

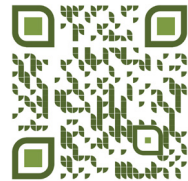
# PLANTS FOR GREEN INFRASTRUCTURE

The way people think about plants and the way our communities manage water are changing. Green infrastructure (GI) uses plants, soils, and natural processes to manage water and add ecological function to new and existing development. It also provides additional benefits, such as recreation space, support for wildlife, and increased aesthetic value.

Grasses and sedges play a major role in green infrastructure and low impact development. Their fibrous root systems anchor soil, slow down water flow, and increase infiltration. They help remove pollutants, and many are well-adapted to the demands of GI features.

These first two pages give a quick overview of common GI projects that include plants. The following pages suggest grasses and sedges that perform well in these projects.

Looking for more information about GI? Scan this QR code.



## MEADOW & PRAIRIE PLANTINGS

**Meadow & Prairie Plantings** reduce stormwater runoff, add green spaces in urban areas, and support wildlife. Plantings are usually open communities of grasses and wildflowers, with few trees. Grasses and sedges work great in these plantings because they cover a wide variety of conditions such as low-fertility soils, full sun, and drought tolerance.

## EROSION CONTROL

**Erosion Control** plants keep soil in place and improve water quality by keeping sediment and pollutants out of waterways. The branching, fibrous root systems of grasses and sedges stabilize soil, especially on banks and slopes. They need little maintenance and are quick to establish, which can be critical on steep inclines or embankments.



## BIORETENTION & RAIN GARDENS

**Bioretention & Rain Gardens** are vegetated depressions in the ground. They provide storage, evapotranspiration, and treatment of stormwater runoff. They drain within 24-48 hours and dry out when rain is sparse. Plants must be able to handle both wet and dry conditions and tolerate pollutants from surrounding land use.



## GREEN ROOFS

**Green Roofs** help manage stormwater, reduce energy consumption, provide wildlife habitat, and increase roof lifespan. Green roof systems typically have low fertility and shallow soil conditions. Plants must be heat/drought tolerant, provide consistent coverage, use nutrients efficiently, and have non-aggressive root growth.

## LAWN ALTERNATIVES

**Lawn Alternatives** create a low ground cover that does not need regular mowing or fertilizing. Compared to turfgrass, they reduce resource use and maintenance burden. Many grasses and sedges handle dry conditions once established and do not need supplemental irrigation. Some can tolerate being mowed two-three times a season if desired.



## BIOSWALES & VEGETATED SWALES

**Bioswales & Vegetated Swales** are gently sloping channels planted heavily with a variety of species, as opposed to grassed swales, which contain only turfgrass. They slow water flow, filter out trash and pollutants, and allow for infiltration and evapotranspiration. Plants must have strong root systems and establish quickly.

Plants for Green Infrastructure	Plant Name	Biorentention & Rain Gardens	Bioswales & Vegetated Swales	Erosion Control	Green Roofs	Lawn Alternatives	Meadow & Prairie Plantings	Quick Facts										
								Zones	Height	Shade	Part Shade	Sun	Dry	Average	Moist	Wet		
	<i>Acorus gramineus</i> 'Ogon'		●					5-10	15"									
	<i>Ammophila breviligulata</i> *			●				3-8	3'									
	<i>Andropogon gerardii</i> *			●			●	3-8	5-7'									
	<i>Andropogon gerardii</i> 'Blackhawks' <sup>1</sup> PP27949*			●			●	3-9	4-5'									
	<i>Andropogon gerardii</i> Karl's Cousin <sup>®</sup> ('Nondhwr')*			●			●	4-8	6-7'									
	<i>Andropogon gerardii</i> 'Red October' <sup>1</sup> PP26283*			●			●	3-9	5-6'									
	<i>Andropogon glomeratus</i> *	●	●					5-9	6'									
	<i>Andropogon ternarius</i> 'Black Mountain'*			●			●	6-9	3'									
	<i>Andropogon virginicus</i> *			●			●	3-8	4'									
	<i>Bouteloua curtipendula</i> *			●	●		●	4-9	3'									
	<i>Bouteloua dactyloides</i> *			●		●		4-8	8"									
	<i>Bouteloua gracilis</i> *			●	●	●	●	3-9	1'									
	<i>Bouteloua gracilis</i> 'Blonde Ambition' <sup>1</sup> PP22048*			●	●	●	●	4-9	3'									
	<i>Carex amphibola</i> *	●	●	●			●	3-9	1.5'									
	<i>Carex appalachica</i> *					●		3-8	1'									
	<i>Carex bicknellii</i> *	●		●			●	3-7	3'									
	<i>Carex cherokeensis</i> *	●	●			●	●	6-9	2'									
	<i>Carex comosa</i> *	●	●				●	4-9	4'									
	<i>Carex crinita</i> *	●	●				●	3-8	4'									
	<i>Carex divulsa</i>					●		5-9	1.5'									
	<i>Carex eburnea</i> *					●		2-8	1'									
	<i>Carex flacca</i>					●		4-8	1.5'									
	<i>Carex flacca</i> 'Blue Zinger'					●		4-8	1.5'									
	<i>Carex flaccosperma</i> *	●						5-8	1'									
	<i>Carex frankii</i> *		●				●	5-8	2'									
	<i>Carex grayi</i> *	●	●					3-9	3'									
	<i>Carex laxiculmis</i> 'Hobb' Bunny Blue <sup>®*</sup>	●						5-9	1'									
	<i>Carex lurida</i> *	●	●			●		3-8	3'									
	<i>Carex muskingumensis</i> *	●	●					4-8	3'									

\*N. American Natives

# Plants for Green Infrastructure

Plant Name

Bioretention & Rain Gardens

Bioswales & Vegetated Swales

Erosion Control

Green Roofs

Lawn Alternatives

Meadow & Prairie Plantings

## Quick Facts

Zones

Height

Shade

Part Shade

Sun

Dry

Average

Moist

Wet

Plant Name	Bioretention & Rain Gardens	Bioswales & Vegetated Swales	Erosion Control	Green Roofs	Lawn Alternatives	Meadow & Prairie Plantings	Zones	Height	Shade	Part Shade	Sun	Dry	Average	Moist	Wet
<i>Carex pensylvanica</i> *					●		4-8	1'							
<i>Carex radiata</i> *	●				●		4-8	2'							
<i>Carex squarrosa</i> *	●	●					4-8	3'							
<i>Carex stricta</i> *	●	●			●		4-8	3'							
<i>Carex texensis</i> *					●	●	5-9	1'							
<i>Carex vulpinoidea</i> *	●	●				●	3-8	3'							
<i>Chasmanthium latifolium</i> *		●					5-10	4'							
<i>Chasmanthium laxum</i> *	●						4-9	3.5'							
<i>Deschampsia cespitosa</i> *	●				●		4-7	1.5'							
<i>Deschampsia cespitosa</i> 'Goldtau'*	●				●		4-9	2'							
<i>Deschampsia flexuosa</i> *				●	●		4-7	2'							
<i>Elymus hystrix</i> *	●						4-9	4'							
<i>Eragrostis elliotii</i> *	●		●				8-10	2.5'							
<i>Eragrostis spectabilis</i> *					●	●	6-10	10"							
<i>Juncus effusus</i> *	●	●			●		4-10	4'							
<i>Juncus inflexus</i> Blue Arrows	●	●					5-9	3'							
<i>Juncus tenuis</i> *	●				●		2-10	1'							
<i>Muhlenbergia capillaris</i> *			●		●		6-10	4'							
<i>Muhlenbergia capillaris</i> 'White Cloud'*			●		●		7-10	4-5'							
<i>Muhlenbergia lindheimeri</i> *			●				7-10	5-6'							
<i>Muhlenbergia reverchonii</i> *	●		●		●		5-10	2.5'							
<i>Nassella tenuissima</i> *			●	●			7-10	2'							
<i>Panicum virgatum</i> *	●	●	●		●		4-10	3.5'							
<i>Panicum virgatum</i> 'Cape Breeze' <sup>1</sup> PP24895*	●	●	●		●		4-9	3'							
<i>Panicum virgatum</i> 'Cloud Nine'*	●	●	●		●		4-9	8'							
<i>Panicum virgatum</i> 'Dallas Blues'¹*	●	●	●		●		4-10	6'							
<i>Panicum virgatum</i> 'Heavy Metal'*	●	●	●		●		4-9	5'							
<i>Panicum virgatum</i> 'Northwind'¹*	●	●	●		●		4-9	5.5'							
<i>Panicum virgatum</i> 'Purple Tears' <sup>1</sup> PP28518*	●	●	●		●		4-10	4'							
<i>Panicum virgatum</i> 'Rotstrahlbusch'*	●	●	●		●		4-10	4'							

\*N. American Natives

# Plants for Green Infrastructure

Plant Name

Plant Name	Bio-retention & Rain Gardens	Bioswales & Vegetated Swales	Erosion Control	Green Roofs	Lawn Alternatives	Meadow & Prairie Plantings	Quick Facts									
							Zones	Height	Shade	Part Shade	Sun	Dry	Average	Moist	Wet	
<i>Panicum virgatum</i> Ruby Ribbons® 'RR1' PP17944*	●	●	●			●	4-9	4'								
<i>Panicum virgatum</i> 'Shenandoah'*	●	●	●			●	4-10	4'								
<i>Panicum virgatum</i> 'Summer Sunrise'*	●	●	●			●	4-10	4.5'								
<i>Panicum virgatum</i> 'Thundercloud' PP20665*	●	●	●			●	4-9	8'								
<i>Rhynchospora colorata</i> *	●	●					7-10	1.5'		●				●	●	
<i>Schizachyrium scoparium</i> *			●	●		●	3-9	3'								
<i>Schizachyrium scoparium</i> 'Blaze'*			●	●		●	3-9	3'								
<i>Schizachyrium scoparium</i> 'Carousel' PP20948*			●	●		●	3-9	2.5'						●		
<i>Schizachyrium scoparium</i> 'Chameleon' PP31339*			●	●		●	3-9	2'								
<i>Schizachyrium scoparium</i> 'Ha Ha Tonka' PP32374*			●	●		●	4-9	3'		●						
<i>Schizachyrium scoparium</i> 'MinnBlueA' PP17310 Blue Heaven®*			●	●		●	3-9	4'								
<i>Schizachyrium scoparium</i> 'Prairie Blues'*			●	●		●	3-9	3'								
<i>Schizachyrium scoparium</i> 'Standing Ovation' PP25202*			●	●		●	3-8	4'								
<i>Schizachyrium scoparium</i> 'The Blues'*			●	●		●	3-9	3'								
<i>Schizachyrium scoparium</i> 'Twilight Zone' PP27432*			●	●		●	3-9	4.5'								
<i>Scirpus cyperinus</i> *	●	●	●				4-9	6'		●				●	●	
<i>Sesleria autumnalis</i>				●	●		4-7	2'		●						
<i>Sesleria</i> 'Greenlee Hybrid'				●	●		5-9	1'								
<i>Sorghastrum nutans</i> *	●	●	●			●	4-9	6'								
<i>Sorghastrum nutans</i> 'Indian Steel'*	●	●	●			●	4-9	5'								
<i>Spartina bakeri</i> *	●	●					6-9	5'							●	
<i>Sporobolus heterolepis</i> *			●	●	●	●	4-9	3'								
<i>Sporobolus heterolepis</i> 'Tara'*			●	●	●	●	4-9	2'								
<i>Sporobolus wrightii</i> *	●	●	●				5-9	6'							●	●

\*N. American Natives

# NATIVE PLANTS FOR STORMWATER PROJECTS

Stormwater control measures (SCM) are structures that treat and manage water that runs off parking lots, roof tops, and other impermeable surfaces during and after a rain event. Green stormwater infrastructure measures like bioretention cells and stormwater wetlands use plants, soils, and natural systems to slow and collect runoff, filter out pollutants, and increase water infiltration.

Grasses, sedges, and rushes are ideal for these measures! Their bunching habit and extensive root systems boost their ecological value by slowing stormwater, reducing erosion, and sequestering carbon. A few years ago, Hoffman Nursery and others worked with North Carolina's stormwater program to add new plants, including grasses and grasslike plants, to the NC Stormwater Design Manual. To help the selection process we've created a chart of plants from the manual that we grow, together with a few others we recommend for bioretention and stormwater wetlands.

## What's in the Chart:

### Grasses, Sedges, and Rushes for Bioretention Cells

Plants used in bioretention cells must be able to withstand widely varying soil moisture conditions. Conditions in bioretention cells can be very dry for long time periods, punctuated with periods of temporary submergence.

Bioretention facilities in the piedmont and mountains tend to become wetter over time; coastal bioretention facilities tend to be very dry. The plants used should be species adapted to stresses associated with wet and dry conditions. Native grasses in mulched cells are an excellent option for bioretention cell plantings because of their hardiness, deeper roots, and aesthetic value.

### Grasses, Sedges, and Rushes for Stormwater Wetlands

The **shallow water zone** includes all areas that are inundated by the normal pool to a depth up to 9 inches. This zone does become drier during periods of drought. Shallow water zones, such as littoral shelves should be vegetated with emergent plants capable of growing in alternating dry and inundation and provide some of the best treatment zones in the wetland.

The **temporary inundation zone** stabilizes the slopes and optimizes pollutant removal during storm events. The temporary inundation zone should be planted with vegetation that can withstand irregular inundation and occasional drought.
























We've also included climate zone, maximum plant height, exposure, and moisture information in the chart as well as plants that support wildlife (🐦) and pollinators (🦋). Grasses, sedges, and rushes are often overlooked when it comes to pollinators and wildlife. Many of the native species we grow provide food and nesting material for butterflies and native bees. They also support other forms of wildlife like birds and small mammals by providing cover and a food source.

# Native Plants for Stormwater Projects

Plant Name	Stormwater Wetlands		Bioretention Cells	Zone	Height	Supports Wildlife and/or Pollinators	Exposure				Moisture				
	Shallow Water Zone	Temporary Inundation Zone					Shade	Part shade	Part sun	Sun	Dry	Average	Moist	Wet	
<i>Andropogon glomeratus</i> *		✓	✓	5-9	6'	 									
<i>Carex amphibola</i> *		✓	✓	3-9	1.5'	 									
<i>Carex bicknellii</i>			✓	3-7	3'	 									
<i>Carex cherokeensis</i> *		✓	✓	6-9	2'	 									
<i>Carex comosa</i> *		✓	✓	4-9	4'	 									
<i>Carex crinita</i> *		✓	✓	3-8	4'	 									
<i>Carex flaccosperma</i>			✓	5-8	1'	 									
<i>Carex frankii</i>		✓		5-8	2'	 									
<i>Carex grayi</i> *		✓	✓	3-9	3'	 									
<i>Carex laxiculmis</i> 'Hobb' Bunny Blue®			✓	5-9	1'	 									
<i>Carex lurida</i> *		✓	✓	3-8	3'	 									
<i>Carex muskingumensis</i> *			✓	4-8	3'	 									
<i>Carex radiata</i> *			✓	4-8	2'	 									
<i>Carex squarrosa</i> *		✓	✓	4-8	3'	 									
<i>Carex stricta</i> *		✓	✓	4-8	3'	 									
<i>Carex vulpinoidea</i> *		✓	✓	3-8	3'	 									
<i>Chasmanthium latifolium</i> *		✓	✓	5-10	4'	 									
<i>Chasmanthium laxum</i> *		✓	✓	4-9	3.5'	 									
<i>Deschampsia cespitosa</i>			✓	4-7	1.5'	 									
<i>Deschampsia cespitosa</i> 'Goldtau'			✓	4-9	2'	 									

\* Listed in the North Carolina's Stormwater Design Manual

# Native Plants for Stormwater Projects

Plant Name	Stormwater Wetlands		Bioretention Cells	Zone	Height	Supports Wildlife and/or Pollinators	Exposure				Moisture				
	Shallow Water Zone	Temporary Inundation Zone					Shade	Part shade	Part sun	Sun	Dry	Average	Moist	Wet	
<i>Elymus hystrix</i> * syn. <i>Hystrix patula</i>		✓	✓	4-9	4'	 									
<i>Eragrostis elliottii</i>			✓	8-10	2.5'										
<i>Juncus effusus</i> *	✓	✓	✓	4-10	4'	 									
<i>Juncus tenuis</i> *		✓	✓	2-10	1'	 									
<i>Muhlenbergia reverchonii</i>			✓	5-10	2.5'	 									
<i>Muhlenbergia capillaris</i> *		✓		6-10	4'	 									
<i>Panicum virgatum</i> * (and cultivars)		✓	✓	4-10	3.5'	 									
<i>Rhynchospora colorata</i> *	✓	✓		7-10	1.5'	 									
<i>Scirpus cyperinus</i> *	✓	✓	✓	4-9	6'	 									
<i>Sorghastrum nutans</i> *			✓	4-9	6'	 									
<i>Sorghastrum nutans</i> 'Indian Steel'			✓	4-9	5'	 									
<i>Spartina bakeri</i>			✓	6-9	5'										
<i>Sporobolus wrightii</i>			✓	5-9	6'										

\* Listed in the North Carolina's stormwater design manual

Information in this chart is based on our experience with these plants and/or the following sources: North Carolina Stormwater Design Manual (deq.nc.gov), Lady Bird Johnson Wildflower Center (wildflower.org), North Carolina Extension Gardener Plant Toolbox (plants.ces.ncsu.edu), Native Plant Trust (plantfinder.nativeplanttrust.org), Prairie Nursery (prairienursery.com), Illinois Wildflowers (illinoiswildflowers.info), Gardenia (gardenia.net), Waterwise Gardening, LLC. (waterwisegardening.com), Dyck Arboretum of the Plains (dyckarboretum.org).