

## PLANT SELECTION BY JULIE WEISENHORN, EDUCATOR, HORTICULTURE

# Right Plant, Right Place, Right Purpose!

### SUSTAINABLE LANDSCAPE DESIGN ...

- Emphasizes plant health and longevity.
- Is important regardless of budget or maintenance level.
- Unsustainable landscapes:
  - Lack of soil preparation
  - Improper plant selection.

### THE 5 CONSIDERATIONS OF SUSTAINABLE DESIGN

- Functional - What you do in your landscape.
- Maintainable - How you take care of your landscape.
- Environmentally sound - Landscaping to minimize long-term impact.
- Cost effective - Doing things the right way to and your wallet.
- Visually pleasing - What do you want to see in your landscape?

### BINOMIAL NAMING SYSTEM

- Genus – the first word in a plant’s scientific name, capitalized; associates plant with others
- Species – second word, descriptive; give a nod to discoverer/breeder; lowercase
- A species occurs naturally in nature

### AVOID RELYING ON COMMON NAMES TO SELECT PLANTS

- A common name can be adopted by people to refer to various plants.
- Varieties
  - A variety occurs in nature.
  - Seedlings will most likely come true to type.
    - Will have same unique qualities as parent plant.
    - *Geranium sanguineum* var. *striatum*
    - Resource: Haynes, C. “Cultivar vs. Variety”, ISU Hort News, Feb. 6. 2008
- Cultivars
  - A “cultivated variety” – selected by humans for plant qualities
  - May be chance seedlings (“sports”) or mutations
  - Seldom breed true to type as seed requires recombination of parental genes.
  - Propagated by vegetative cuttings, grafting tissue culture (cloning).
- Hybrids
  - The offspring of two plants of the same or closely related species differing in one or more genes.
  - Plants are hybridized in hopes of creating a new plant with desirable parental traits.
  - Flower color, growth habit, disease resistance
  - Parent plants are chosen with specific traits in mind.

### IN SUSTAINABLE DESIGN, PLANTS ARE SELECTED BASED ON:

- Design use - *The plant’s design purpose in the landscape – tree, key, specimen, accent, group, mass*

- Plant elements of design - *A plant's characteristics and optimal growing conditions.*

**Design use: Trees**

- Purpose: Structure – the “bones” of the landscape
- Create shade / sun areas.
- Influence all other plants you will choose.

**Design use: Key**

- Purpose: To rounded to soften architectural features and hardscape.
- Visible
- Planted individually or groups of three – “key group”.
- Combine large and small key plants.
- Help transition from building to ground.
- No pyramidal plants.

**Design use: Accent**

- Purpose: To guide a visitor through a landscape.
- Form specific
- Year-round emphasis
- One or three plants
- Often evergreen
- Lots of texture
- Foliage color and bark
- A focal point (not always a plant)
- If used incorrectly, accent plants draw attention to the harsh edges of a building...

**Design use: Specimen**

- Purpose: To provide seasonal interest in flowers, foliage, and fruit.
- Planted individually.
- May go in / out of season.
- May be a key plant as well.

**Design use: Species /cultivar group**

- Purpose: To provide a backdrop to highlight other plants.
- Same species or cultivar.
- Help transition.
- Odd number
- Individual plants are distinguishable.

**Design use: Mass**

- Purpose: To create unity through repetition.
- Same species
- Individuals indistinguishable.
- Read as one element.
- Finest texture

**In addition to design use, plants are selected based on the Plant Elements of Design.**

- Type of plant
  - Woody plants - Trees, shrubs, groundcovers, woody vines
  - Herbaceous plants - Annuals, perennials, biennials, wildflowers, ferns, herbs, groundcovers

- Size
  - Always select for mature size
  - Measure your space available for a plant.
  - Plants too large for space will:
    - Grow into neighboring plants, buildings, over windows, block doorways, walkways, paths, patios, and power lines
- Texture - Coarse, Medium-coarse, Medium, Medium-fine, Fine
  - Texture of a plant can change depending on how elements are combined
  - The finer the texture of the plant, the greater the number required.
- Form – round, mounded, upright, vase-shaped, arching, spreading, etc.
- Seasonal interest & color: Spring - early, mid, late; Fall - early, mid, late; Summer - early, mid, late; Winter
- Cold Hardiness <http://planthardiness.ars.usda.gov/PHZMWeb/>
  - 13 US zones based on average annual extreme temperature;
  - Zone 1 (-60 to -55 ° F) to Zone 13 (65 to 70° F)
- Soil
  - The foundation of every landscape
  - Provides nutrients, water and oxygen critical to healthy plant growth
  - Sustainability is lost through poor soil preparation and improper plant selection.
  - U of M Soil Test Lab <http://soiltest.cfans.umn.edu/>
  - Common soil terms / classifications
    - Compacted, dry, wet, well-drained, poorly drained, salt-tolerant, high organic matter, pH (alkaline, neutral, acidic), coarse, medium, fine, texture (fine, medium, coarse)
  - Most plants can survive in a wide range of soil conditions when given proper care.
- Drought tolerance
- Moisture tolerance
- Sun & shade
  - Full Sun - 6+ hrs sun
  - Part Sun - 3-6 hrs sun
  - Light Shade (dappled)
  - Part Shade - 3-6 hrs shade
  - Full Shade
  - Less than 3 hrs sun
  - Heavy Shade
  - Almost to no sun
  - Winter Sun /shade
- Pest resistance: Insects, diseases, wildlife, weeds
  - Choose plants with disease resistance, not favored by insects / animals
  - Locate plants in optimal growing conditions
  - Keep plants healthy
    - Out-compete weeds
    - Tolerate / recover from some pest damage
  - Understand cosmetic vs. life-threatening damage
- Insect resistance
  - Emerald Ash Borer - No longer plant ash trees
  - Japanese beetles - Ornamental grasses

- Bronze birch borer - River birch
  - Elm leaf beetle - Discovery elm
- Disease resistance
  - Downy mildew - Bounce series, Beacon (2020)
  - Apple scab - Donald Wyman, Firebird®, Jewelberry, Tina, Prairiefire, etc.
  - Dutch Elm Disease - Homestead, Triumph, Discovery, Accolade, Cathedral
  - Rhizosphaera needle cast - Norway spruce, white spruce, other evergreens - firs, pines
- Wildlife
  - Rabbits - Potentilla, ferns, peony, salvia, germander
  - Deer - Juniper, cedar, grasses beautybush, potentilla, pine, spirea, wisteria, geranium, lavender, daffodil, salvia, germander, wild phlox, catmint, peony, aster, Jacob's ladder, vervain, barren strawberry, scabiosa
  - Select plants for beneficial insects, birds, bats
    - Pollinator friendly plants
    - Fruit and nesting sites for birds, attract insects
    - Night-blooming fragrant flowers for bats

**PLANT ELEMENTS OF DESIGN [HTTP://LANDSCAPEPLANTS.EXTENSION.UMN.EDU/](http://landscapeplants.extension.umn.edu/)**

**Getting started**

1. Go to website: <http://www.landscapeplants.extension.umn.edu/>
2. Set up an account
3. Check your email for a confirmation
4. Ready-set-go back to the homepage
5. Enter email + password and click logon
6. Click "Remember me"

**General tour**

1. Click on Advanced search to expand
2. With Woody selected, click through drop down arrows
3. With Herbaceous selected, repeat.
4. Click through footer links.

NOTE: Blog link is broken ☹.

**Exercise #1: All plants, images**

1. With Woody plants selected, click Search. How many woody plants are in the database?
2. Click "View Images". How many Woody plant images are there in the database?
3. Click on a picture to view plant information.
4. Click View search results, then Clear.
5. Repeat for Herbaceous plants.

**Exercise #2: Downloading images**

1. With Woody plants selected, click Search.
2. Click "View Images".
3. Select a few pictures by clicking on the white box next to the plant name.
4. Click Download images – files will be sent to your computer's Downloads folder.
5. Click View search results, then Clear.

**Exercise #3: Search for this plant**

1. Plant type: Deciduous tree
2. Size: height minimum of 40 ft

3. Light: Full sun
4. Soil: Adaptable
5. Seasonal interest: Fall
6. Add width maximum of 30 ft and search again

#### **Exercise #4 Search for this plant**

1. Plant type: Herbaceous perennial
2. Size: Height 36 in maximum
3. Light: Part sun
4. Soil: Prefers well-drained
5. Seasonal interest: Late summer
6. Add Landscape Use: Pollinator garden

#### **Result: *Echinacea purpurea***

1. Click View and scan plant data
2. Click on image to enlarge
3. Click Back to search
4. Click on Print
5. Scroll / look at the plant data sheet
6. Close the tab / window
7. Click Clear

#### **Exercise #5 Export select plants to a plant list for your landscape design**

1. Jot down a list of conditions for a site.
2. Make your own woody selection.
3. Click boxes of 1-3 plants (left of plant name)
4. Click Export Plants. NOTE: Must click Export before advancing to next window.
5. Click Clear.
6. Repeat steps 1-4 with herbaceous plants (use same / similar conditions)

#### **Exercise #6: Export plant list**

1. After choosing plants, scroll to top of window.
2. Click on orange Export List ( xx plants)
3. Review - edit / add to plant list
4. Print Plant data sheet if needed
5. Done? Click Export Plants
6. Click on the .csv file, edit as needed

### **TAKE-HOME MESSAGES**

- Think about the five considerations of sustainable design when you are planning a landscape project.
- Study your landscape site: sun, shade, available space.
- Have your soil tested so you can amend it properly before planting.
- Choose plants that grow in your site conditions.

### **ADDITIONAL RESOURCES**

University of Minnesota Extension Horticulture <https://extension.umn.edu/yard-and-garden>

Lawns and Landscapes - Landscape Design <https://extension.umn.edu/lawns-and-landscapes/landscape-design>

#### Plant Databases

Plant Elements of Design <http://landscapeplants.extension.umn.edu/>

Minnesota Department of Natural Resources <http://www.dnr.state.mn.us/nr/>

US Department of Agriculture <http://plants.usda.gov/>

Minnesota Landscape Arboretum <http://www.arboretum.umn.edu>

Plant Information Online <https://plantinfo.umn.edu>

U of MN WROC Annual Flower Research Results <http://wcroc.cfans.umn.edu/flower-research-results>

#### Plants for Pollinators

Holm, Heather, *Pollinators of Native Plants*, Pollination Press LLC, Minnetonka, MN. 2014

"Insect Pollinator Best Management Practices for Minnesota Yards and Gardens", MN Dept. of Agriculture, 2014.

<http://z.umn.edu/mdabees>

"Plants for Minnesota Bees", UMN Dept. of Entomology Bee Lab, 2014,

<https://www.beelab.umn.edu/bees/flowers>

The Xerces Society for Insect Conservation, <http://www.xerces.org/>

#### Associations & Societies

Minnesota State Horticultural Society (MSHS) <http://www.northerngardener.org/>

Minnesota Nursery & Landscape Association (MNLA) <https://www.mnla.biz>

American Horticulture Society (AHS) <http://www.ahs.org/>

American Society of Landscape Architects (ASLA) <http://www.asla.org/>

#### Public & Botanical Gardens

American Public Garden Association <http://www.publicgardens.org/>

Botanic Gardens <http://www.botanicgardens.org/pageinpage/home.cfm>

Chicago Botanic Garden <http://www.chicagobotanic.org/>

United States Botanic Garden <http://www.usbg.gov/>

Brooklyn Botanic Garden <http://www.bbg.org/>

Missouri Botanic Garden <http://www.mobot.org/>

Como Park Zoo & Conservatory <http://www.comozooconservatory.org/>

Noerenberg Gardens <https://www.threeriversparks.org/parks/noerenberg-gardens.aspx>

## **QUESTIONS / COMMENTS**

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