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-insttructions.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.

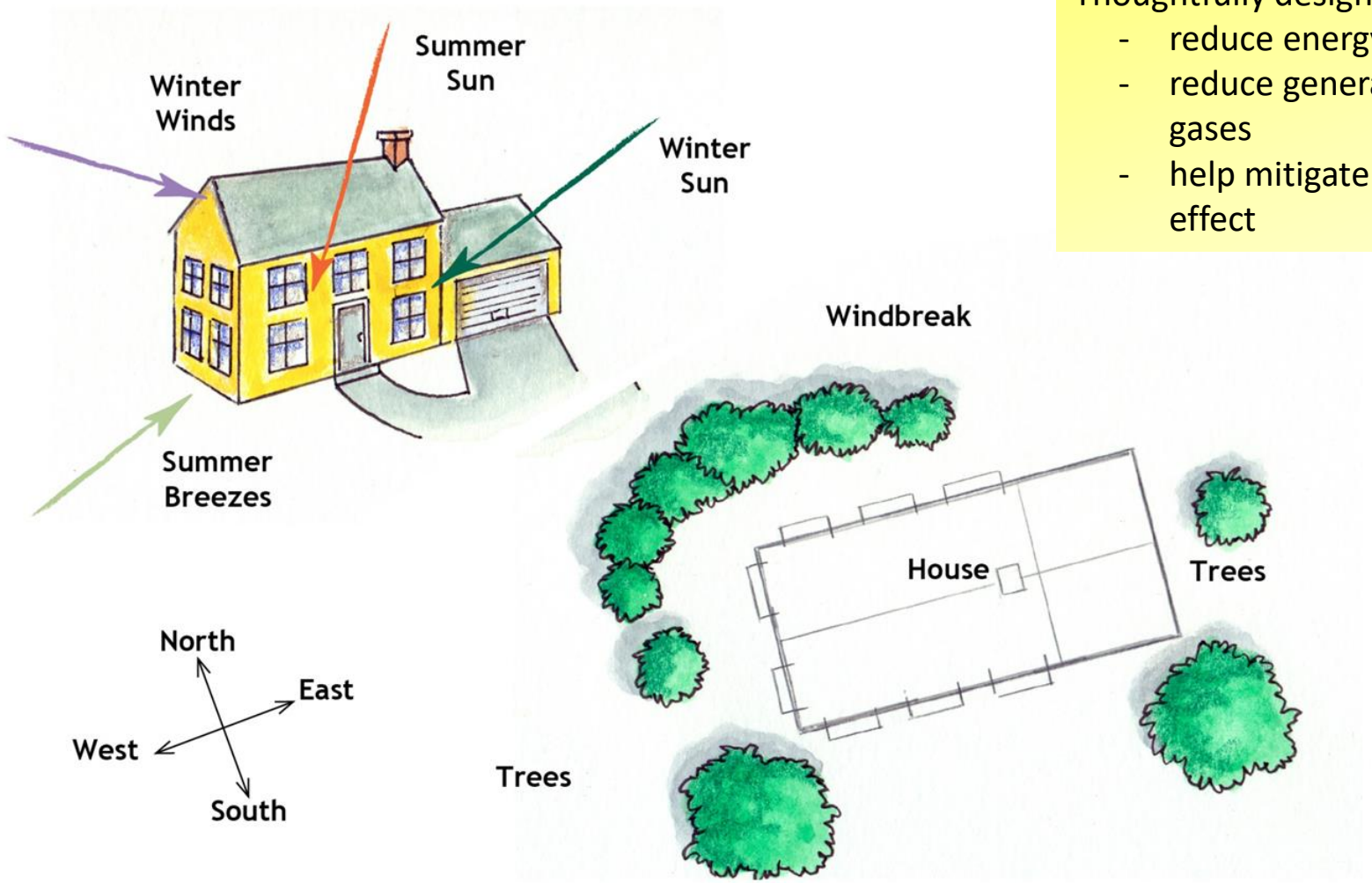
WATER: Conserve by rethinking your lawn

- 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

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

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 herbicide).*

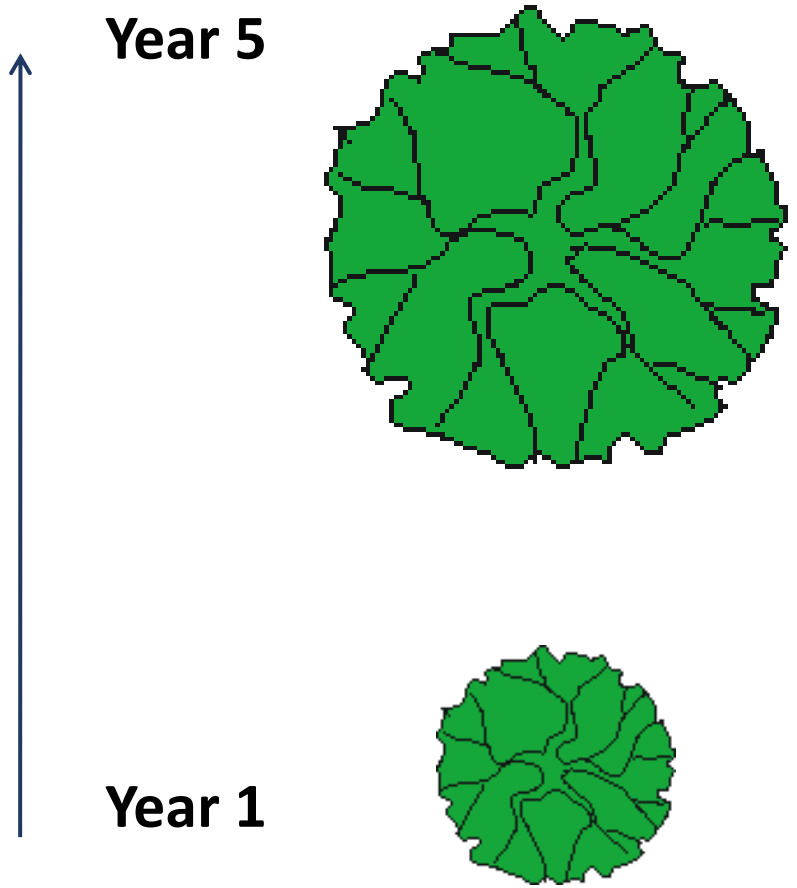
PLANTS: Spacing tips for trees & shrubs

- 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)

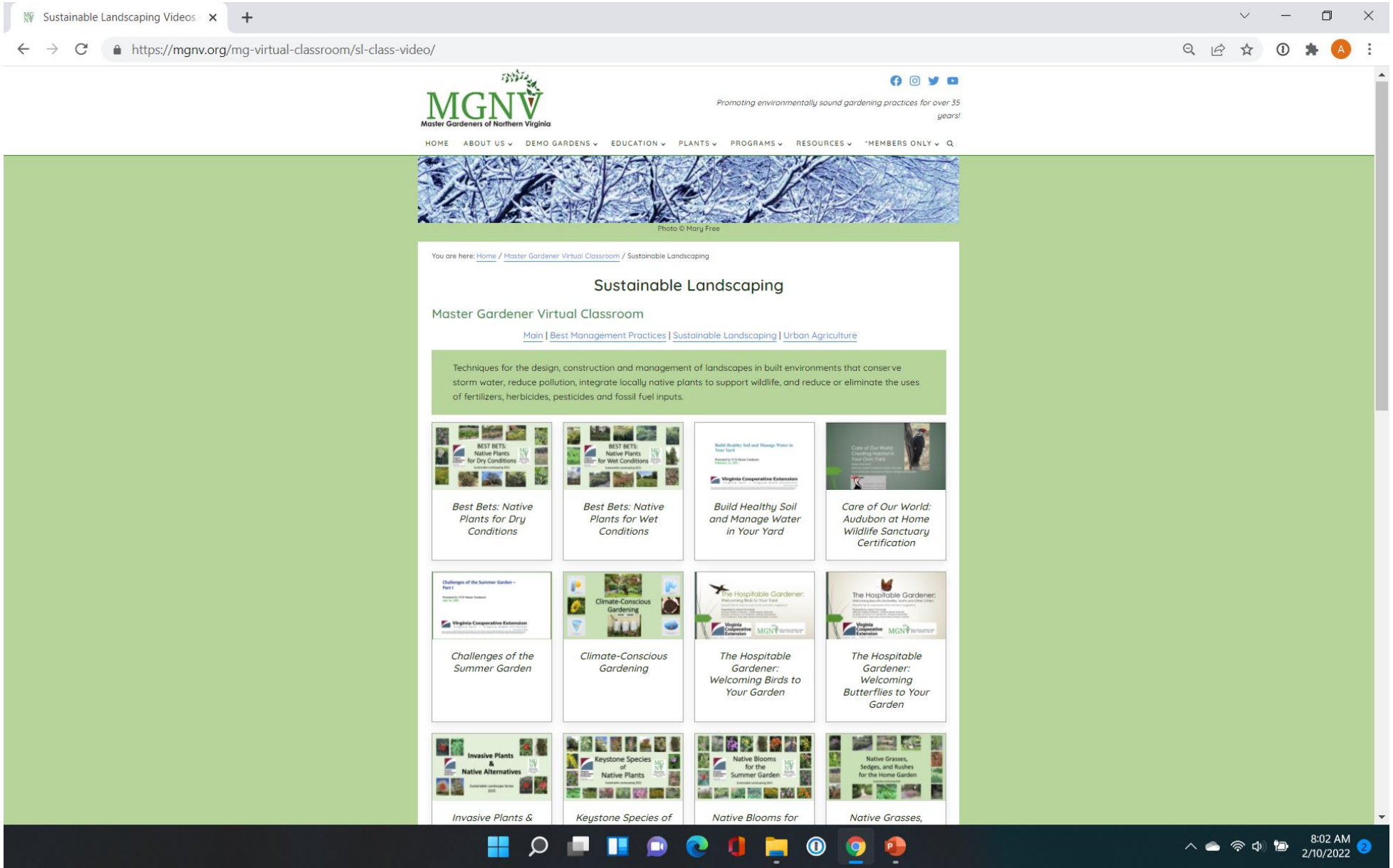
- Consider the Plant's MATURE, NATURAL Size!
- Right Plant, Right Place!
- Plan for Year 5, not Year 1!
- Trees will create shade!



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/



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/

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

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

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/

Native Plants

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

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, VCE Pub HORT-59: 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