

Rain Garden Plant Selection

Charlotte Glen , Bill Lord, Mitch Woodward

North Carolina Cooperative Extension

Andrew Anderson

North Carolina State University



Rain Garden Plant Function

- Nutrient and some heavy metal uptake
- Transpiration
- Enhance infiltration
- Soil stabilization
- Provide wildlife habitat – pollinators and beneficial insects
- Provide aesthetic appeal



Plants suitable for rain gardens...

- Tolerate periods of saturated soil, yet also thrive under drier conditions
- Persistent, long lived
- Low Maintenance
- Do not require fertilization or irrigation once established



Texas Star,
Hibiscus coccineus

Native Wetland Plants

- Tolerate wet conditions – many also tolerate intermittent drought
- Accustomed to our climate and soils
- Typically low maintenance
- Beautiful selections
- Caution: some spread vigorously, eg. Hardy ageratum



Hardy Ageratum, *Conoclinium coelestinum*

Native spreading perennial with vigorous rhizomatous roots – will quickly overtake other plants



Plants not suitable for rain gardens...

- Do not like “wet feet”
(eg. Flowering Dogwood)
- Are susceptible to root rot
(eg. Non native Azaleas)
- Not drought tolerant
 - Unless you plan to water during dry spells



Avoid Invasives!

North Carolina Native Plant Society

☪ NCNPS HOME ☪ Natives ☪ **Invasives** ☪ Plant Gallery ☪ Neat Stuff ☪ Contact

Invasive Exotic Species List

NC Native Plant Society – Invasive Exotic Plants in NC – 2010

<http://www.ncwildflower.org/invasives/list.htm>

Rain Garden Design

- **Minimum size** depends on watershed
 - Can plant outside of excavated area
- **General location** determined by stormwater flow



Intercept stormwater before it leaves the landscape

Avoid the “rain garden that fell from the sky” look



Blend in with existing plantings and topography



If rain garden is “on its own”, make it large enough to be a landscape feature, in scale with size of yard



Too small,
stranded in
middle of
yard

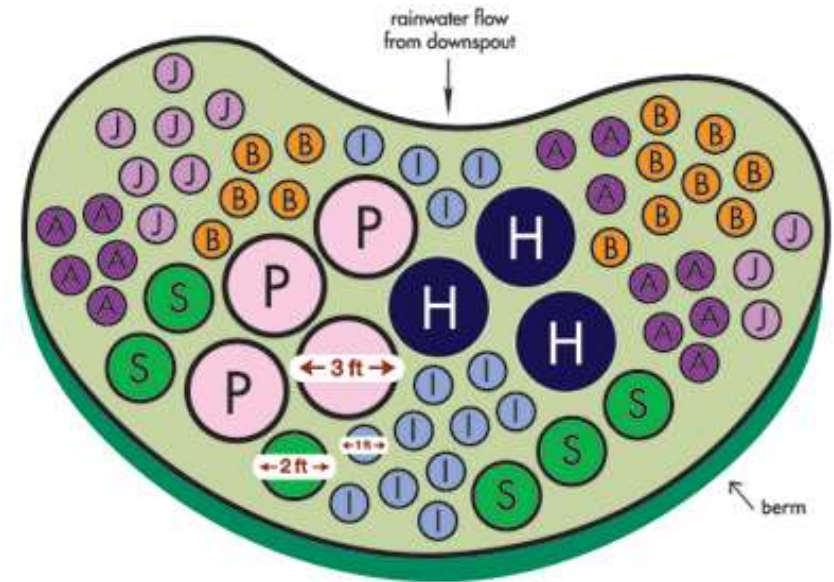


**Design with maintenance in mind –
Would it have been better to extend this rain garden out to the
sidewalk?**



Rain Garden Planting Design

- Rain gardens can be any shape
 - Work with contour of site
- Groups of plants look better than 1 of this, 1 of that
- Generally, taller plants in middle or towards back



**Simple planting plan
incorporating:
stone,
mass plantings of
grasses,
and accent trees**

Can also use turf in rain
gardens – Bermuda is
best turf for rain gardens



More complex
planting plant
incorporating
shrubs and
several types
of perennials



Dense plantings of grassy plants around berm and edges look good, stabilize the edge, help filter debris, and keep mulch from washing out



“Naked” berms



Full Edges



Plant Spacing

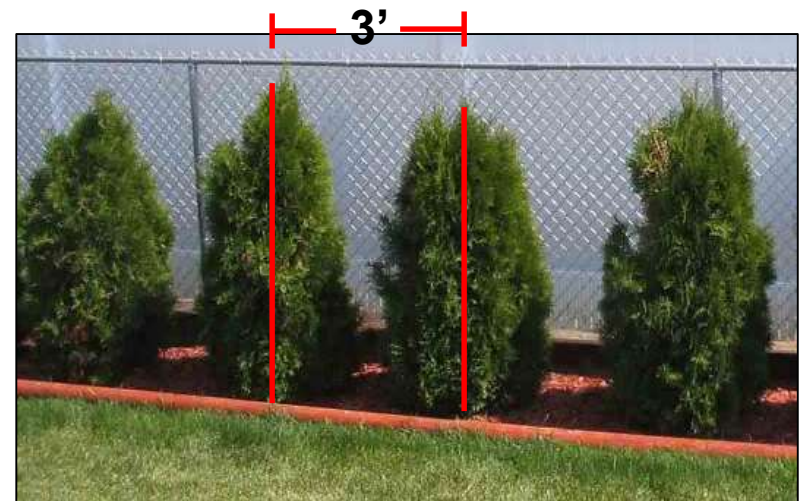
- Depends on growth habit of plant (height, width, overall shape)
- Allow enough space for plants to reach mature size
 - Slight overlap for full look
 - Just touching or space in between for less crowded look



Plant Spacing

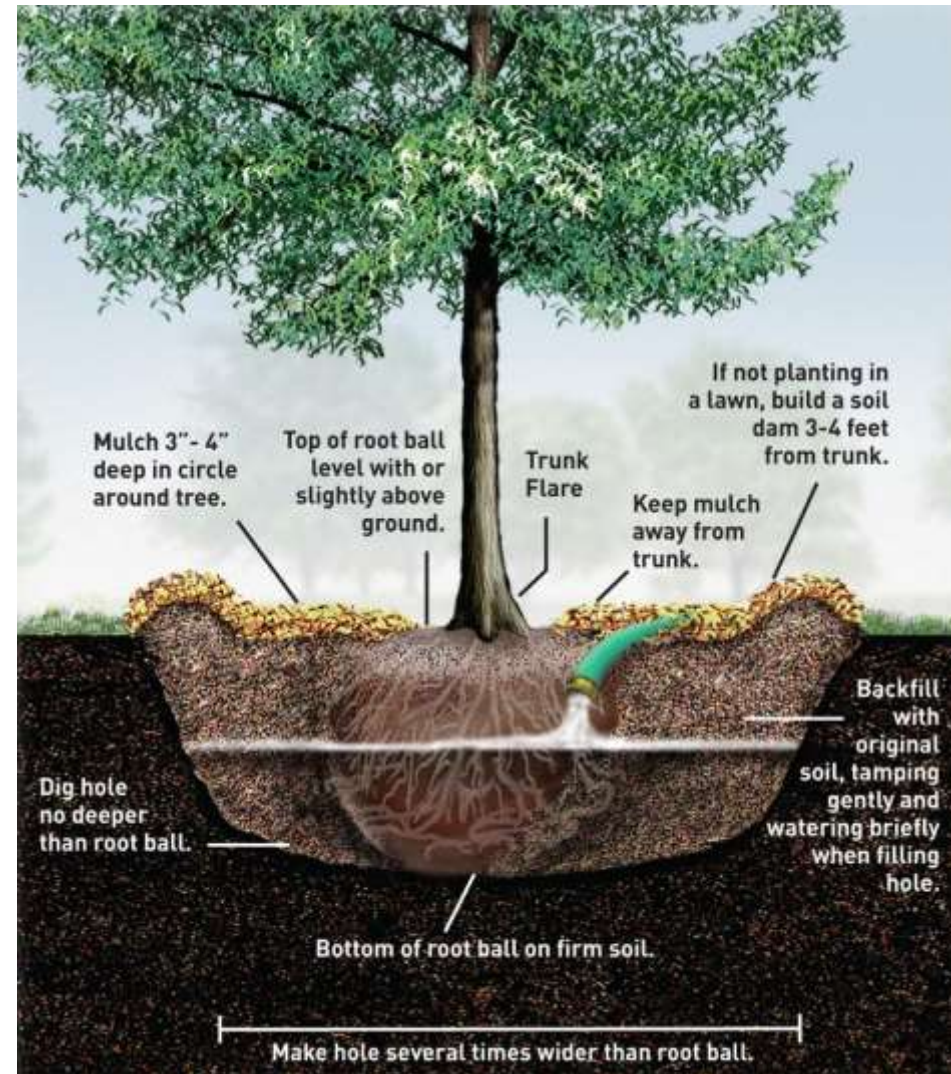
- Spacing measured from center of one plant to the center of the next (not the edge)
- General planting guide (Note: Read plant label for spacings):
 - 1'- 3' apart for perennials
 - 2'-3' apart for most grasses
 - 3'-5' apart for most small to medium shrubs
 - 6'-8' apart for larger shrubs
 - For trees use mature size

If these shrubs grow 3' wide and you want them to meet at maturity, space 3' apart from center of one shrub to center of next



Good planting technique

- Dig a hole at least twice as wide as root ball or container
- Same depth as root ball
- Top of root ball level with or slightly above soil level



Plant correctly



Tight roots may not grow out properly

Loosen roots
before planting



Do you need to fertilize???

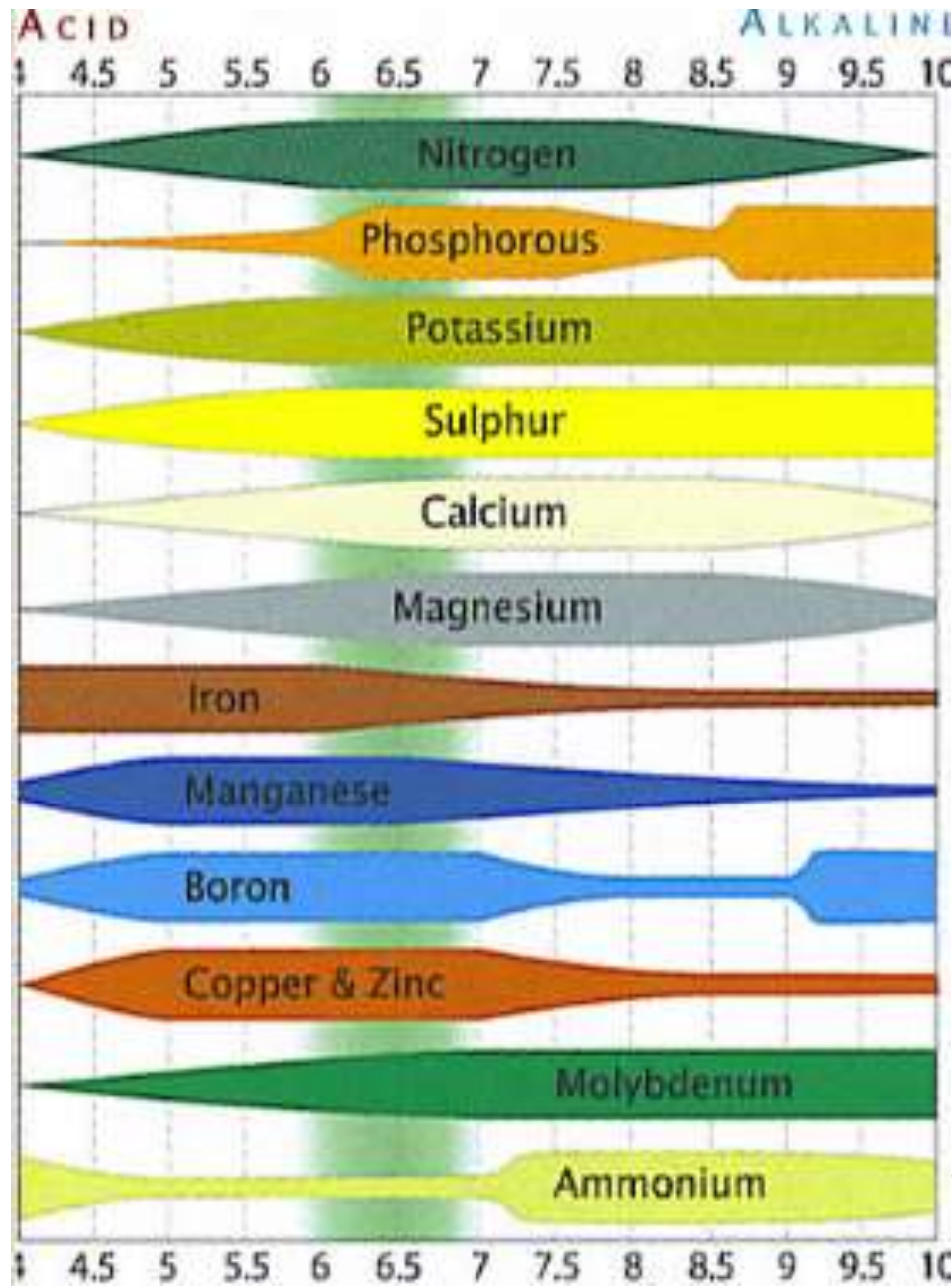
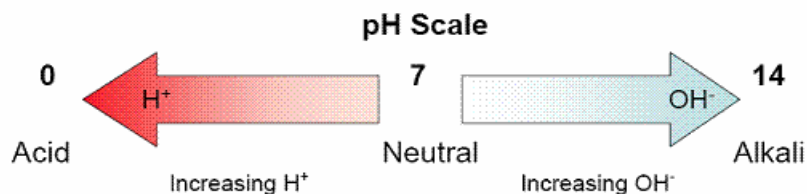
2005

2006



Check Soil pH

- **Soil test!** Soil pH affects nutrient availability
 - Can limit root growth under extremely acidic conditions
 - Our soils are typically acidic, as is rain water
- Also check phosphorus index
 - ideally, less than 50



Choosing Plants for Rain Gardens

- **Key question:** How wet will it be?
- Depends on soil type and hydrology of the site (sand or clay)
- Also depends on location within rain garden



Match Plants to Expected Moisture Level

- **Quick Draining Rain Garden**, drain < 12 hours
 - Need greater drought tolerance, especially in deep sandy soils
- **Standard Rain Garden**, drain in 12 hours - 3 days
 - Plants tolerant of moist soil and “wet feet”
- **Wetland Garden**, drain > 3 days
 - Plants tolerant of extended flooding



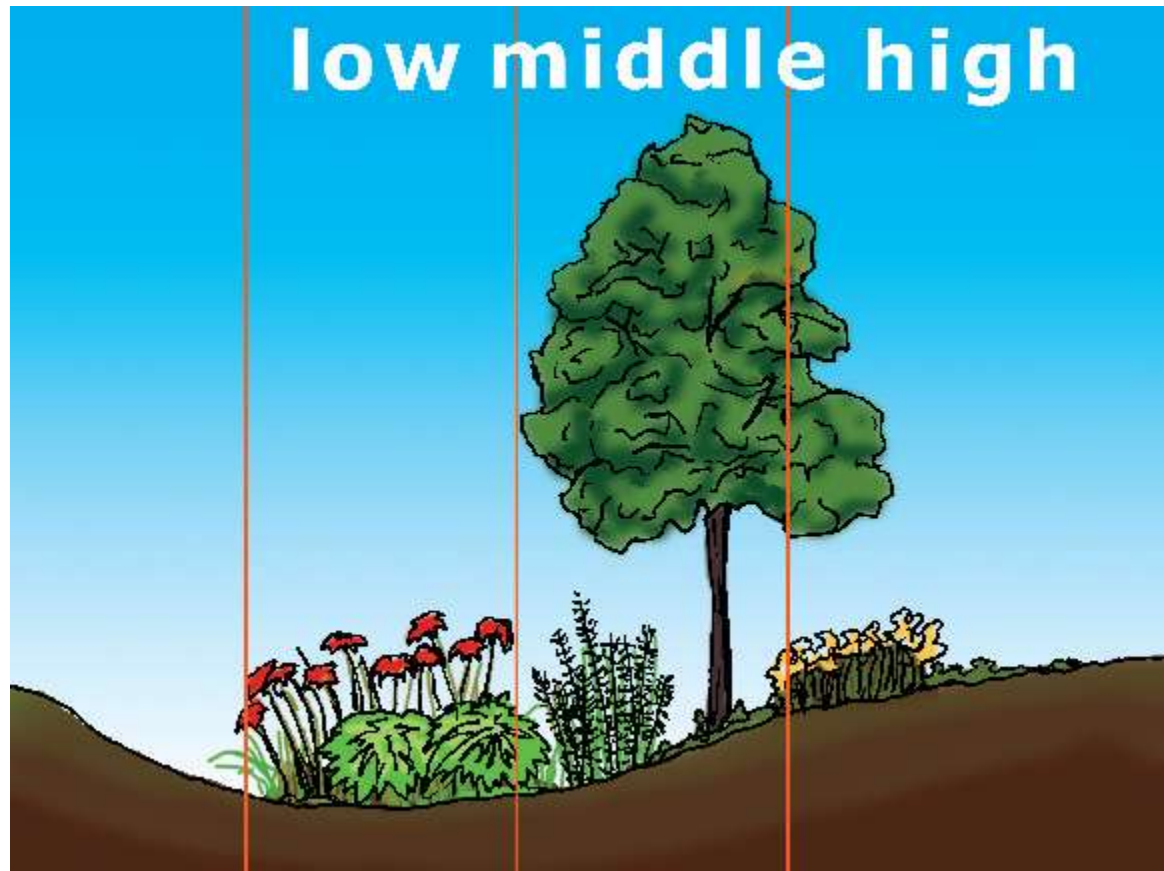
Rain Garden Wetness Zones

- **LOW**

- pooling area, wettest zone
- Most careful plant selection

- **MIDDLE**

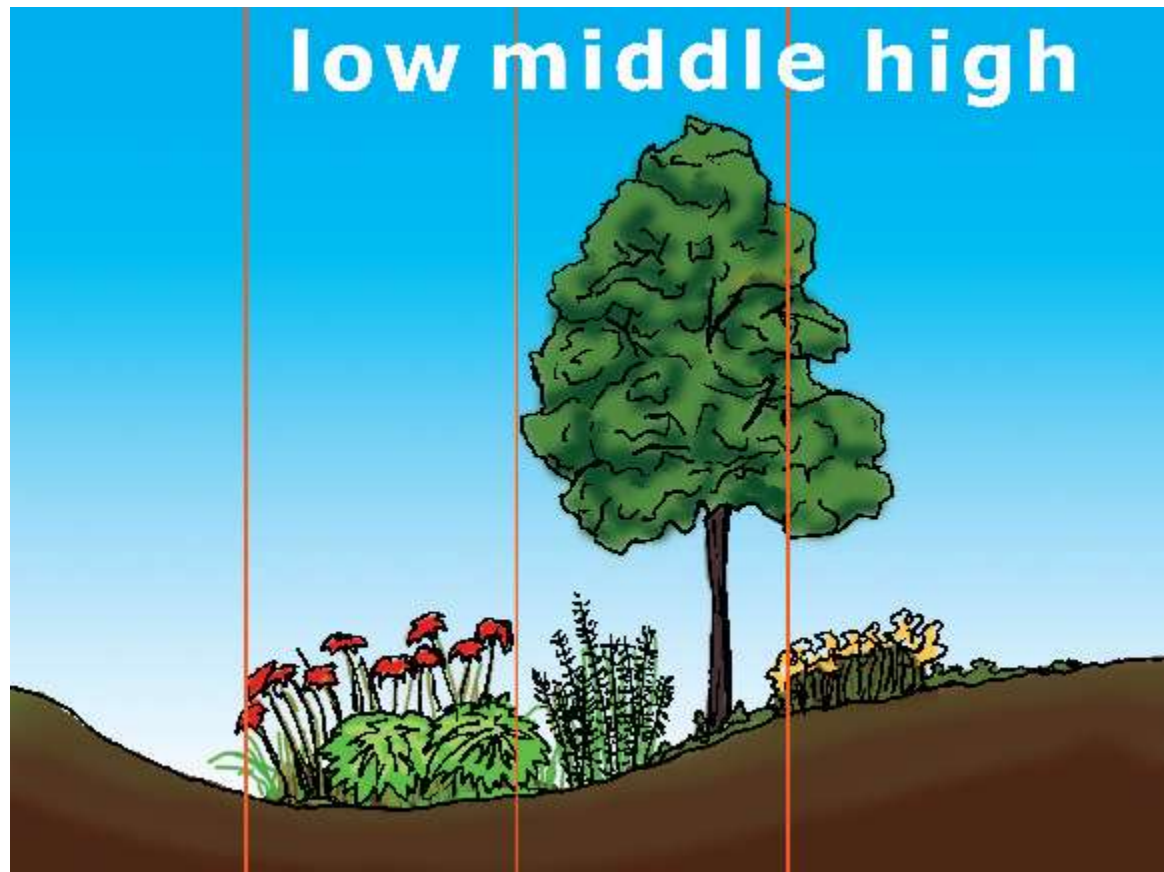
- sloped area
- intermittently wet with flooding then dry



Rain Garden Zones

- **HIGH**

- Outer edge and surrounding area
- May experience brief overflow but not standing water
- Can use any plants adapted to site conditions
- Planting in and beyond this area will help garden blend into larger landscape



Plant selection is most critical in deeper/longer ponding areas



**Sandy Soil =
drought
tolerance most
important**

Extend plantings beyond the excavated area to broaden plant selection



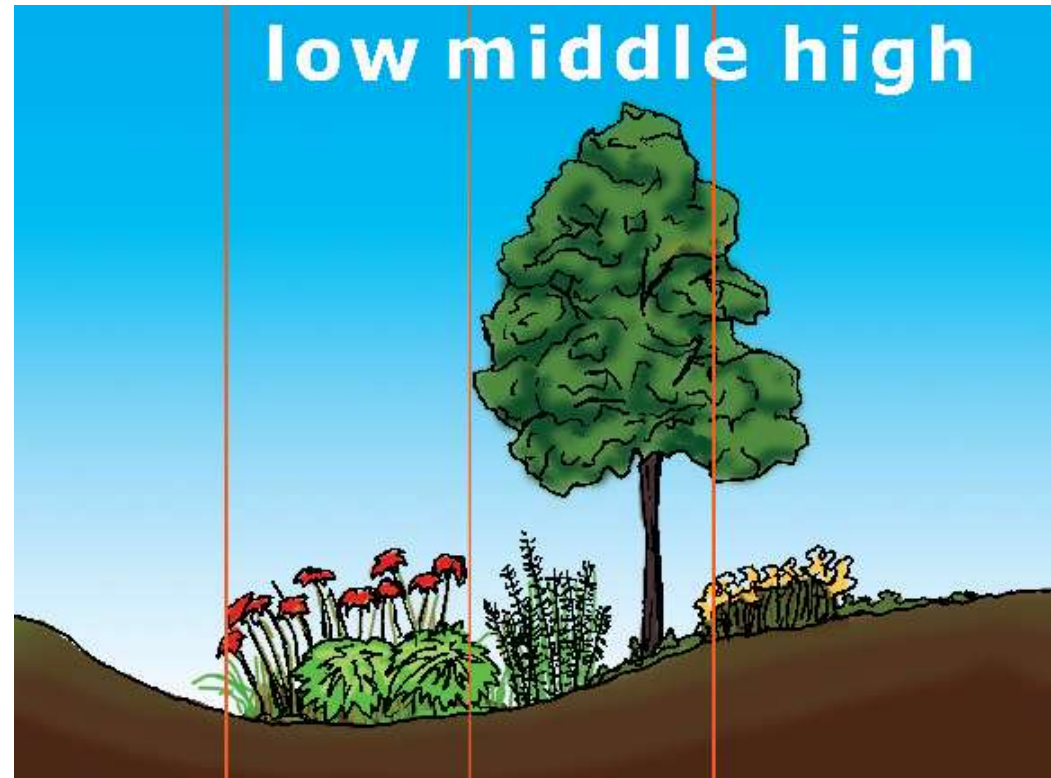
Plants for Rain Gardens in Central NC

- Trees
- Shrubs
- Perennials
- All for sun to part shade
- Natives and non-invasive non-natives
- Commercially available



Match Plants to Expected Moisture Level

- Plants suited to quick draining rain gardens (wet < 12 hours) good for HIGH areas
- Plants suited to standard rain gardens (wet 12 hours - 3 days) good for LOW and MIDDLE areas
- Plants suited to wetland gardens (wet > 3 days) best in LOW areas

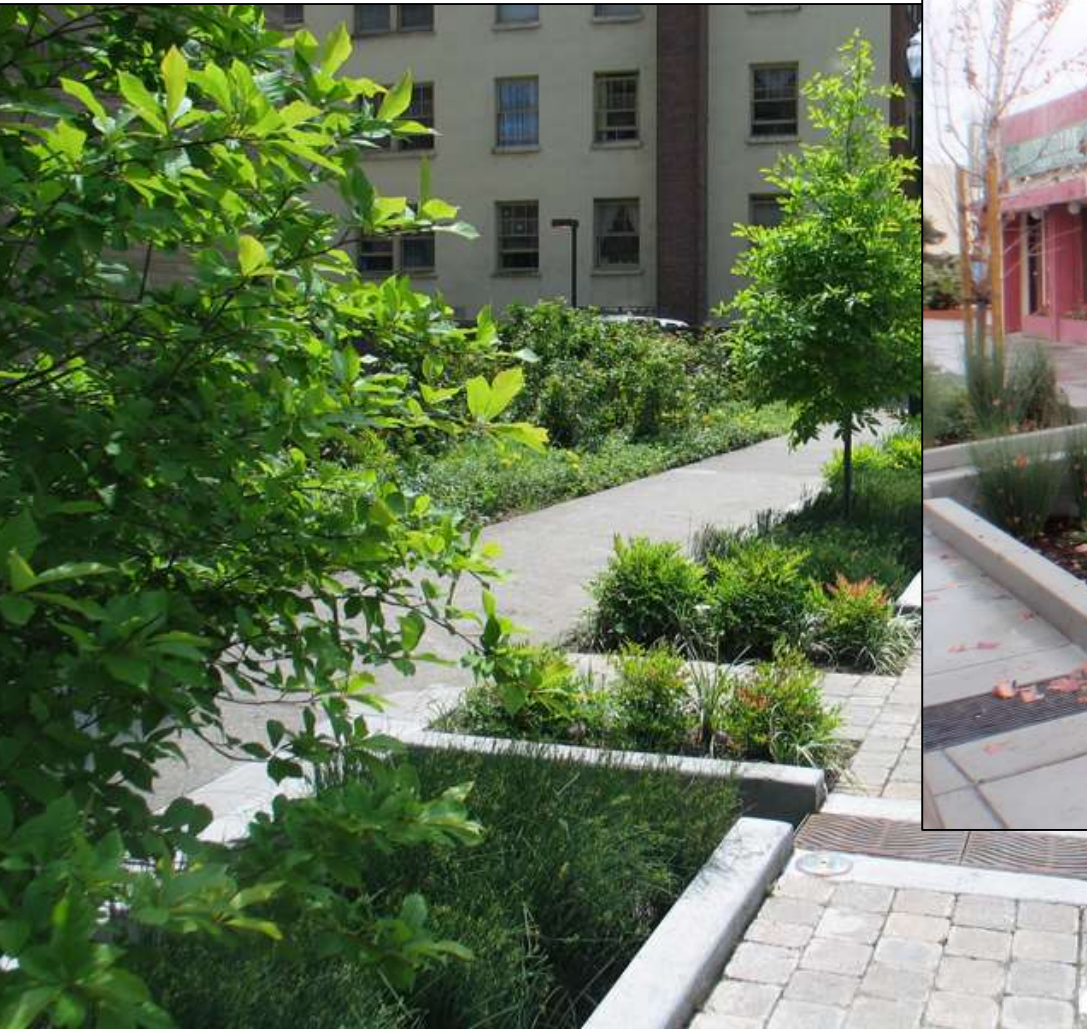


Trees in Rain Gardens

- Add height
- Extensive root systems
- For small rain gardens, 1 small tree often enough
- Use in combination with shrubs and perennials
- Or trees only for a low maintenance garden



Trees in bioretention cells underplanted with grasses and sedges



River Birch

Betula nigra

- Native
- 40' x 30'
- 'Heritage' older variety, 'Duraheat' newer with better leaf spot resistance
- Dry, standard, wetland



Red Maple

Acer rubrum

- Native
- Grows 40'-60' x 40'-60'
- Standard, Wetland
- Cultivars:
 - 'October Glory'
 - 'Red Sunset'



Blooms (top)
Seeds (bottom)

Red Maple foliage



Redbud

Cercis canadensis

- Native
- Lives ~ 20 yrs.
- Dry, standard (not in ponding area)
- 15'-20' tall and wide
- Deer love it!



Redbud Cultivars

'Forest Pansy'

'Merlot'

'Burgundy Hears'



'Hearts of Gold'

'Rising Sun'



Sweet Bay

Magnolia virginica

- Semi-evergreen tree to 30', often multi-stemmed
- Native
- Fragrant flowers, late spring
- Standard, wetland



**Upright habit;
Fall seeds great
for birds**



Fringetree

Chionanthus virginicus

- To 20' x 20'
- Standard, wetland
- Fragrant blooms in spring
- Deer love it!



Yaupon

Ilex vomitoria

- Native
- Weeping, upright, and dwarf (3'-4' tall) forms available
- Red berries on weeping and upright forms
- Average to dry



Shrubs in Rain Gardens

- Most moisture tolerant shrubs are **deciduous**
- Plant **evergreens** in high zones and outer edges for winter interest
- Too many shrubs may look overgrown



Too many shrubs – planted too close together

Beautyberry

Callicarpa americana

- Native
- 6' x 6' if cut back to 1' every year in Feb/March
- Quick, standard





Sweat Bee



Rustic
Sphinx
Moth

Virginia Sweetspire

Itea virginica

- Native
- Standard, wetland
- Suckering roots
- Cultivars:
 - ‘Henry’s Garnet’,
4’-6’ x 4’-6’
 - ‘**Little Henry**’, dwarf
– 3-4’ x 3-4’
- Deer Love It!



Itea flowers



Possumhaw Viburnum

Viburnum nudum

- Native
- 6-10' tall, 4-8' wide
- Standard, wetland
- Cultivars:
'Winterthur' and
'Brandywine'



**Snowberry Clearwing
Moth**



Sweet Pepperbush

Clethra alnifolia

- Native
- 4'-6' tall and wide
- Cultivars:
 - ‘Hummingbird’, ‘Sixteen Candles’, dwarf white, 3' x 6'
 - ‘Ruby Spice’, upright pink, 8' x 5'
- Very fragrant, suckering roots
- Quick, standard





**fall
color**

'Ruby Spice' – pink flowers



Clethra 'Sixteen Candles'
Grows 3' - 4' tall and wide

Buttonbush

Cephalanthus occidentalis



- Native
- 6' x 6'
- Standard, Wetland
- Cut back to 1' each year in March – or will grow to 12'
- White flowers in summer
- Late to leaf out in spring



Winterberry

Ilex verticillata



- Native
- Standard, wetland
- 6' – 8' tall and wide
- Cultivars more compact, 3-4':
 - Berry Poppins
 - Red Sprite
 - Little Goblin
- Must plant male pollinator
 - Mr. Poppins
 - Jim Dandy



Spicebush

Lindera benzoin

- Native
- 4'-6' tall and wide
- Small yellow flowers in early spring
- Red berries in fall on female plants
- Standard, wetland



Spicebush Swallowtail



Inkberry

Ilex glabra

- Native
- 4'-5' x 3'-4'
- Evergreen
- Quick Draining,
Standard



'Shamrock'

Perennials and Grasses in Rain Gardens

- For color and seasonal interest
- Most dieback in winter – cut back after frost
- Grasses add texture and are tough!
- Flowers provide food and habitat for beneficials and pollinators





Fall Color



False Indigo

Baptisia - hybrids and species

- 3' - 4' x 2' - 3'
- Sun to light shade
- Drought tolerant
- Very long lived, clump forming
- Several species native to SE US



Baptisia australis

**White Fals Indigo,
*Baptisia alba***



'Purple Smoke'



'Carolina Moonlight'



Blue Flag Iris, *Iris virginica*

Native

2'-3'

Standard, wetland

Siberian Iris,

Iris sibirica,

not native



Yellow Flag Iris,

Iris pseudacorus,

is not native and is
potentially invasive!

Don't plant!



Black Eyed Susan

Rudbeckia fulgida

- Native
- Yellow flowers all summer, 3' tall
- Quick, standard
- Cultivar: 'Goldstrum' most common
- Deer love it!



Daylilies

Hemerocallis hybrids

- Not native
- Quick, standard
- 100's of varieties!
- 1' to 4'
- Dwarf rebloomers:
 - 'Happy Returns', 'Pardon Me', 'Stella D'oro', 'Purple Stella'



Rain Lilies

Zephyranthes

- Not native
- Evergreen foliage
- 1' tall
- Standard, wetland
- Several species and selections – white, pink, yellow, apricot
- *Z. candida* – white
- Hardy to zone 7



Labuffarosea

Rain Lilies

Grandjax



Ajax



Seashore Mallow

Kosteletskya virginica

- Native
- 4'-5' tall
- Standard, wetland
- Butterflies love it!
- Late to emerge in spring



Rose Mallow

Hibiscus moscheutos

- Native
- 4'-6' tall and wide
- Standard, wetland
- Many cultivars and hybrids, 'Disco Bell' - seed strain
- Deer?

Red Star, Texas Star

Hibiscus coccineus

Red flowers, more finely cut leaves, less bothered by Jap. Beetles and caterpillars



Swamp milkweed

Asclepias incarnata

- Native
- 3' -4' tall and wide
- Spring/early summer flowers, pink or white
- Sun to part shade
- Standard, wetland
- Monarchs! Attracts many pollinators



Joe Pye Weed

- Native
- Standard, wetland
- *Eutrochium dubium*
 - 4'-5' tall x 3'-4' wide
 - Eastern half of NC
- *E. fistulosum*
 - 5'-8' x 3'-4'
 - More common piedmont
- *E. purpureum* and *E. maculatum* in Mountains



Cardinal Flower

Lobelia cardinalis

- Native
- Height: 3'
- Standard, Wetland
- Do not mulch over evergreen leaves in winter



'Fireworks' Goldenrod

Solidago rugosa

- Native
- 2'-3' tall and wide
- Pollinators love it!
- Standard



Panic Grass, Switch Grass

Panicum virgatum

- Native
- Quick, standard
- ‘Shenandoah’ ‘Prairie Fire’, 3’ x 2’, burgundy leaves
- ‘Northwind’, 5’ x 2’, upright
- ‘Cloud Nine’, large, 8’ x 6’, strong stems



‘Northwind’

River Oats

*Chasmanthium
latifolium*

- Native
- 3'-4'
- Self-seeds
- Standard,
wetland



Muhly Grass

Muhlenbergia capillaris

- Native
- 4' tall in bloom, 3' x 3' mound
- Dry to average
- Semi-evergreen, but best if cut back in winter

Summer →
Fall ↓



Sweetflag

Acorus gramineus

- Not native
- 8" – 12", evergreen
- 'Ogon' – gold leaves
- Great for edges and underplanting
- Standard, Wetland
- *Acorus calamus* – is native, taller, green leaves



Juncus (Rush)

Juncus effusus,
Common rush

- Native
- 3' x 2'
- Semi-evergreen
- Grass like plant
- Standard, wetland – prefers constant moisture



Juncus in bioretention



Sedges – *Carex* species

- Many native species available from wetland nurseries
- Non native species sold at many nurseries
- Most need constant moisture and prefer afternoon shade

Carex crinita, Fringe Sedge

- 3' tall, semi-evergreen
- Standard, wetland



Ferns

- Many native ferns for moist soils
- Most prefer part-full shade
- **Cinnamon Fern** →
 - *Osmunda cinnamomea*
 - Tolerates full sun if constantly moist
 - 3'-4' x 2'-3'
- **Sensitive Fern** →
 - *Onoclea sensibilis*
 - Spreads
 - 2'-3' tall
- Standard, wetland



Need more plant info?

Plants Database

<http://plants.ces.ncsu.edu/>

NC STATE UNIVERSITY CAMPUS DIRECTORY | LIBRARIES | MYPACK PORTAL | CAMPUS MAP

NC STATE UNIVERSITY

State University
A&T State University
NC COOPERATIVE EXTENSION
Empowering People · Providing Solutions

Search

Plants [Grow Plants](#) [Buy Plants](#)

Annuals	Poisonous Plants
Carnivorous Plants	Roses
Edible Plants	Shrubs
Ferns	Spring Bulbs
Groundcover	Summer Bulbs
Herbs	Trees
Native Plants	Vines
Ornamental Grass	Water Garden
Perennial Bulbs	Wildflowers
Perennials	All Plants

