Home Landscape Guide for the central Shenandoah Valley

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Preface

This booklet is intended primarily for first time homeowners or for homeowners who would like to make their home landscape more functional and eco-friendly. I realize that many homeowners now rely on landscape service companies to plant and maintain their turfgrass and other outdoor plants. However, it is still useful for homeowners to have some basic knowledge of landscape design and maintenance. The landscape service industry is largely an un-regulated industry. Some industry workers have extensive training, while others have little or none. So even if you don’t plant or maintain your own landscape, being a knowledgeable consumer can help you make sure that the landscape operator doesn’t perform unnecessary or ineffective services.

I spent my career as a research and extension horticulturist in central Florida, and several years ago wrote a home landscape guide for that area. More recently, after moving to Harrisonburg, Virginia I decided that a similar guide could be useful for residents of the central Shenandoah Valley (hereafter referred to in the text as the Valley). Many landscaping principles and practices apply to both regions; but, of course, the climates are quite different and many of the landscape plants adapted to central Florida are not suitable for the central Shenandoah Valley and vice versa.

The central Shenandoah Valley’s Natural Environment

Climate

The Valley has a humid continental climate, with typically warm to hot summers and cold winters.

The daily high temperatures in July are frequently in the mid 80s, while the daily lows in January tend to be in the high teens to low 20s. The average number of frost-free days in the Valley is 165, and this period typically starts in mid May and ends in mid October.

The Valley is in USDA plant hardiness zone 6, which has an average annual minimum temperature of between 0 and -10 F. Visit

http://planthardiness.ars.usda.gov/ to see the USDA plant hardiness zone map.

The Valley is the driest region of Virginia (as a result of the rain shadow effect from the Allegheny Mountains on the west side the Valley and the Blue Ridge Mountains on the east side of the Valley). However, precipitation (in the form of rain or snow) is relatively evenly distributed throughout the year. Summer is generally the wettest time of year, with an average rainfall of 3-4 inches per month, while winter tends to be the driest time of year, with 2-3 inches of
precipitation per month. Fall and spring precipitation can vary considerably from year to year, but is normally intermediate between summer and winter levels.

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**Soil**

In the Valley, soil characteristics, including depth, vary depending on factors such as the slope of the land, proximity to streams and rivers, and history of use (e.g. history of cultivation or lack of cultivation). Also, the parent material from which these soils were formed (primarily limestone, shale, and sandstone) has an influence on soil pH (acidity or alkalinity) and texture.

To assess the fertility of the soil in your landscape and to receive fertilizer recommendations for certain turfgrasses and landscape plants, consider having a sample of your soil tested. Collecting a sample is simple and the cost of analysis is only $10/sample at the Virginia Tech Soil Testing Lab. For more information see VCE’s online publication ‘Soil sampling for the home gardener’ [http://www.pubs.ext.vt.edu/452/452-129/452-129.htm](http://www.pubs.ext.vt.edu/452/452-129/452-129.htm) or call your county extension office. (See appendix for contact information.)

Another helpful publication on the VCE website [http://www.ext.vt.edu/](http://www.ext.vt.edu/) is fact sheet 426-711 (Building healthy soil).
Landscape design

Generally, the types and placement of plants in the home landscape can be determined by the function you want them to serve. Here are some possible functions:

- focus attention on your home’s most outstanding attribute (which in most cases is the front entrance)
- shade the west, east and south windows from direct sunlight during the summer
- slow cold winter winds (which generally come from the north and northwest)
- create outdoor living and recreation areas
- block unsightly views
- provide habitat for wildlife
- provide fresh spices, vegetables, fruits, and flowers for home use

A plant can serve more than one function. And in fact, on small residential lots plants often serve multiple functions. For example, in my Florida home landscape, I planted a lemon tree to provide my family and friends with fresh lemons. But this tree also shaded a west facing window from the afternoon sun and provided perches for small birds.

If you don’t enjoy yard work and want to keep landscape establishment and maintenance costs to a minimum, strive for a simple design and choose plants that are cold hardy, drought tolerant, and require little, if any, pruning. In the Valley, this includes trees such as northern red oak (Quercus rubra), eastern white pine (Pinus strobus), and kousa dogwood (Cornus kousa); shrubs such as burkwood viburnum (Viburnum burkwoodii), and meyer lilac (Syringa meyeri ‘Palibin’); and ground covers such as prostrate juniper (Juniperus horizontalis) and lily turf (Liriope muscari).

Use native plants (in preference to non-native or exotic plants) – whenever possible. They are generally low maintenance and often provide valuable food and shelter for birds, insects, and other wildlife.

Include only as much lawn in your design as you need for recreation – because turfgrass requires more regular maintenance than just about any other type of plant.

Lawns continue to be the norm in America, despite the fact that large regions of the country have climates that are too hot, cold, or dry for turf grasses to grow naturally. Science and technology, in the form of new varieties, power mowers, string trimmers, irrigation systems, synthetic fertilizer, weed killers, and pesticides, have made it possible for homeowners from Florida to California to grow turfgrass. Billions of dollars are spent annually on this landscape aesthetic, and yet many lawns fall short of what is considered ideal: a single type of grass, without brown patches, bare spots, or intruding weeds, kept neatly edged and mown to a uniform height.

Is a lawn – an area of seldom used space – really worth all the time, energy, and money we devote to it? In the last few decades there has been movement toward lower input landscapes. These include shade gardens and beds of low growing shrubs and herbaceous perennials separated by paths made with stepping stones or mulch. Ecologically, these alternative landscapes make more sense than a monoculture of non-native turf. And although beauty is in the eyes of the beholder, many now think they are more beautiful and interesting, as well.
Instead of scattering shrubs and trees throughout open areas, group them in mulched beds. This will make mowing easier and faster.

If you only have funds for a limited number of plants you’re likely to get the most bang for the buck with a few medium to fast growing shade trees. They can greatly reduce the heat load on your house – if planted in the proper location (see below) – and eventually will give you the opportunity to plant some interesting understory (shade-loving) plants.

By planting a tree, you can also help reduce the amount of carbon dioxide (CO\textsubscript{2}) in the atmosphere. (An increasing concentration of CO\textsubscript{2} in the atmosphere is resulting in higher mean global air temperatures.) Growing trees absorb CO\textsubscript{2} from the air and use the carbon to make wood. Trees sequester about 1.5 pounds of CO\textsubscript{2} for every 1 pound of new wood they produce.

Evergreen trees and shrubs, such as white pine and certain varieties of arborvitae (*Thuja* spp.), can be used to block unsightly views, create privacy for outdoor living areas, and serve as windbreaks, but fencing can also accomplish these functions (often more quickly and with less regular maintenance). A common mistake is to plant too many shrubs and trees. Give them room to reach their mature size, realizing that for plants purchased in small containers this can take four or five years for shrubs and 10 years or more for trees.

Years ago my family and I moved into a new house. There were a few medium sized oak trees in the front yard and a couple of small sabal palms in the side yard, but other than these native plants, our lot was pretty much a blank slate. My wife and I both have degrees in horticulture, so you’d think we’d know what to plant and where. But despite our training we’ve made plenty of mistakes over the years. One such mistake was planting a broad-leaf shrub a few feet in front of our house. We bought a three-gallon size plant, and our plan was to train this plant into a multi-stemmed specimen shrub. The plan worked until a few years ago, when we realized we could no longer keep this plant a reasonable size without distorting its shape and rendering it unattractive. Finally, I did the deed: I spent almost an entire day, sweating and grunting, getting rid of this plant, roots and all. The small, inexpensive shrub we had purchased over a decade prior had grown into a house-eating monster with a trunk circumference of two feet!

So before you purchase a cute little plant and put it in your yard, consider its mature size and the work or expense that is involved in its removal. Remember the expression “Right plant, right place.” It will serve you well!
A great way to add splashes of color to your landscape without using a lot of water is to grow annuals and herbaceous perennials in large sturdy pots filled with a commercial potting mix. Potting mixes, which are composed mostly of organic matter, have a high water holding capacity and therefore are efficient mediums in which to grow drought sensitive plants. Usually just one to two gallons of water per pot will keep potting mixes moist for several days – or even longer if the pot is in a shady location.

Proper placement of shade trees in the home landscape

A.W. Meerow and R.J. Black have written an excellent article (http://edis.ifas.ufl.edu/EH141) titled Enviroscaping to Conserve Energy. Here are some of the highlights of the article:

- House walls are the most practical surface to shade because new tree plantings take many years to cast an effective shadow on the roof.

- In general, the target areas for shading are the walls facing west, east, and south – in that order. Windows provide the most direct entry for heat into a house. Consequently, special attention may need to be given to walls containing the most windows.

- To provide effective shade within 10 years, plant the tree 7 to 20 feet from the wall. (The distance you choose should depend on the expected mature height and breadth of the tree.)

- Deciduous trees (i.e. trees that lose their leaves in the fall) are recommended for planting on the south, southeast, and southwest sides of the house. Their bare winter canopies allow the sun to warm the house during the day. Evergreen trees (i.e. trees that retain their leaves year-round) are recommended for planting at the northwest corner of the house. This type of tree, in addition to the shade it provides, can be a barrier to cold winter winds.

For more information on landscape design, see Garden & Landscape Design at http://www.pubs.ext.vt.edu/category/garden-landscape-design.html.
Plant material

Trees

Mature shade trees are giant air conditioners. They not only help remove dust and other pollutants from the air, they cool the air (by dissipating heat from the surfaces of their leaves) in a process called transpiration. Evaporative cooling takes place as a result of transpiration – as it also does when we perspire. So, by stepping under a big oak, you’re, in a manner of speaking, letting the tree do some of the sweating for you!

Unfortunately, many new neighborhoods don’t have any mature shade trees. They are on land that was formerly planted in pasture. Hopefully the developers of these neighborhoods have established trees that will someday provide homeowners and their children, who are out mowing the lawn or playing ball, a pleasant respite on a sunny summer day. If they haven’t and you live in one of these neighborhoods, or your yard, for whatever reason, is without shade, here is some information on trees that are generally available from nurseries and are well adapted to Valley conditions:


- **Black gum** (*Nyssa sylvatica*). Height: 30-50 ft; spread: 20-30 ft.; Growth rate: slow – medium. Great specimen tree. Its fall color can be outstanding.

- **Chestnut oak** (*Quercus montana*). Height: 60-70 ft.; spread: 60-70 ft.; Growth rate: medium. Grows well on dry, upland sites. Leaves turn orange-yellow to yellowish brown in fall.


- **European beech** (*Fagus sylvatica*). Height: 50-60 ft.; spread: 35-45 ft.; Growth rate: slow to medium. Can develop into a beautiful specimen tree. Leaves turn russet brown and golden bronze in fall.

- **Japanese zelkova** (*Zelkova serrata*). Height: 50-80 ft.; spread: generally less than height; Growth rate: medium to fast. Leaves turn yellow-orange-brown in fall. Related to elms.

- **Littleleaf linden** (*Tilia cordata*). Height: 60-70 ft.; spread: 30-45 ft.; Growth rate: medium. Leaves
dark shiny green in summer, turning yellow in the fall.

- **London planetree** (*Platanus ×acerifolia*). Height: 70-100 ft.; spread: 65-80 ft; growth rate: medium to fast; its bark is striking, especially in the winter.

- **Northern hackberry** (*Celtis occidentalis)*. Height: 40-60 ft; spread: 40-60 ft.; growth rate: medium to fast. Fruit is a popular food of many birds.

- **Northern red oak** (*Q. rubra)*. Height: 60-80 ft.; spread: 60-75 ft.; growth rate: fast. Leaves turn russet-red to bright red in the fall.

- **Red maple** (*Acer rubrum)*. Height: 40-60 ft.; spread: 25-50 ft.; growth rate: medium to fast. The most outstanding feature of this species is its fall color, which can be yellow, orange, and red – sometimes all on the same tree. It does best when growing in moist soils.

- **Sweetgum** (*Liquidambar styraciflua)*. Height: 60-75 ft.; spread: 40-50 ft.; growth rate: medium to fast (most vigorous on moist sites). This species can produce some brilliant (orange and red) fall color. One downside of sweetgum: its hard spiny fruit, when on the ground, can be tough on bare feet. (Suggestion: look for non-fruiting varieties.)

- **Tulip poplar** (*Liriodendron tulipifera)*. Height: 70-90 ft; spread: 35-50 ft.; growth rate: fast; No serious pest or disease problems. Leaves turn yellow or golden yellow in fall.

- **Willow oak** (*Q. phellos)*. Height: 40-60 ft.; spread: 30-40 ft; growth rate: medium. Requires pruning in early years to establish a single leader (trunk). Leaves turn yellow, bronze-orange, or russet-red in fall.

- **Yellow buckeye** (*Aesculus flava)*. Height: 50-75 ft; spread: 30-55 ft; growth rate: medium. Showy yellow flowers in mid spring. Leaves turn a pumpkin orange in the fall.

- **Yellowwood** (*Cladrastis kentukea)*. Height: 30-50 ft.; spread: 40-55 ft.; growth rate: medium. Leaves emerge a bright yellow green, are bright green in summer, and turn various shades of yellow in fall. Good choice if space is limited.

* A Virginia native species
** Height and spread measurements are for mature trees.

Additional information on these and other trees can be found at [http://www.pubs.ext.vt.edu/category/trees-shrubs-groundcovers.html](http://www.pubs.ext.vt.edu/category/trees-shrubs-groundcovers.html). Also, be aware that there are varieties (some that are relatively new) of many of the species mentioned above. These varieties can vary in growth habit, leaf color, and other ornamental traits. For guidelines on planting trees and shrubs, see [http://www.pubs.ext.vt.edu/430/430-295/430-295.html](http://www.pubs.ext.vt.edu/430/430-295/430-295.html). The services of a trained professional, preferably a certified arborist, are recommended when a large tree needs limbs removed. The International Society of Arboriculture ([www.isa-arbor.com](http://www.isa-arbor.com)) keeps a list of certified arborist by state.
Shrubs

Here are some shrubs that have been relatively trouble-free in the Valley:

- **Arrowwood viburnum** (*Viburnum dentatum*). Height: 6-8 ft.; spread: 6-15 ft.; growth rate: medium. Leaves dark green in summer, yellow to reddish purple in fall. Will grow in full sun or partial shade.

- **Burkwood viburnum** (*V. ×burkwoodii*). Height: 8-10 ft.; spread: 5-7 ft.; growth rate: slow to medium. Will grow in full sun or partial shade. Fragrant flowers.

- **American holly** (*Ilex opaca*). Height: 15-30 ft.; spread 18-40 ft.; growth rate: slow. Leaves are evergreen. Many varieties available. A male variety in the area is required for pollination and fruit set on female varieties.

- **Chinese juniper** (*Juniperus chinensis*). Height and spread variable (depends on variety). Growth rate: slow to medium. An evergreen shrub for full sun/well drained locations. Foliage color is green but varies in hue depending on variety.

- **Doublefile viburnum** (*V. plicatum*). Height: 8-10 ft.; spread: 9-12 ft.; growth rate: medium. Will grow in full sun or partial shade. Has an attractive horizontal branching habit.

- **Koreanspice viburnum** (*V. carlesii*). Height: 4-5 ft.; spread: 4-8 ft.; growth rate: slow. Will grow in sun or partial shade. Flowers are very fragrant.

- **Meyer lilac** (*Syringa meyeri*, variety Palibin). Height: 4-5 ft.; spread: 5-7 ft. Plant in full sun for best flowering; flowers are fragrant.

- **Red chokeberry** (*Aronia arbutifolia*). Height: 4-5 ft.; spread: variable. The majority of foliage is in the upper half of the plant at maturity. Will grow in full sun or partial shade. Its fruit are small (1/4” dia.) and turn bright red in fall.

- **Smooth hydrangea** (*Hydrangea arborescens*). Height: 3-5 ft.; spread: 4-6 ft.; plant in semi-shady areas. Starts blooming in June and continues for up to two months.

- **Sweet pepperbush** (*Clethra alnifolia*). Height: 4-8 ft.; spread: 4-6 ft.; growth rate: slow to medium. Good shrub for moist, shady areas. Produces fragrant flowers, starting in July and continuing into late summer.

- **Yew** (*Taxus spp.*). Height and spread variable (depends on variety). Growth rate: slow. An evergreen shrub for either sunny or shaded locations (but soil must drain well). Foliage appears to be a favorite food of deer.
**Herbaceous perennials**

Perennials are plants that have the potential to live for several years or more. Herbaceous perennials are perennials that are typically small in stature, have little or no woody tissue, and disappear (die back) for part of the year. (e.g. hostas die back in the fall but their leaves return in the spring). Herbaceous perennials are often complimentary to larger, woody plants, and can help add diversity to the home landscape. For detailed information on this class of plant, see ‘Annuals, Perennials, and Bulbs’ at [http://www.pubs.ext.vt.edu/category/annuals-perennials-bulbs.html](http://www.pubs.ext.vt.edu/category/annuals-perennials-bulbs.html).

New types and varieties of herbaceous perennials, including ornamental grasses, are continually being made available through nurseries and garden centers. Before purchase, be sure to read the plant labels to determine if the plant is suitable for the situation you want to use it in.

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**Groundcovers**

Groundcovers are low growing plants, often less than 1 ft. tall, with spreading habits. Certain groundcovers (e.g. Japanese pachysandra (*Pachysandra terminalis*) and ajuga (*Ajuga reptans*) can be useful alternatives to turfgrass for shady locations. And creeping juniper (*J. horizontalis*) and Japanese garden juniper (*J. procumbens ‘Nana’*) can be used as a low maintenance alternative to turfgrass in sunny locations.

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For a brochure listing plants native to the mountain region of Virginia (including the Shenandoah Valley) and their recommended uses and light and moisture requirements, see [http://www.dcr.virginia.gov/natural_heritage/documents/mtn_nat_plants.pdf](http://www.dcr.virginia.gov/natural_heritage/documents/mtn_nat_plants.pdf)

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**Turfgrass**

If you need a clean outdoor area for play or sports or for the pleasure of your pet dog(s), then a turfgrass lawn should be part of your home landscape.

Unfortunately, as I mentioned in the section on landscape design, turfgrasses have relatively high maintenance requirements. Even the lowest maintenance turfgrasses require regular mowing during the growing season.

Kentucky bluegrass and tall fescue are the turfgrasses of choice for the Valley. For detailed information on varieties and maintenance go to [http://www.pubs.ext.vt.edu/category/lawns.html](http://www.pubs.ext.vt.edu/category/lawns.html)
**Annuals**

Annuals are a type of plant that completes their life cycle (i.e., grows, flowers, and then dies) in one growing season or is a subtropical species that lives less than a year because it cannot survive cold winters. In the Valley, many popular annuals will grow and flower more or less continuously from mid May through mid October – unless there is an extended period of hot weather (high 80s/low 90s) during the summer.

Some annuals are complimentary. For example, snapdragons are upright growers, while petunias like to spread. They can be planted together in a pot, planter, or in a bed that has been generously amended with organic matter.

For best results, grow annuals in full sun; fertilize lightly, but regularly; and make sure the soil or potting mix around the plants does not get too dry. Also, be careful not to set the plants too deep or pile organic mulch up around the plants, as this can result in stem rot.

Mature plantings of annuals can often be revitalized with selective pruning. Remove the spent flower spikes (this may stimulate additional flowering) and prune back the old and declining sections of spreading-type annuals.

An added advantage of growing certain annuals in the garden: they can be wonderfully fragrant and great as cut flowers for inside arrangements.

For information on specific annuals, see [http://urbanext.illinois.edu/annuals/directory.cfm](http://urbanext.illinois.edu/annuals/directory.cfm)

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**Fruits**

Small fruits (strawberries, grapes, blackberries, raspberries, and blueberries) and tree fruits (apples, pears, peaches, plums, and cherries) can be grown in the Valley, but the maintenance requirements for high quality fruit production (i.e. pruning, pest and disease control, and soil modification [in the case of blueberries]) is beyond the scope of this guide. Please see [http://www.pubs.ext.vt.edu/426/426-840/426-840.html](http://www.pubs.ext.vt.edu/426/426-840/426-840.html) and [http://www.pubs.ext.vt.edu/426/426-841/426-841.html](http://www.pubs.ext.vt.edu/426/426-841/426-841.html) for detailed information on small fruits and tree fruits, respectively.
Vegetable and spice crops

Mid May through mid October is a great time to grow a number of vegetable and spice crops in the Valley. For “warm season crops” this nearly 6-month period starts after the danger of a freeze is over in the spring and ends with the first freeze in the fall.

If you’d like to have a vegetable garden in your home landscape, first, decide what crops to grow and where to plant them. (A list of recommended warm and cool season vegetable crop varieties can be found at http://www.pubs.ext.vt.edu/426/426-480/426-480.html.) It’s best not to plant the same or a closely related crop repeatedly in the same area. For example, if you planted tomatoes in the northwest corner of your backyard last year, don’t plant tomatoes or peppers (which are in the same plant family as tomatoes) in that area this year. Consider planting beans or some other unrelated crop in that area instead. This technique is known as crop rotation, and it helps minimize pests, especially soil-borne ones.

A garden journal can be used to keep track of the details of past crops. Or now, with digital photography, you may find it easier to take some pictures of your garden during each season and place these in a labeled folder on your computer.

You can grow plants directly in the soil, at ground level, or in raised beds – often made by filling lumber or block bound enclosures with a mixture of compost, manure, and weed-free top soil. Also, many types of vegetable and herb plants can be grown successfully in pots filled with a high quality potting soil. One of the advantages of planting into raised beds or pots vs. directly into a native soil that’s mostly clay is that mixtures high in organic matter are easier to work with than a clayey soil, especially when wet, and have better drainage properties.

Insect pests and diseases are likely to damage plants at some point during the season. See VCE’s Pest Management Guide at http://www.pubs.ext.vt.edu/456/456-018/456-018.html for information on various control measures.

Popular warm-season crops include:

- **Cucumbers.** Cucumbers can produce 2-5 pounds of fruit per plant. Applications of a multi-purpose fungicide containing chlorothalonil and labeled for use on cucumber may be helpful if symptoms of powdery mildew disease are observed.

- **Peppers** (sweet and hot). Peppers are small bushes, but benefit from staking, especially if they’re planted in a windy location. Expect a yield of between one half and one pound of fruit per plant.

- **Snap beans** (bush type). Make several plantings, two weeks apart (e.g. sow seeds on May 15th, 30th, and June 15th). The average yield is about one pound.
of beans per foot of row. Water once or twice a week during dry weather.

- **Tomatoes.** Most tomato varieties are vines, which should be staked or grown in wire cages. Expect a yield of two to three pounds of ripe fruit per plant.

All of the crops mentioned above benefit from mulch, which helps to moderate soil temperature, conserve soil moisture, and control weeds.

- **Basil, chives, mint, oregano, rosemary, and thyme** are easy spices to grow in the home landscape. All do well in pots in a sunny location, although mint, oregano, rosemary, and thyme can also be grown in partial shade. Mint, especially, should be kept in a pot, as it tends to be aggressive and spread beyond its allotted space.

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**Popular cool-season crops include:**

- **Broccoli.** Cool days and nights are important for success, so plant transplants between April 15th and May 25th. Space 12-18 inches apart in the row. Harvest small multiple side shoots that develop after the main central head is cut.

- **Cabbage.** Buy only healthy looking transplants. Plant between April 5th and May 15th. Use an insecticide that contains *Bacillus Thuringiensis* (Bt) to control looper caterpillars.

- **Collards.** Plant seed between March 16th and April 25th. Space 12-18 inches apart in the row. Watch for leaf-eating caterpillars, and if they are present spray plants with a Bt insecticide. Start picking outer leaves when plants are 1 foot tall.

- **Lettuce.** Rodale’s Encyclopedia of Organic Gardening notes that lettuce greens are so easy to grow, so nutritious, and so delicious picked fresh from the garden, that everyone should grow them. If you grow them from seed, sow the seeds very shallow as they need light for germination. Plant seed between April 5th and May 15th. Thin to 8-12 inches between plants.

- **Onions and peas (English).** Plant onion sets and pea seeds from March 16th to April 15th. Space onions 4-6 inches apart in the row and peas 1-3 inches apart in the row.

    As with warm-season vegetable crops cool-season crops perform best in sunny, well drained locations.

For information on planting dates for other vegetables, as well as spacing and yield information consult VCE’s vegetable planting guide [http://pubs.ext.vt.edu/426/426-331/426-331_pdf.pdf](http://pubs.ext.vt.edu/426/426-331/426-331_pdf.pdf).
Plant maintenance

Watering

During the growing season, the Valley averages between $\frac{3}{4}$ and 1 inches of rain a week – enough to meet the needs of most of the trees and shrubs in our home landscape.

However, supplemental irrigation is sometimes beneficial for these plants – especially if they are newly planted. This is because the rain is not evenly distributed. Some weeks your landscape may receive two or more inches of rain and other weeks none.

So here are some tips to make the most of what nature gives you:

- Buy a rain gauge (they’re inexpensive and available at almost any garden center or hardware store).

- Don’t water if you’ve received 1 inch of rain or more within the last 7 days – unless some of your annuals are wilting. Then consider spot watering (instead of watering your entire yard).

- Established turfgrass in the Valley usually does not require irrigation, as it will protect itself from drought by going dormant.

- At current public water supply rates, it costs around $10 to apply an inch of water to a typical residential landscape. Save that money, if you can, and save that water for the days when you really need it!

- Established trees generally don’t require supplemental irrigation, while most established shrubs can survive just fine without rain or irrigation for several weeks – and probably longer if mulched.

- Small, newly planted shrubs should receive 1-2 gallons of water (i.e. the capacity of a standard watering can) every few days for six months, after which they can be treated as established shrubs.

- Most annuals and vegetable garden plants benefit from irrigation once or twice a week if rain is lacking.

- A reasonable schedule (assuming no rainfall) would be to apply $\frac{1}{2}$ inch of water to drought susceptible plants twice a week, especially during periods of hot weather.

- The best time to irrigate is early morning. Irrigating at this time minimizes the amount of water lost to evaporation. The worst time to irrigate is late afternoon or early evening because this can result in leaves staying wet overnight and being more susceptible to infection by disease-causing fungi and bacteria.
To determine how long it takes your irrigation system to apply ½ inch of water: place several empty tuna cans (or similar straight-sided containers) in a straight line from your sprinkler to the edge of the watering pattern; turn the water on for 15 minutes; measure the depth of water in each can; calculate the average depth; and, finally, multiply this number by four to obtain the irrigation rate in inches per hour.

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**Fertilization**

Despite what you see on certain product labels at garden centers, fertilizer is not plant food. Foods are carbon-based substances (primarily carbohydrates, fats, and proteins) that can be broken down by living organisms to provide them with energy and the building blocks to construct and repair living tissue.

Green plants make their own food; they don’t get it from an outside source. They use energy from the sun to assemble carbohydrates, fats, and proteins from simpler components.

What plants *do* need from the outside are these simpler components: water, carbon dioxide (which they obtain from the air), and certain nutrient elements (nitrogen, phosphorus, potassium, etc.) that occur naturally in the soil.

A deficiency of one or more of the nutrient elements can limit plant growth and development. So as good gardeners we may have to add fertilizer to the soil to prevent a deficiency from occurring.

The problem with thinking of fertilizer as food is one of scale. Food is something we need frequently and in large quantities. Fertilizer is something to be applied occasionally and in small quantities – especially if it is a high analysis fertilizer (such as 16N-4P-8K). Excess fertilization can damage plant roots as well as kill beneficial soil microorganisms. Also, heavy or prolonged rains or irrigation can move nutrient elements from the home landscape to nearby ponds or streams where they become polluters.

Home landscapes that have been fertilized for years with N-P-K fertilizers most likely have soil P (phosphorus) levels that are very high. (This is because P is immobile in the soil and is not needed in as high levels by plants as is N (nitrogen) and K (potassium). If soil test results show that your soil P is adequate or high, then you would be advised to use a P-free fertilizer, such as a 10-0-10.

Nutrient elements are mostly retained by soil organic matter and clay particles. But even in infertile soils, fertilizer is not always necessary. It depends on the situation. If plants are small and immature or if organic matter (e.g., fruits, vegetables, and clippings) is being regularly removed from the landscape (and thus breaking the natural recycling of nutrients), then the addition of synthetic fertilizer, manure, or compost is important. If, however, plants are perennial and mature in size then very little, if any, fertilizer is needed. The
plant can be considered in equilibrium. Its older leaves will die and fall to the ground where they decay, releasing nitrogen, potassium, etc. into the soil. Then these nutrients can be taken up by the plant’s roots and used in the creation of new leaves. The cycle is complete.

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**Pruning**

Pruning is a technique used to control or redirect plant growth. Some pruning is useful and improves the appearance of our home landscape. For example, mowing our lawns is a form of pruning that maintains open space, creating green vistas for viewing flower beds and other taller landscape elements. But too often we are forced to prune because plants are in the wrong place.

Large shrubs close to houses, sidewalks, patios, or driveways usually require frequent pruning or hedging to keep them within bounds.

Planting shrubs close to the house is a practice carried forward from the days when the typical house was raised off the ground and plants were used to hide the crawl space around the base of the house. However, today most houses have no crawl space to hide. Plants should be used to help integrate the house into the landscape – not to hide or block main design features, such as windows, entranceways, pillars, etc.

The problem is that large landscape shrubs are often relatively cheap when purchased in small pots so new home contractors and homeowners have used this material extensively to comply with codes requiring foundation plantings.

Unfortunately, many people are hesitant to dig up and replace shrubs, even if the plants are too big, detract from the beauty of the house, and require regular pruning.

Before adding a new plant to your landscape, consider its potential size at maturity. (A plant’s height and spread at maturity should be listed on a tag attached to the plant or on a stake in the pot.

There is no reason for shrubs to touch the house. They should be far enough away that there is good air circulation and room to easily access exterior walls.

There are two main types of pruning cuts: thinning cuts and heading cuts (Fig. 1).

A thinning cut removes an entire stem, whereas a heading cut removes only a portion of a stem.

Thinning cuts are used to establish a desired structure in young trees and shrubs. They are also used to remove stems that cross and rub against each other.

Heading cuts are used to reduce the height and/or spread of a shrub. (Pruning has a negative effect on the overall size of shrubs, but it can be used to cause the shrub to grow taller at the expense of spread or wider at the expense of height.)
There are two types of heading cuts: selective and nonselective. Selective heading only shortens selected stems and these stems are cut just above a bud or branch that’s pointing in the direction of desired growth (Fig 2).

If the cut is made just above a bud, this bud and possible other latent buds further down the stem will be stimulated to grow and become axillary stems. This tends to make the shrub denser.

Nonselective heading shortens all stems, without regard to the position of buds or branches. This type of pruning is more commonly known as hedging or shearing. The topping of trees is also a form of nonselective pruning.

In my opinion most landscape shrubs would be more attractive, and probably healthier, if they were allowed to obtain a natural shape.

If necessary, shrub size can be reduced while preserving the plant’s natural shape. This is accomplished by removing or shortening the shrub’s longest stems.

Hedging results in a single, thin layer of foliage, which is on the outside edge of the shrub (i.e. there are essentially no leaves in the interior space), so if any of the (exterior) leaves are damaged an unsightly hole appears.

Most shrubs should not need frequent pruning – if they are in an appropriate location. Occasionally, however, it is advisable to cut back an errant, lanky stem – or to prune the top of a hedge so that it’s narrower than the base of the hedge. (Otherwise the base of the hedge will be shaded and thin out over time.)
Fig. 1. Heading left; thinning right

Fig. 2. Pruning to a bud
Here are some guidelines to consider before getting too excited with your loppers:

- If shrubs have been planted too close together, think about removing every other plant. This should allow the remaining plants to develop more gracefully.

- Prune branches that crowd other plants or come too close to the house or walkways. Then consider removing some of the tallest and oldest stems, but be careful not to remove more than 1/3 of the stems in any one year – unless complete rejuvenation is desired. (See the online article ‘Pruning shrubs’ http://www.pubs.ext.vt.edu/430/430-459/430-459.html for details on rejuvenation of older shrubs.)

- For the formal look, shears the plant six to eight inches beyond the previous cut, until the plant or hedge has reached the desired size. Angle the clippers so that the top of the hedge is narrower than the base. This will allow light to reach the lower leaves and keep them alive. Maintaining the desired shape may require several shearrings per year. The exact number depends on plant vigor, which can be affected by light levels and soil moisture and fertility.

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**Mulching**

Organic mulch is certainly a helpful material in the home landscape – it suppresses weed seed germination and growth and reduces soil moisture loss – but our gain, in terms of an improved home landscape, can be a loss for the environment in which the mulch was derived.

A popular mulch sold at home and garden centers is cypress mulch. Cypress mulch is often made from the sawmill residues generated in the manufacture of cypress lumber, but, unfortunately, it may also be produced from whole trees cut from forested wetlands. The University of Florida Extension Service does not recommend the use of cypress mulch, despite its popularity, because the origin of the mulch may be difficult to determine and its overuse can result in habitat destruction.

Another popular bagged mulch is pine bark mulch. This mulch is a byproduct of processing pine for lumber or paper, so in terms of environmental impact its use is relatively benign. Pine straw is also used as a mulch. It is collected from pine plantations where the forest floor is kept essentially free of understory plants. Unfortunately this
prerequisite reduces the wildlife habitat value of the plantation.

Of course, for any of these commercially available mulches, there is an environmental cost, in terms of the energy used to harvest, package, and transport the product to its final destination.

To reduce the amount of commercial mulch you need, you can take advantage of materials produced in your own yard – i.e. grass clippings and fallen leaves from deciduous trees. These materials break down quickly, compared to wood and bark based mulches, but they’re nutrient-rich, renewable, and free!

By recycling yard “waste” you are helping to maintain the quality of your home ecosystem while minimizing any negative impacts you might have on other ecosystems. If the appearance of leaf mulch is not to your liking you can always top it off with a thin layer of a more decorative mulch.

A word of caution: make sure that the layer of mulch under your trees (especially the younger ones) is not too thick. Please don’t mound mulch up around the trunk! (i.e., don’t create “tree volcanoes”) This can cause decay of trunk tissue and reduce the amount of oxygen getting to the tree’s root system.) The rule of thumb is for the mulch under a tree’s canopy to be no more than 2-3 inches thick. In essence, you are replicating the conditions found on a native forest floor -- where the accumulated organic debris is generally not very deep.

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Disease and pest control

Diseases and insects

Diseases and insect pests are generally not a serious problem in the home landscape – if the landscape has been appropriately designed, established with plants known to be well adapted to the Valley, and properly maintained (in terms of water, fertilizer, pruning, and mulch). Also, most plants can tolerate a moderate amount of damage to their leaves due to insect feeding or disease. If you are concerned about a disease or insect outbreak on a favorite plant in your yard, you may find it helpful to discuss the situation with a local expert. Often, you can talk with a certified master gardener by calling your county extension office. (See appendix for contact information.) Personally, my strategy over the years has been to remove ornamental plants from my yard that are prone to disease or insect problems, and replace them with more resistant varieties or species.

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Weeds

Weeds are just plants growing where they’re not wanted. Actually, a corn plant is a weed, if it comes up in a soybean field. We consider a plant a weed if it disturbs our sense of order or uniformity in the landscape – or if it
competes with plants we consider more desirable.

There are three elements of the home landscape where weeds can be a problem: lawns, beds (either mulched or covered with a groundcover) and hard outdoor surfaces (i.e., patios, sidewalks, and driveways).

As for weeds in lawns, A.J. Koski, Cooperative Extension turfgrass specialist at Colorado State University suggests starting with a relaxed perspective. "A totally weed-free lawn is rarely attainable, even with herbicides. It is better to tolerate a few weeds than to make many applications of herbicides in an attempt to eliminate all weeds. Indiscriminate use of herbicides can cause problems for trees and other landscape plants,” says Koski.

The best way to minimize weed problems in your lawn is to keep your turfgrass dense and healthy. A thorough treatment of turfgrass management is beyond the scope of this booklet, but I would like to mention two practices that can help keep your lawn healthy.

1) Mowing the lawn regularly during the growing season, and removing no more than 1/3 of the grass’ leaf blade per mowing. This may require adjusting the mower deck to its highest setting.

2) Using a mulching (or bag-less) mower. This practice returns valuable organic matter to the soil.

As for weed control in beds of shrubs, flowering annuals, or herbaceous perennials, a two to three inch deep layer of mulch works well, although it’s not likely to be 100% effective. Hand weeding can control weedy annuals, such as purslane (*Portulaca oleracea*) – if they are pulled before their seeds mature. But to control perennial weeds, such as Bermudagrass (*Cynodon dactylon*), a systemic herbicide that kills the underground stems and roots works best.

For specific herbicide recommendations, see VCES publication ‘Weed management in home ornamental beds’ [https://pubs.ext.vt.edu/456/456-018/Section_4_Home_Ornamentals-6.pdf](https://pubs.ext.vt.edu/456/456-018/Section_4_Home_Ornamentals-6.pdf)

And finally, how to deal with those tough weeds in the expansion joints of your sidewalk and cracks in the driveway: I suggest spot spraying them with an herbicide that doesn’t persist in the soil – not with a long-lasting herbicide, such as those in certain brush, poison ivy, or total vegetation control products, as these materials could be absorbed by the roots of desirable plants that are under the hard surfaces.
Appendix

**Important dos and don’ts**

- Buy a rain gauge, and use it to keep track of how much rain your landscape actually receives.

- Use fallen leaves as mulch. They are important in the recycling of organic matter and minerals to the soil.

- Annually, place 1-2 inches of organic mulch under the canopy of trees and shrubs. However, avoid placing it in direct contact with trunks or canes and **don’t** mound mulch up around plants. This can create an unnaturally moist condition, which may result in crown rot.

- When it comes to placing new plants in your landscape, follow the axiom “Form follows function”. What function do you want the plant to serve: shade, screening, color, wildlife habitat, etc.?

- Use native plants – whenever possible. The Virginia Native Plant Society ([http://vnps.org/](http://vnps.org/)) is a good source of information on native plants that perform well in the home landscape.

- Plants close to the house should soften the sharp edges of the house, not hide main design features, such as windows, pillars, etc. Certain ground covers and low growing shrubs are suited for planting close to the house, but incorporate variation in height and texture into your plantings so the house doesn’t look like it’s floating on the vegetation.

- Informal shrubbery borders that don’t require hedging are generally preferred.

- Diversity in the landscape is good (but diversify in a way that results in a pleasing combination of form and texture and compliments the beauty of your house).

- Make sure any trees and shrubs planted on your property are adapted to USDA hardiness zone 6.

- If a plant is prone to a serious pest or disease problem that requires regular applications of a chemical control product, consider eliminating this plant from your landscape.

- Plant only as much turfgrass as needed (for recreation and possibly as a foreground for taller and more interesting landscape elements). In general, turfgrass requires more regular maintenance than other types of plants.
• If you use a string trimmer, don’t get too close to the trunks of young trees or the base of young shrubs. These trimmers can easily damage bark, which often results in stunting or even death of the tree or shrub. It’s best to remove weeds by hand if they are growing close to young trees and shrubs.

**Essential gardening tools**

Most of these tools can be found at your local hardware store or in the gardening section of the big box stores. They range in price from less than $10 for a hand trowel to around $100 for a two-wheel garden cart.

**Tools for soil preparation and planting**

• Square-point shovel – for scraping up sod and weeds
• 16-tine bow rake – for removing debris from and smoothing out the soil surface
• Round-point shovel – for digging holes for shrubs and trees
• Post hole digger – for digging holes for plants that are in 1-gallon containers
• Pinch point bar – for breaking through rocky and hard pan soils and for cutting through large diameter tree roots
• Safety glasses – to protect eyes from shattering rocks, wood chips, etc.
• 10-gallon plastic mixing tub – (This is a good container for holding the soil from holes dug to plant small shrubs and trees.)
• Hand trowel – for digging small holes
• Kneeler – for making kneeling bearable (This device is especially helpful when kneeling to plant large numbers of annuals.)

**Tools for mulching**

• Two-wheel cart – for moving bagged or loose mulch
• 5-tine pitch fork – for spreading mulch
• Leaf rake – for gathering leaves and other light organic materials
• 18 inch wide plastic snow shovel – to use in combination with leaf rake to pick up leaves and other organic debris

**Tools for pruning**

• Hand pruner – for detailed pruning
• Loppers – for cutting medium diameter branches
• Double edge pruning saw – for cutting large diameter branches
• 12 foot long lightweight tree pruner – for pruning branches on mature trees
• Hedge shears – for hedging certain small leafed shrubs and spreading groundcovers
• Half moon edger – for edging small areas of turf
• Split cowhide leather gloves – for handling thorny branches

Tools and supplies for watering and spraying

• 32-inch long water wand – for efficient and gentle hand watering
• 1 or 2-gallon hand sprayer (Actually I recommend having two sprayers: one designated for spraying herbicides and the other for spraying insecticides and fungicides.)
• Disposable nitrile or chloroprene gloves – for use when handling pesticides and fertilizers and for general use to keep hands and nails clean
• Rubber boots – to keep feet dry when having to walk through wet turf or soil

Consider low-tech alternatives to the leaf blower and string trimmer

More than once I’ve been in my car, waiting for a traffic light to change, when a landscape maintenance worker in a parking lot next to the road is using a gas-powered leaf blower to rid the parking lot of dirt and debris. The problem is that dirt and debris are flying off the parking lot into my car. What is a leaf blower really accomplishing? If you ask me, I’d say this machine is often just moving unwanted material from one public space to another (i.e. from parking lot to road) or from private property to public property (i.e. from one’s driveway to the street or into the air we breathe). So not only is there no net benefit gained from the leaf blower, in terms of “cleaning” up our local environment, leaf blowers are noisy, generate unwanted gases, and are hazardous to the health of the operators. How many operators have you seen using dust masks? Not many, I bet!

What’s wrong with using a rake and broom – tools that have worked just fine for centuries? A rake moves leaves with ease, and a broom can move small materials without stirring up much dust.

Gas-powered string trimmers are noisy and polluting too. And while they may be helpful for edging turf on large commercial and public properties or for cutting back brush along rights of way, I think we can easily do without them in small residential landscapes. Their main use is for edging along driveways, curbing, and sidewalks. But what if, for example, there was no turf between the sidewalk and the curb (an area that tends to be problematic for turf anyway, because of the difficulty of getting uniform sprinkler irrigation close to the curb)? Then there would be no need to edge. Instead of turf, this area could be a place for low-growing, drought tolerant herbaceous perennials, stepping stones, and mulch. Reduce turf and you reduce edging. Small edging jobs can be handled easily with a half-moon edger – a simple cutting tool that makes no noise and generates no pollution.


**Reliable sources of information**

The Virginia Cooperative Extension
Service website [http://www.ext.vt.edu/](http://www.ext.vt.edu/)
This website is maintained by Virginia’s Land Grant Universities, Virginia Tech and Virginia State, and contains numerous publications on home gardening and landscaping written by VT and VSU faculty. These publications can be downloaded or printed free-of-charge.

**Manual of woody landscape plants: their identification, ornamental characteristics, culture, propagation and uses** (6th edition) by Michael Dirr. This book can be purchased from online booksellers. Also, the Massanutten Regional Library [http://www.mrlib.org/](http://www.mrlib.org/) has a copy of the 5th edition, which was published in 1998.

**The Edith J. Carrier Arboretum and Botanical Gardens at James Madison University**
780 University Blvd.
Harrisonburg, VA 22807
[http://www.jmu.edu/arboretum](http://www.jmu.edu/arboretum)
Phone: (540) 568-3194

This arboretum, the only one located on a public university campus in Virginia, is a great resource for the central Shenandoah Valley community.

The 125 acre site includes native plants of the mid-Appalachians (e.g., oaks, hickories, woodland wildflowers, azaleas, and rhododendrons); a collection of non-native trees, shrubs and bulbs (e.g., magnolias, Kousa dogwoods, hollies, daffodils, etc.); herb and rose gardens; and terraced and wetlands gardens.

A visit to the arboretum and gardens provides ideas and inspiration for anyone interested in gardening or landscaping. Seeing a plant in a photo or in a small pot at a garden center is one thing; seeing it full size in a mature landscape is another.

The grounds are open (free-of-charge) from dawn to dusk, 365 days a year. The arboretum’s Frances Plecker Education Center is open from 8:00 a.m. to 5:00 p.m., Mon-Fri., excluding holidays (which will be noted on the arboretum’s website calendar).

**Virginia Cooperative Extension Offices in the central Shenandoah Valley**
(For free information, classes, and workshops)

Rockingham County
965 Pleasant Valley Rd., Harrisonburg, VA 22801
Phone: (540) 564-3080
Website: [http://offices.ext.vt.edu/rockingham/](http://offices.ext.vt.edu/rockingham/)

Augusta County
13 Government Center Lane, Verona, VA 24482
Phone: (540) 245-5750
Website: [http://offices.ext.vt.edu/augusta/](http://offices.ext.vt.edu/augusta/)
Eastern white pine (*Pinus strobus*)