A rain garden is a landscaped area specially designed to collect rainfall and manage stormwater runoff. It is a planted shallow depression that temporarily holds runoff from impervious areas until it evaporates, is absorbed by the plants, or infiltrates into the ground. The plants, microorganisms, and soil in the rain garden act as a filter to clean pollutants from the runoff. For more information on rain gardens look at VCE publication SPES-13P. For a rain garden to work, plants must be selected, installed, and maintained properly.

**Plant Selection**

- Choose plants tolerant of both occasional flooding as well as dry periods.
- Choose noninvasive plants that are adapted to the local environment.
- Choose a mixture of species. A good rule of thumb is one plant species for every 10 to 20 square feet. For example – a 140-square-foot garden would have 7 to 14 different plant species.
- Choose plants based on the amount of sun or shade the garden receives, for interest year-round, to blend with the rest of the landscape, and for any specific design theme like pollinators or natives.
- Choose a mix of woody and herbaceous plants for different root depths and different filtering abilities.
- Choose a mix of evergreen and deciduous plants so there will be visual interest and active filtering in the winter.
- Choose perennials instead of annuals as they come back every year and generally require less maintenance.
- Choose to add a tree (that doesn’t drop a lot of debris) if the garden is large enough. See small and medium tree definitions in the glossary.
- Choose plants for vertical layering – a mix of tall-, medium-, and low-growing species for visual interest and to slow down rainfall.

**Plant Installation**

- Install plants in their proper moisture zones (see Fig. 1).

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Figure 1. Planting Zones
• Plant shrubs and perennials in groups of three to five of the same species. Trees can be planted in groups or individually.
• Plant taller and larger plants in the center, at the back, or at one end of the garden, depending on the views.
• Plant shorter plants where they can be seen easily, around the garden edges, in front of larger plants, or underneath taller plants.
• Space and plant perennials so that their canopies will grow together and cover the ground to minimize weeds.
• Space and plant trees and shrubs according to their mature size. For example – beautyberry shrubs, that grow to six feet wide, should be planted three feet apart.
• Adding plants outside and around the rain garden area helps the garden blend into the overall landscape.
• More information can be found in *Tree and Shrub Planting Guidelines*, Virginia Cooperative Extension publication 430-295.

**Maintenance**

• Add two to three inches of organic mulch (like pinebale, pine needles, or shredded hardwood) to the entire newly planted rain garden. Do not cover the crowns of the perennials. Replenish mulch as needed in areas where the plant canopies haven’t filled in or where there is bare ground.
• Be aware that mulch may float when runoff comes into the rain garden.
• Prune or remove any dead, diseased, or damaged plants as soon as the problem is noticed. More information on pruning woody plants can be found in Virginia Cooperative Extension publications 430-455 through 430-462.
• Leave the foliage of perennials and ornamental grasses when they die back and go dormant for the winter. In the spring just before new growth starts, prune the dead foliage and remove from the garden. This leaves the ground bare the shortest amount of time and helps prevent weeds.
• Hand pull or spot treat weeds with an herbicide as necessary.
• Water the garden during its establishment (first growing season) and extended dry periods (more than two weeks). One inch of water per week is recommended.

**Plant Lists**

Trees, shrubs, and perennials are listed with both their common and *scientific* names. Research plants including specific *cultivars*, *varieties*, and sizes, to see which ones fit the rain garden design best.

**Trees**

Small Trees (10-25’ tall, needs a minimum of 50 - 400 square feet of planting area)  
Medium Trees (25-50’ tall, needs a minimum of 400 - 1200 square feet of planting area)

<table>
<thead>
<tr>
<th>Crape Myrtle</th>
<th>Lagerstroemia spp.</th>
<th>Black Alder</th>
<th>Alnus glutinosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwarf River Birch</td>
<td><em>Betula nigra</em> ‘Little King’</td>
<td>Carolina Silverbell</td>
<td><em>Halesia tetrapeta</em></td>
</tr>
<tr>
<td>Eastern Redbud</td>
<td><em>Cercis canadensis</em></td>
<td>Crape Myrtle</td>
<td><em>Lagerstroemia spp.</em></td>
</tr>
<tr>
<td>Fringetree</td>
<td><em>Chionanthus virginicus</em> or <em>re tusus</em></td>
<td>Eastern Hophornbeam/ironwood</td>
<td><em>Ostrya virginiana</em></td>
</tr>
<tr>
<td>Hazel Alder</td>
<td><em>Alnus serrulate</em></td>
<td>Eastern Red Cedar</td>
<td><em>Juniperus virginiana</em></td>
</tr>
<tr>
<td>Serviceberry</td>
<td><em>Amelanchier arborealaeviniscanadensis</em></td>
<td>Musclewood/hornbeam</td>
<td><em>Carpinus caroliniana</em></td>
</tr>
<tr>
<td>Witchhazel</td>
<td><em>Hamamelis spp.</em></td>
<td>Sweetbay</td>
<td><em>Magnolia virginiana</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>White Cedar</td>
<td><em>Thuja occidentalis</em></td>
</tr>
</tbody>
</table>
Shrubs

American Beautyberry
Anise
Arrowwood
Bottlebrush Buckeye
Buttonbush
Carolina Allspice
Chokeberry
Cranberrybushes
Devilwood
Dogwood
Elderberry
False Indigo
Fetterbush
Foothergilla
Groundsel Bush
Highbush Blueberry
Inkberry
Leucothoes
Oakleaf Hydrangea
Possumhaw
Rose of Sharon
Spicebush
Steeplebush
Summersweet Clethra
Swamp Azalea
Swamp Rose
Virginia Sweetspire
Wax Myrtles
Willows

Summerberrys

Winterberry
Yaupon Holly

Perennials

Arrowhead
Asters
Beardtongue
Beebalm
Blackeyed Susan
Blue Lobelia
Bluestar
Calla Lily
Canna Lily
Cardinal Flower
Crinum Lily
Daylilies
Gingers
Goldenrod
Hardy Begonia

Hibiscus
calyxflorus
Ironweed
Irises
Joe-Pye Weed
Leopard Plant
Liatris
Lily turf
Lizard Tail
Lungwort
Marsh Marigold
Monkey Flower
Obedient Plant
Pickerelweed
Plantain Lily
Primroses
Rain Lilies
Red Columbine
Siberian Bugloss
Spiderwort
Swamp Milkweed
Swamp Sunflower
Turtleheads
Virginia Bluebells
Wild Ginger
Windflowers

Ferns

Autumn Fern
Christmas Fern
Cinnamon Fern
Holly Fern
Japanese Painted Fern
Lady Fern
Royal Fern
Tassel Fern
Wood Ferns

Winterberry

Perennials

Arrowhead
Asters
Beardtongue
Beebalm
Blackeyed Susan
Blue Lobelia
Bluestar
Calla Lily
Canna Lily
Cardinal Flower
Crinum Lily
Daylilies
Gingers
Goldenrod
Hardy Begonia

Ferns

Autumn Fern
Christmas Fern
Cinnamon Fern
Holly Fern
Japanese Painted Fern
Lady Fern
Royal Fern
Tassel Fern
Wood Ferns

Grasses and Grass-like

Feather Reed Grass
Little Bluestem
Rushes
Sedges
Sweet Flag
Switchgrass

Virginia Cooperative Extension  www.ext.vt.edu
**Groundcovers**

Bugleweed

Ajuga spp.

Foamflower

Tiarella cordifolia

Green and Gold

Chrysogonium virginianum

Lilyturf

Liriope spicata

Mazus

Mazus reptans

Plumbago

Centostigma plumbaginoides

St. Johnswort

Hypericum calycinum

Strawberry Begonia

Saxifraga stolonifera

**Resources**

Chesapeake Bay Program How-To’s and Tips - [https://www.chesapeakebay.net/action/howtotips](https://www.chesapeakebay.net/action/howtotips)


Low Impact Development Center Rain Garden Design Templates - [http://www.lowimpactdevelopment.org/raingarden_design/templates.htm](http://www.lowimpactdevelopment.org/raingarden_design/templates.htm)


Virginia Cooperative Extension: Stormwater Management for Homeowners Fact Sheet series by L. Fox - [http://pubs.ext.vt.edu/](http://pubs.ext.vt.edu/)

Virginia Cooperative Extension: publications on fertilizer and pesticide use, plant and grass selection and maintenance, and local Extension offices and agents - [http://www.ext.vt.edu](http://www.ext.vt.edu)

Virginia Cooperative Extension: Guides to Successful Pruning publications 430-455 through 430-462 - [http://pubs.ext.vt.edu](http://pubs.ext.vt.edu)


Virginia Department of Environmental Quality Regional Native Plant Guides - [www.PlantVirginiaNatives.org](http://www.PlantVirginiaNatives.org)


**Glossary**

Annual – any plant that completes its life cycle from seed germination through flowering and seed set in one year

Cultivar – a human crossed plant selection with a unique trait that is maintained by asexually propagation

Deciduous – any woody plant that drops its leaves in winter

Evergreen – any plant that retains foliage throughout all months of the year

Herbaceous – Plants that have no woody stems and generally die back and are dormant over the winter

Impervious surface - Surface that does not allow water to flow through it

Perennial – any plant that lives for longer than 2 years

Stormwater - Water that runs off impervious surfaces during rain events, often associated with urban areas; also called “runoff”

Variety – a naturally occurring plant population with a unique trait like flower or fruit color

Woody – plants that have hard stems like trees and shrubs

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