

# Sustainable Landscape Design: The Basics

11 February 2022 – EMG Amy Crumpton

*Best Management  
Practices for:*

**Soil**

**Water**

**Energy**

**Plants**

**Materials**



Photo credit: Beth Buffington, MGNV



**Virginia Cooperative Extension**

Virginia Tech • Virginia State University

## SOIL: Rehabilitate soil health

- *Avoid pesticides & herbicides.*
- *Use fertilizers only as directed, more is not better.*
- Remove invasive plants (see helpful guide in resources below).
- Top dress soil with compost, hardwood, and/or leaf mulch.
- Consider a green mulch, plants as groundcover.
- Aerate top layer of soil, but avoid tilling as it disrupts soil structure.
- Make your own compost.
- Conduct a Soil Test - <https://www.soiltest.vt.edu/sampling-instructions.html>

## SOIL: Mulch correctly

- Leave whole downed leaves to decay in garden beds and recycle plant cuttings as mulch. Don't strip yard of its natural mulch.
- Mowed leaves may be left on lawn to decay.
- Use leaf or hardwood mulch, compost or mixture.
- Spread mulch 2 - 3 inches deep, but avoid mulching seedlings.
- NO VOLCANOS around trees – keep root flare visible!! Pull back from base of plants, too. Think donut.
- Avoid landscaping cloth – interferes with gas exchange.

## **WATER:** Conserve by rethinking your lawn

- Conventional lawn irrigations uses 30% of municipal freshwater in the Eastern U.S. (60% out West), fertilizers wash into waterways.
- Avoid lawn as the default. Use lawn to connect spaces, as pathway, or as edging.
- Remove lawn from around trees, expand the mulch zone.
- Create new garden beds and/or connect current beds.
- Mow less often to encourage turf to grow deeper roots.
- Mix clover, violets into turf grass.

## **WATER:** Manage drainage and erosion

- Terrace slopes to slow drainage and/or use deep-rooted native plants (no English ivy or vinca!).
- Construct a swale or rain garden.
- Stop compression by defining pathways that use hardwood mulch, pea gravel, or stepping stones.
- Use raised beds, particularly for vegetable or edible gardens, to assist with drainage.

# ENERGY: Single family homes in U.S. consume 22% of energy



Thoughtfully designed landscape can:

- reduce energy use by as much as **40%**
- reduce generation of greenhouse gases
- help mitigate the urban heat island effect

For windbreaks & privacy hedges try combos of these:

Evergreen Trees:

American Holly (*Ilex opaca*)

Eastern Red Cedar (*Juniperus virginiana*)

Sweetbay Magnolia (*Magnolia virginiana*)

Evergreen Shrubs:

Inkberry (*Ilex glabra*)

Southern Bayberry (*Myrica cerifera*)

Northern Bayberry (*Myrica pensylvanica*)

## ENERGY: Plant strategically

- Shade windows that receive direct sunlight. [Deciduous trees will allow sunlight into house in winter – passive solar].
- Shade east and west facing walls and roofs.
- Shade a/c units and dark surfaces (driveways, roads, patios).
- Plant staggered row and/or layered rows of trees and shrubs as windbreak – house distance should be 2x to 5x the height of the windbreak (i.e., 40 ft tree should be 80 ft from house).

## **ENERGY: Reduce outdoor light pollution**

- Light should only be on when needed (or motion-sensor).
- Light should only illuminate the area that needs it (not your neighbor's yard).
- Light should be no brighter than necessary.
- Minimize blue light emissions (use light that is less than 3000 Kelvins color temperature).
- Light should be fully shielded (pointing downward).

**Resource: International Dark-Sky Association – [darksky.org](https://www.darksky.org)**



## ENERGY: Limit use of gas-powered equipment

- Gas mowers and leaf blowers contribute to air pollution and ground level ozone, more so than automobiles.
- Source of noise pollution.
- Use electric models or manual alternatives—push mower, rakes.
- Design yard management to remove need for gas-powered equipment.



# PLANTS: Right plant for the right place, more native plants

- Select plants that fit soil, water and light conditions.
- Layer plants structurally and select variety to offer something in bloom throughout the growing season (layering seasonally).
- Leave dried native plant stems at least 2 feet through winter before cutting back in late March/early April.
- Aim for 70% native woody plant biomass to support bird reproduction.
- Aim for 15 to 20 plant families to ensure biodiversity of plant to insect interactions (don't plant all asters, for example).
- *Do not buy plants that have been sprayed with neonicotinoids (systemic insecticide).*

## PLANTS: Spacing tips for trees & shrubs

- Large tree (50 ft>) - 20 ft from 1-story building
- Medium tree (25-50 ft) - 15 ft from building
- Small tree (15-25 ft) - 8 ft from building
- Shrubs: 2 ft tall plant 3 ft from wall; 3 ft tall plant 4-5 ft. Leave space for airflow, access.
- Apply to fenceline, too. Neighbor allowed to cut/prune what grows over property line.

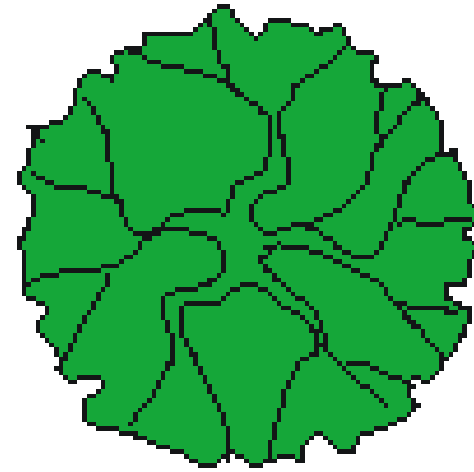
# PLANTS: Select plants to fit your space

## Plant size: (height and width)

- Consider the Plant's MATURE, NATURAL Size!
- Right Plant, Right Place!
- Plan for Year 5, not Year 1!
- Trees will create shade!



Year 5



Year 1



## **MATERIALS:** Consider the environmental costs

- **REDUCE** inputs (such as mulch bagged in plastic).
- **REUSE** materials found on-site.
- *Reused design details give a site personality.*
- **RECYCLE** by purchasing materials that have been certified as made from recycled materials, biodegradable, non-toxic, or sustainably harvested.

More videos on Sustainable Landscaping at - <https://mgnv.org/mg-virtual-classroom/sl-class-video/>

The screenshot shows a web browser window with the address bar displaying <https://mgnv.org/mg-virtual-classroom/sl-class-video/>. The website header includes the MGCV logo (Master Gardeners of Northern Virginia) and the tagline "Promoting environmentally sound gardening practices for over 35 years!". A navigation menu lists: HOME, ABOUT US, DEMO GARDENS, EDUCATION, PLANTS, PROGRAMS, RESOURCES, and MEMBERS ONLY. Below the menu is a blue-tinted image of bare tree branches with the caption "Photo © Mary Free".

The main content area is titled "Sustainable Landscaping" and "Master Gardener Virtual Classroom". It includes a breadcrumb trail: [Main](#) | [Best Management Practices](#) | [Sustainable Landscaping](#) | [Urban Agriculture](#). A green box contains the text: "Techniques for the design, construction and management of landscapes in built environments that conserve storm water, reduce pollution, integrate locally native plants to support wildlife, and reduce or eliminate the uses of fertilizers, herbicides, pesticides and fossil fuel inputs."

A grid of video thumbnails is displayed, each with a title and a small image:

- Best Bets: Native Plants for Dry Conditions
- Best Bets: Native Plants for Wet Conditions
- Build Healthy Soil and Manage Water in Your Yard
- Care of Our World: Audubon at Home Wildlife Sanctuary Certification
- Challenges of the Summer Garden - Part 1
- Climate-Conscious Gardening
- The Hospitable Gardener: Welcoming Birds to Your Garden
- The Hospitable Gardener: Welcoming Butterflies to Your Garden
- Invasive Plants & Native Alternatives
- Keystone Species of Native Plants
- Native Blooms for the Summer Garden
- Native Grasses, Sedges, and Rushes for the Home Garden

## SELECTED RESOURCES:

### Sustainable and Conservation Landscaping Practices - General

*Landscape for Life* - <https://landscapeforlife.org/>

*The 8 Essential Elements of Conservation Landscaping* - <https://www.chesapeakelandscape.org/resources/the-eight-essential-elements/>

*You and Your Land: A Guide for the Potomac Watershed* - <https://www.fairfaxcounty.gov/soil-water-conservation/you-your-land>

### Sustainable and Conservation Landscaping Practices – Some Specific Issues

*Backyard Composting* - [https://www.pubs.ext.vt.edu/content/dam/pubs\\_ext\\_vt\\_edu/HORT/HORT-49/HORT-49-PDF.pdf](https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/HORT/HORT-49/HORT-49-PDF.pdf)

*Invasive Plants and Better Alternatives* - <https://mgnv.org/invasive-plants/>

*Non-Native and Invasive ID and Control: A citizen's guide to the non-native invasive plants that may be lurking in your backyard* - <https://www.fairfaxcounty.gov/parks/sites/parks/files/assets/documents/naturalcultural/non-native-invasive-id-control-booklet.pdf>

*Outdoor Lighting Basics* - <https://www.darksky.org/our-work/lighting/lighting-for-citizens/lighting-basics/>

*Stormwater at Home, Arlington County* - <https://www.arlingtonva.us/Government/Programs/Sustainability-and-Environment/Stormwater/Stormwater-Watersheds/Stormwater-at-Home>

### Native Plants

Chesapeake Bay Native Plant Center - <http://www.nativeplantcenter.net/>

*Native Plant Landscaping Design Tips* - <https://www.plantnovanatives.org/garden-design-tips>

*Native Plants for Northern Virginia* - <https://www.plantnovanatives.org/quick-start-guide>

*Native Plants for Wildlife Habitat & Conservation Landscaping: Chesapeake Bay Watershed* - <https://www.fws.gov/chesapeakebay/resources/native-plants.html>

*Tried & True Native Plant Selections for the Mid-Atlantic* – <https://mgnv.org/native-plants/>

### Habitat for Wildlife

*For the Birds, Butterflies & Hummingbirds: Creating Inviting Habitats* - [www.pubs.ext.vt.edu/HORT/HORT-59/HORT-59.html](http://www.pubs.ext.vt.edu/HORT/HORT-59/HORT-59.html)

Audubon at Home, Audubon Society of Northern Virginia - <https://www.audubonva.org/creating-wildlife-habitat>

*Native Plants Finder*, National Wildlife Federation - <https://www.nwf.org/NativePlantFinder>