



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.

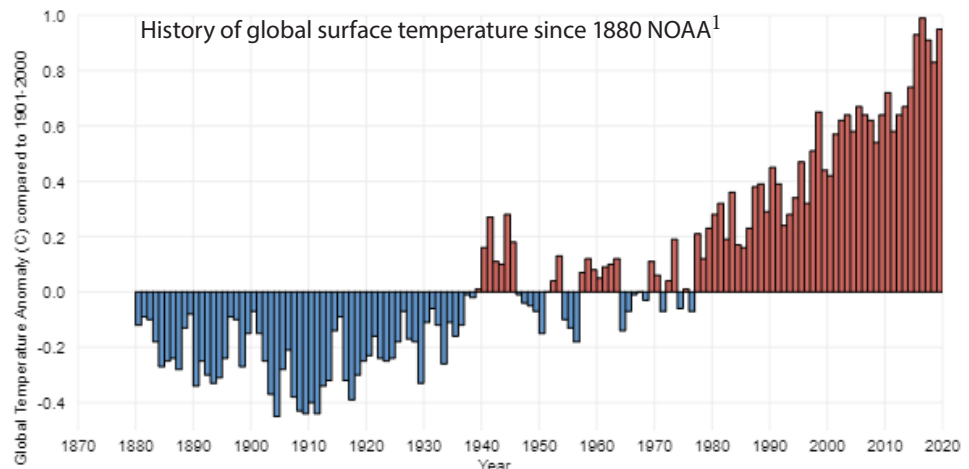
We will review other ways to live “Green” in some of the upcoming sections of this chapter including:

- 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



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 Area⁴

*	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.

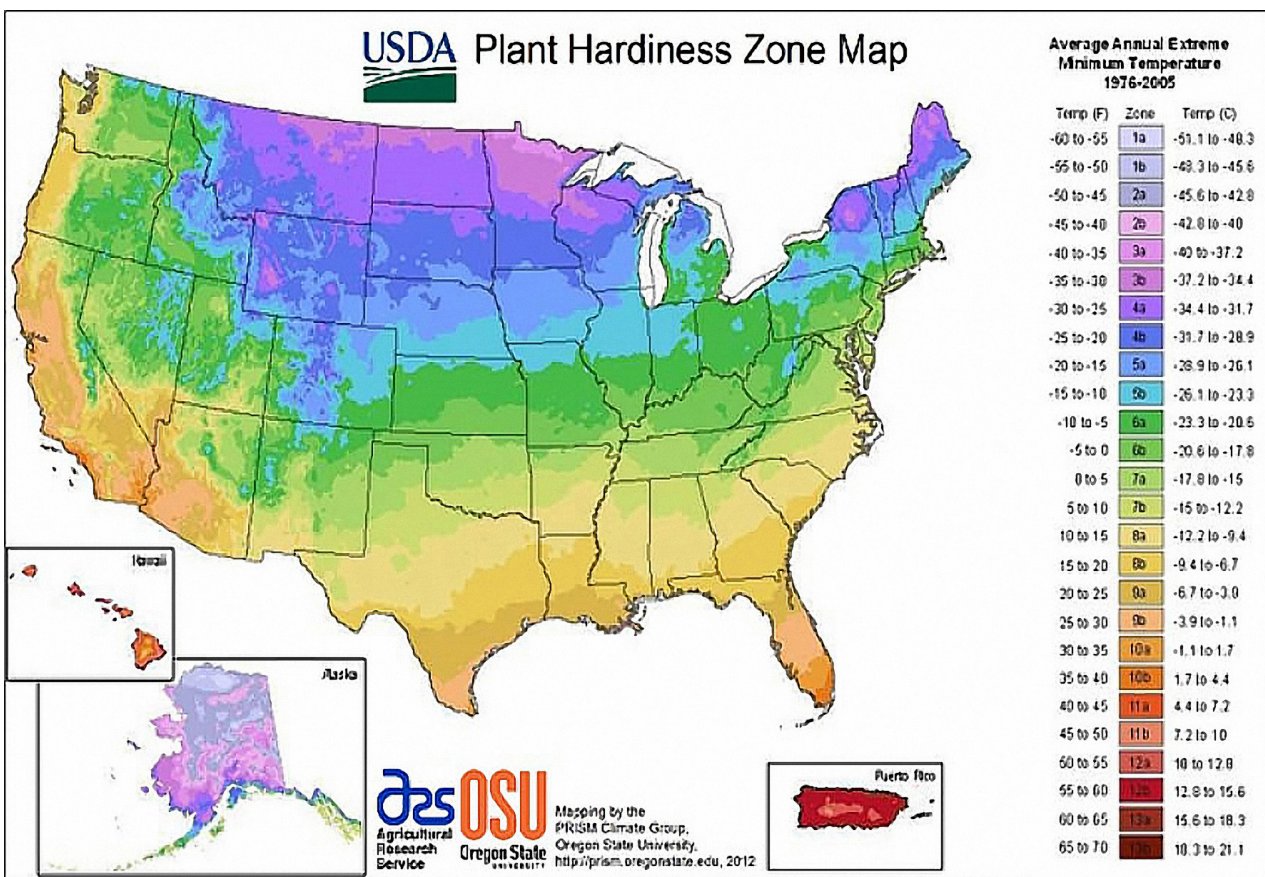


Table 2. Average High and Low Temperature Degrees (F) for Gloucester Area⁶

*	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.

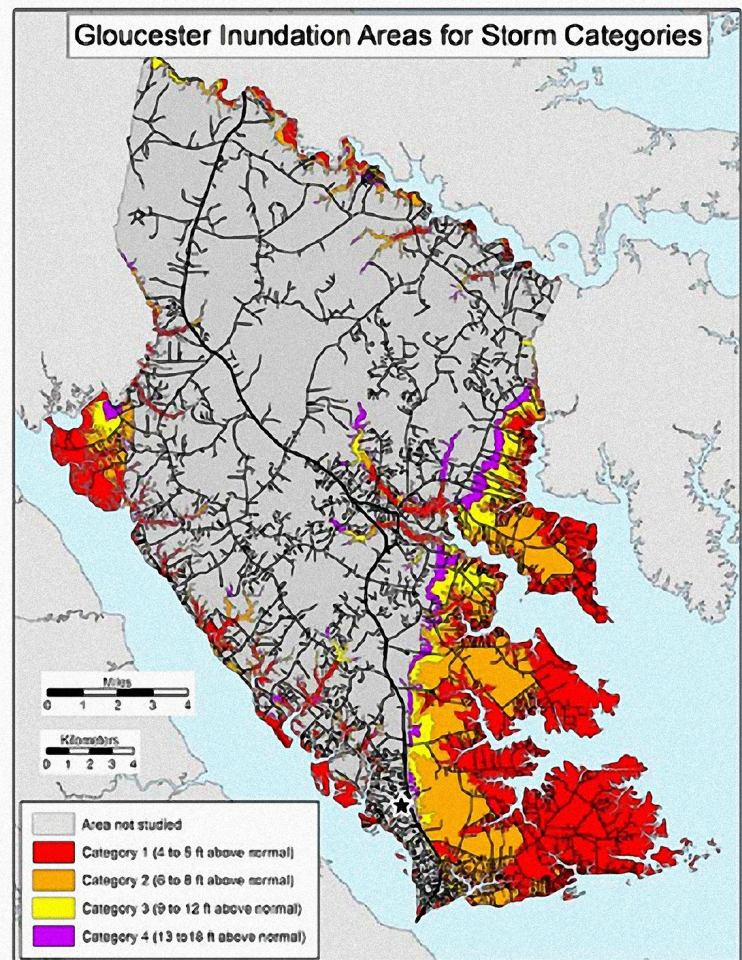
Flooding

“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 Bay-scaping 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/recurrent_flood.jpg

SOIL

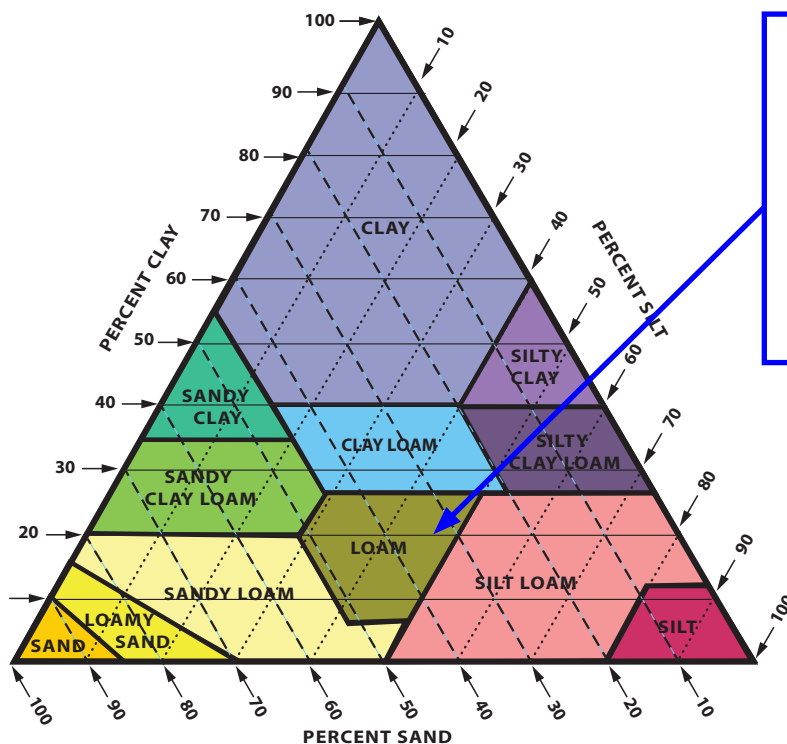
Soils of our area, the coastal plain of Virginia, are formed from unconsolidated sediments deposited when the ocean level was much higher than at present. As sea levels fell, many of these deposits were reworked by meandering rivers and streams that originate in the western part of the state and flowed 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.

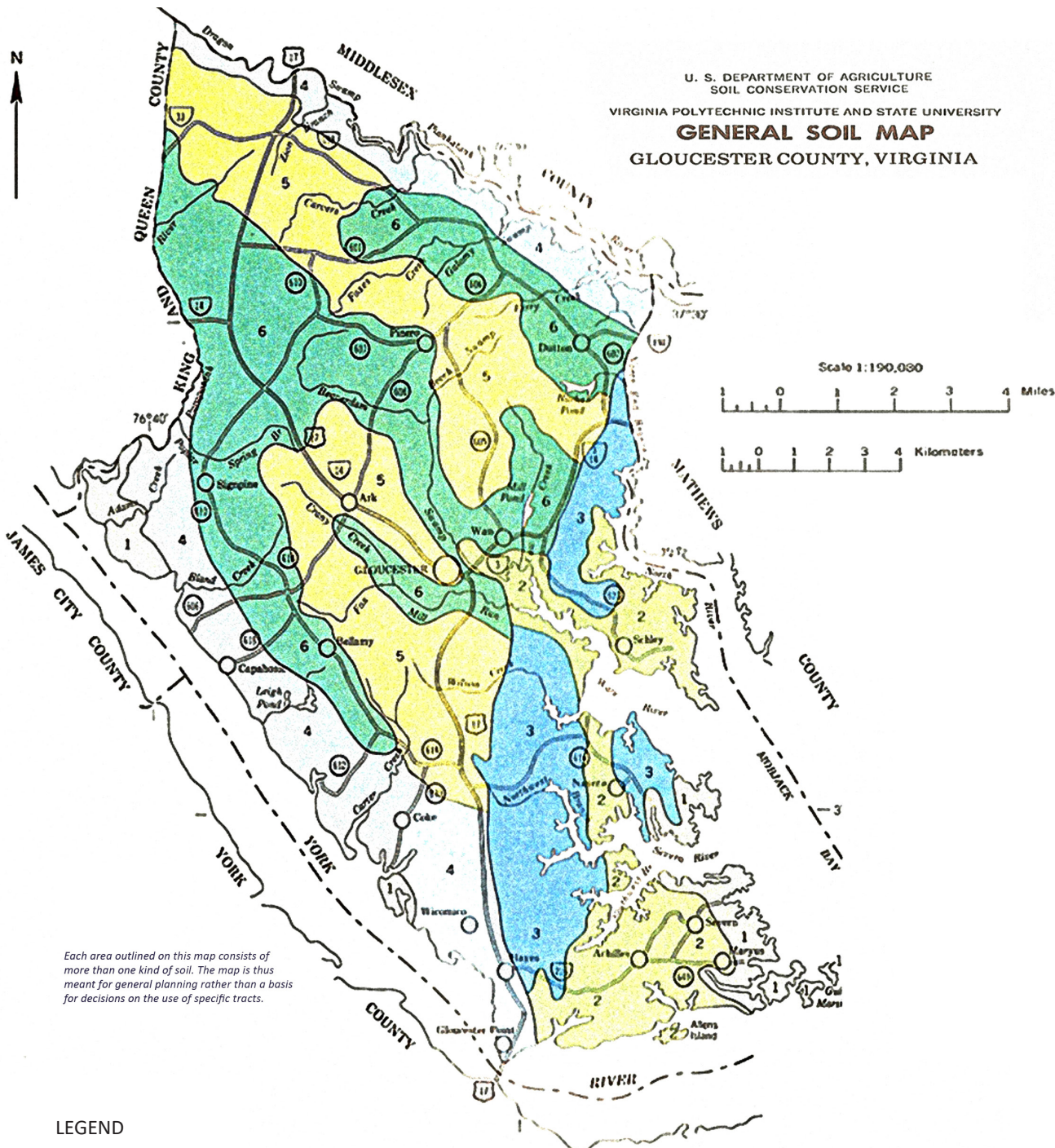


Loam soils have a mineral content consisting of 25-50% sand, 28-50% silt, and 7-28% clay.

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

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

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

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.

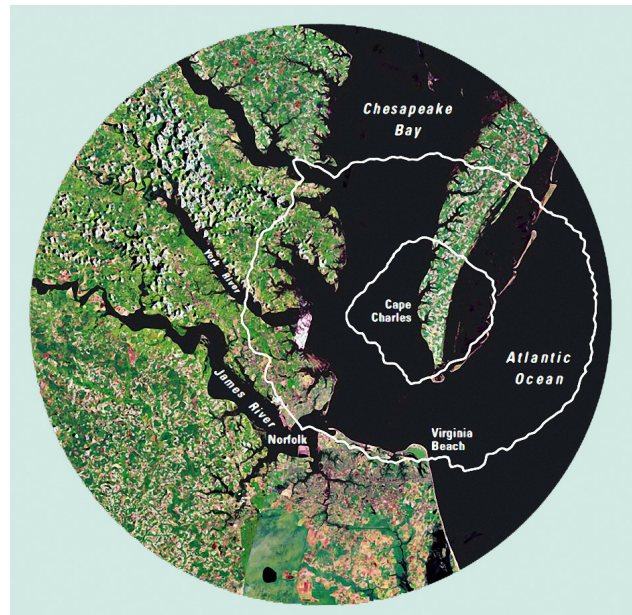
The outer rim of the impact crater crosses Gloucester County as an arc running from the Rt. 3 bridge across the Piankatank River, to Cow Creek on Rt. 14, and across the York River around Rosewell. Thus, all of Mathews County and much of Gloucester County are on the rim or inside the outer rim of the 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

