Plant Selection and Garden Design
Learning Objectives
At the end of this session, you will:

• Be able to select the most appropriate plants
• Be able to explain rain garden design principles
• Be able to design sample rain gardens
Plant Selection and Garden Design

Plant Selection
Environmental Benefits

Plants can:

- Capture stormwater
- Capture carbon
- Capture particulates in air and water
- Shade and cool soil
- Open pore spaces in soil
Functional Benefits

Plants can:

- Create or define spaces
- Frame or anchor areas
- Provide textural contrast
- Screen views
- Provide seasonal interest

Photo credit: Eliana Brown
Plants Can Create or Define Space
Plants Can Frame or Anchor an Area
Plants Provide Textural Contrast
Plants Can Screen a View

Photo credit: Phyto Studio
Plants Can Provide Seasonal Interest

Photo credit: Eliana Brown
Plant Selection Steps

What are your Hardiness and Heat Zones?

What function will the plant perform?

What are the growing conditions?

Level of maintenance?

What is the largest you will ever want the plant to get?

Choose your favorite!

Photo credit: Layne Knoche
Moisture Tolerance and Planting Zones

Top of Garden: Average to Dry Soil Moisture

Sides of Garden: Average Soil Moisture

Bottom of Garden: Average to Moist Soil Moisture

Sides of Garden: Average Soil Moisture

Top of Garden: Average to Dry Soil Moisture
Things to Consider: Physical Factors

• Where you place inlets and outlets

• Plant considerations
  o Sun
  o Seasonal interest
  o Patterns and groupings
  o Aggressiveness
  o Mature height and spread
  o Root mass (*depth* and *width*)
  o Exposure to deicing materials
Things to Consider: Aesthetic and Personal Preferences

- Edges
- Views
- Hardscapes (benches, paths, art, fences, boulders)
- Wildlife habitats (pollinator plants, feeding stations)
What Is Native?

Definition varies, but generally in the United States a native plant:

• Occurs naturally in a particular region
• Exists without human intervention
• Was present when Europeans arrived (500 years ago!)
• More info at: https://illinoisplants.org/
Native Plant Resources

- USDA-Natural Resources Conservation Service PLANTS Database
  plants.usda.gov
- University of Connecticut NEMO Rain Gardens website and app
  nemo.uconn.edu/raingardens
- *Bringing Nature Home* by Douglas W. Tallamy
- Illinois Extension Brochures
  https://extension.illinois.edu/cfiv/pollinator-pockets
Native Plant Sources

- Native Plant Nurseries
  https://illinoisplants.org/native-plant-nurseries/

- Local and regional seasonal plant sales
  https://illinoisplants.org/native-plant-sales/
What Is Invasive?

“An alien (or non-native) species whose introduction does, or is likely to cause economic or environmental harm or harm to human health.”
IISC Invasive Landscape Plant Species

- **Acer platanoides** (Norway maple)
- **Ailanthus altissima** (tree of heaven)
- **Alnus glutinosa** (black alder)
- **Euonymus fortunei** (wintercreeper)
- **Pyrus calleryana** (callery pear)
Plant Selection and Garden Design
**Blue Thumb Guide – Zones**

#1 — **Back edge.** Dry (average moisture). Tall plants.

#2 — **Side edges.** Dry (average moisture). Medium plants.

#3 — **Side slopes.** Average (moist soil). Medium plants.

#4 — **Front edge.** Dry (average moisture). Short plants.

#5 — **Center.** Moist (wet soil). Medium to tall plants.

#6 — **Center.** Moist (wet soil). Medium to tall plants.

#7 — **Transition.** Average (moist soil). Medium plants.
Example: Native Prairie in Full Sun

- **Coreopsis palmata** (Prairie Coreopsis)
- **Rudbeckia subtomentosa** (Sweet Black-eyed Susan)
- **Heliopsis helianthoides** (Common Ox-eye)
- **Liatris pycnostachya** (Prairie Blazingstar)
- **Tradescantia ohiensis** (Ohio Spiderwort)
- **Juncus effusus** (Soft Rush)
- **Geum triflorum** (Prairie Smoke)
- **Asclepias incarnata** (Marsh Milkweed)
- **Iris versicolor** (Blue Flag Iris)
- **Asclepias tuberosa** (Butterfly Milkweed)
- **Lobelia siphilitica** (Great Blue Lobelia)
Example: Native Prairie in Full Sun

Photo provided by Michigan Master Rain Gardener program
Example: Native Prairie in Full Sun

Photo provided by Michigan Master Rain Gardener program
Example: Native Plants in Shade/Partial Shade

- **Carex vulpinoidea**
  - Fox Sedge

- **Rudbeckia laciniata (s)**
  - Greenheaded Coneflower

- **Aquilegia canadensis**
  - Columbine

- **Geranium maculatum**
  - Wild Geranium

- **Athyrium felix-femina**
  - Lady Fern

- **Lobelia cardinalis (s)**
  - Cardinal Flower

- **Campanula rotundifolia (s)**
  - Harebells

- **Chelone glabra**
  - Turtlehead

- **Onoclea sensibilis**
  - Sensitive Fern

- **Polemonium reptans**
  - Jacob’s Ladder

- **Lobelia siphilitica (s)**
  - Great Blue Lobelia
Example: Native Plants in Shade/Partial Shade

Photo provided by Michigan Master Rain Gardener program
Example: Native Plants in Shade/Partial Shade

Photo provided by Michigan Master Rain Gardener program
Example: Native Plants in Shade/Partial Shade

Photo provided by Michigan Master Rain Gardener program
Example: Low-maintenance Shrub Garden

Thuja occidentalis
Arborvitae

Viburnum prunifolium
Black Haw Viburnum

Hamamelis vernalis
Witchhazel

Cornus sericea
Red-osier Dogwood

Diervilla lonicera
Dwarf-bush Honeysuckle

Lindera benzoin
Spicebush

Aronia melanocarpa
Black Chokeberry

Juniperus horizontalis
Creeping Juniper

Spiraea
Spiraea

Purdue University is an equal access/equal opportunity institution.
Example: Low-maintenance Shrub Garden

Photo provided by the U.S. EPA
More Rain Garden Design Resources

• New Moon Nursery
  http://www.newmoonnursery.com/

• Missouri Botanical Garden
  nemo.uconn.edu/raingardenshttps://www.missouribotanicalgarden.org/

• *Blue Thumb Guide to Rain Gardens* by Rusty Schmidt
  https://bluethumb.org/raingardens/

• *Planting in a Post-Wild World* by Thomas Rainer and Claudia West
  https://phytostudio.com/book
Plant Selection and Design: Review

- Determine your USDA zone
- Figure out how much sun will your rain garden will get
- Determine your maintenance level (avoid aggressive and invasive species)
- Decide whether plants must tolerate deicing salts
- Determine whether you want to attract certain wildlife species
- Decide if you want the rain garden to be attractive spring to fall or all year
- Select plants that fit your criteria
Plant Selection and Garden Design

Activity
Plant Selection and Garden Design

Home Learning
Home Learning

• Watch video
  o Installation and Maintenance (12 minutes) go.Illinois.edu/purdue