch such as pine straw.

Fertilize pansies once a month and prune as they become leggy.
Plant tulips 8 to 10 inches deep to delay early sprouting. Daffodils may still be planted now.

Bury tender bulbs previously dug up in potting soil, peat moss, or sawdust if they begin to shrivel.

Vegetables
Continue to add organic compost to the vegetable garden.

Herbs
Make herb vinegars. Add 4 ounces of fresh herbs to 1 quart of wine vinegar and allow to set for two weeks. Pour in decorative bottles.

Houseplants
Trim away, following the natural shape of the leaves, dried brown leaf edges on tropical plants.

Keep poinsettia evenly moist and protect it from being chilled or subjected to drafts. Keep in full sunlight at between 65 and 72F.

Wash leaves of plants with large leaves and smooth foliage (philodendron, dracaena, rubber plant, etc.) with clear water to remove dust and grime.

Collect snow (contains minerals) and let melt and use to water plants.

Wrap gift plants which you transport outside in newspaper; even a few minutes of cold can harm a plant.

Since there is not much outside gardening activity this month, relax and engage in some armchair gardening. Now is the time to review all those seed catalogs that have started to pile up on your table. Make your seed and plant selections for next year; be adventuresome and try something new. It is also a good time to inspect all tools, sharpen some and replace others.

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