

# Sustainable Lawns and Lawn Alternatives



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Horticulture Extension Agent  
NCCE Chatham County

# What are sustainable landscapes?

- **Increase diversity**
- **Support ecosystems**
- **Reduce inputs**
  - Select plants adapted to site and climate
- **Enhance beauty and functionality**



# Where do lawns fit?

- **Monocultures**
- **High inputs**



# How Lawns Fit in Sustainable Landscapes

- 1. Minimized to appropriate areas**
- 2. Adapted to existing site conditions**
- 3. Tolerate some diversity**
  - Many weeds provide important resources for pollinators - especially early spring bloomers
- 4. Allowed to go dormant during drought**
- 5. Soil test for proper fertility**
- 6. Healthy lawns = fewer pests & diseases**

# Appropriate Areas: Usage

- Need a wear-tolerant surface
- Need a low visual profile
- Need to maintain an access route



# Appropriate Areas: Site Conditions

- **Sunny** – at least 4 hours/day
- **Well drained**
- **Relatively flat to gently sloped**
- **Smooth, graded surface**
- **Relatively large block** with curving edges – easy to maintain



# Reducing Lawn Area



**Difficult to maintain!**

## Cut out problem areas:

- Wet and/or shady areas
- Constant, heavy traffic areas
- Difficult to maintain areas

# Reducing Lawn Area

**Expand mulched area**  
around trees and beds

- Pine straw
- Shredded bark
- Leaves





# Reducing Lawn Area

- **Add or expand beds** on perimeter and side yard
- Increase plant diversity
- **LESS MOWING**



# Turf Options

- Of 10,000 grass species worldwide, ~ 50 adapted to use as turf
- **7 common lawn species in NC**
- **No single species adapted to all areas of the state!**



# NC Native Grasses

- **Over 100 native species**
  - Broomsedges (*Andropogon*)
  - Bluestems (*Schizachyrium*)
  - Panic Grasses (*Panicum*)
  - Muhly Grass (*Muhlenbergia*)
- **None are adapted to use as mown turf**
- Some are grown as ornamental grasses
  - Deer Resistant



# The Right Turf for Your Lawn

- Climate
- Site conditions
- Need for wear tolerance
- Maintenance you can provide
- Budget
- Aesthetic preferences



'Empire' Zoysia

# Climate

## Cool season grass

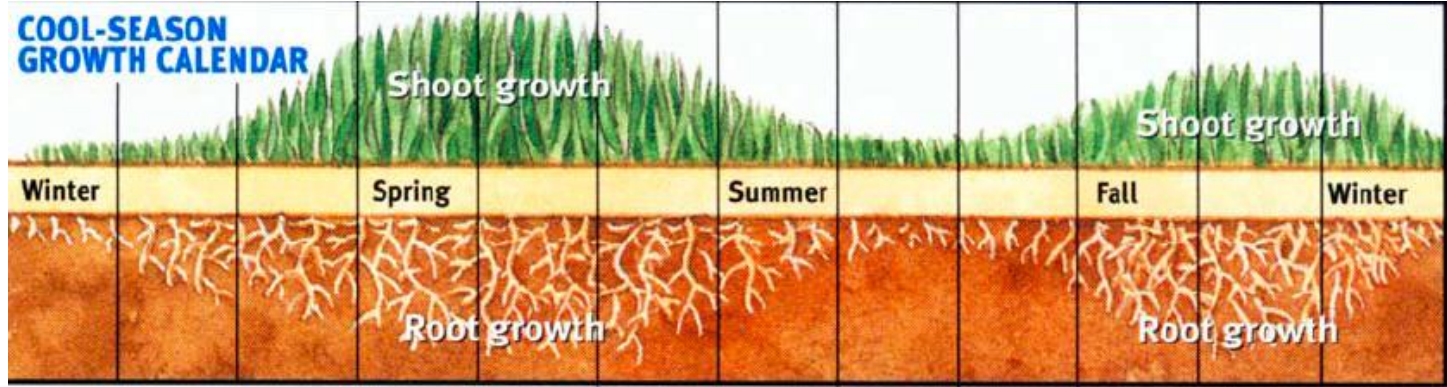
- Green in winter, not so happy in summer

## Warm season grass

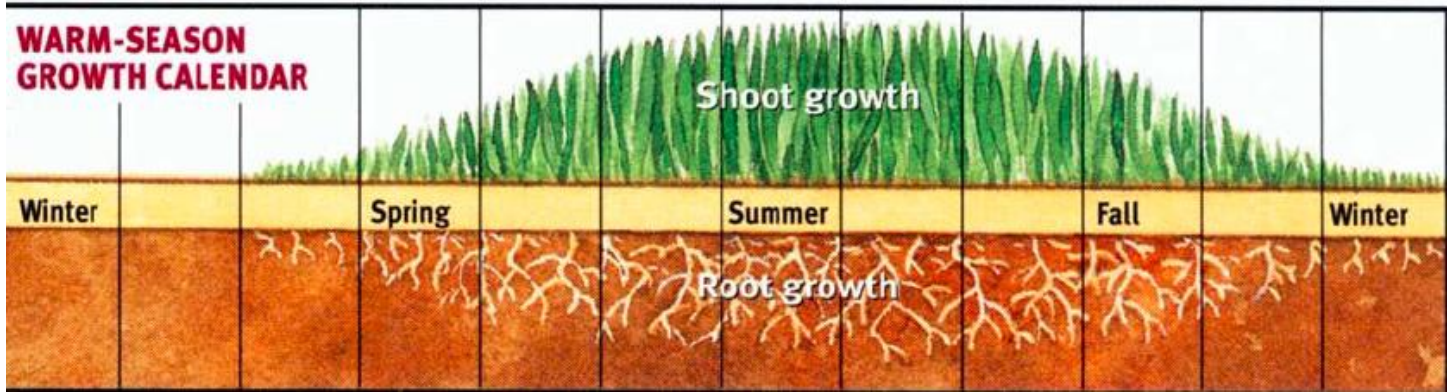
- Brown in winter, happy in summer



# Cool Season Turf Growth



# Warm Season Turf Growth



## You Can't Have Both!

- Warm and cool season lawns don't mix
- If have mix, select preferred species and manage for that species



# Turf Species for North Carolina

## Cool Season

- Tall fescue
- Fine fescues\*
- Kentucky bluegrass\*

## Warm Season

- Zoysia
- Bermuda
- Centipede<sup>+</sup>
- St. Augustine <sup>+</sup>

\* Not well adapted to the piedmont

<sup>+</sup> More prone to winter damage



# Choosing the Right Turf

	Can Be Seeded?	Tolerance Ratings					Appearance		Rate of Establishment*	Maintenance		
		Shade	Heat	Cold	Drought	Wear	Color	Texture		Cutting Height (in.)	Fertilizer (lb N/1,000 sq ft/yr)	Mowing Frequency**
<b>PIEDMONT</b>												
Bermudagrass (common)	Yes	1	6	2	6	6	Medium	Medium	Fast	0.75–2	4–4.5	Med-high
Bermudagrass (hybrid)	No	1	6	3	6	6	Light-dark	Fine-med	Fast	0.75–2	3–6	High
Bahiagrass	Yes	4	5	2	6	4	Med-dark	Coarse	Moderate	2–4	1	High
Centipedegrass	Yes	4	4	2	4	1	Light	Coarse	Slow	1–2	1–2	Low
Kentucky bluegrass/tall fescue mix	Yes	4	4	5	5	5	Med-dark	Med-coarse	Fast	2.5–3.5	2–4	High
Kentucky bluegrass/tall fescue/fine fescue mix	Yes	5	4	5	5	5	Med-dark	Med-coarse	Fast	2.5–3.5	2–4	High
St. Augustinegrass	No	5	5	2	4	1	Med-dark	Coarse	Fast	2.5–4	2–3	Med-high
Tall fescue	Yes	4	4	5	5	5	Medium	Med-Coarse	Fast	2.5–3.5	2–4	High
Zoysiagrass	Yes	4	5	4	6	5	Med-dark	Fine-med	Very slow	0.75–2	1–3	Low-med

**Carolina Lawns**  
**NC State Extension**  
 1 (Very Poor) - 6 (Excellent)

# Site Conditions

## Shade Tolerance – Still need 4+ hours/day!

- Tall Fescue (good)
- Zoysia (good)
- Bermuda (poor)

## Wear Tolerance

- Bermuda (high)
- Tall Fescue (high)
- Zoysia (medium)

## Drainage

- No turf grasses tolerate poor drainage!



# Site Conditions

## Soil pH and Nutrients

- All turf grasses except centipede grow best if **pH above 6.0**
  - Piedmont soils typically more acidic
  - **Add lime to raise pH**
- **Soil Testing:**
  - To determine how much lime needed, other nutrients
  - Free via NCDA and NCCE from April 1 – Dec. 15



# Soil Compaction

**No turf is adapted to highly compacted soil**

**Screwdriver test** – if difficult to push screwdriver into moderately moist soil, compaction needs to be alleviated



# Core Aeration

- Alleviates compaction in established lawns
- **Cool season grasses:**  
Sept/Oct or Feb/March
- **Warm season grasses:**  
May/June/July



# Maintenance Considerations

**How much time and money do you want to spend maintaining your lawn?**

- Mowing, edging, fertilizing

## **Maintenance**

- Bermuda (High)
- Tall fescue (Med)
- Zoysia (Med-Low)



# Budget

## By seed – cheapest

- Tall fescue: quick, high quality
- Bermuda: quick, lower quality
- Zoysia: slow, lower quality

## By sod – expensive

- Better quality varieties of all except tall fescue



# Aesthetic Preferences

- Color
  - Winter
  - Summer
- Height preferences
- Coarse texture vs fine texture





# Aesthetic Preferences

## Cool Season: Tall Fescue

- Mow high, 3-4”
- Wide blade
- Green most winters
- Dark green color

## Warm Season: Zoysia and Bermuda

- Mow lower, 1-2”
- Narrower blade
- Brown/beige in winter
- Zoysia – medium dark green
- Bermuda – gray-green



# Grasscycle!

- **Don't bag lawn clippings!**
- Does not contribute to thatch
- Only remove clippings when mowing delayed or weed seed abundant



# Tall Fescue

## Traditional Piedmont Lawn

- Most heat-tolerant cool season grass
- Sun-part shade
- Mow at 3"+, never shorter than 2.5"
- Wide blade = coarse texture
- Seed in Sept/Oct



## Advantages

- Easiest turf to establish by seed
- Clumping/bunch grass – does not run into beds and gardens
- Dark green color
- Can be green year-round
- Relatively shade tolerant



## Disadvantages

- May go dormant during summer drought if not irrigated
- Becomes spotty/patchy over time
- Overseeded every 2-3 years to maintain thickness/coverage
- Not well adapted to sandy or drought prone soils



# Recommended Tall Fescue Varieties for the Piedmont

- Many named varieties (cultivars) available
- **Plant a blend of varieties**
- **NCSU Trials**
  - Wolfpack II
  - Rebel IV
  - 3<sup>rd</sup> Millennium



# Varieties Should Be Listed on Label

PURE SEED	VARIETY/KIND	GERMINATION
17.06%	TAR HEEL II TALL FESCUE*	85%
17.06%	WOLFPACK II TALL FESCUE*	85%
14.62%	ENDEAVOR II TALL FESCUE*	85%

## OTHER INGREDIENTS

50.00% WATER SMART® PLUS FERTILIZER COATING

1.00% INERT FROM SEED

0.25% OTHER CROP SEED

0.01% WEED SEED

NOXIOUS WEED SEEDS: NONE FOUND

LOT NO. 16020003

TESTED: OCT. 2015 SELL BY: JUL. 31, 2016

Always buy seed dated for current year, preferably stored in climate controlled environment (indoors)

# Alternative: Tall Fescue-Clover Blend

- Clover is a legume
- Reduce N fertilizer needs by half
- Dutch white clover
  - Perennial
  - Creeping habit
- Disadvantages:
  - Not shade or drought tolerant
  - Slick/clumpy when mown
  - Reduced wear tolerance





# Tall Fescue – Clover Blend

## Mini- or Micro- clovers preferred

- “Turf Type” white clover
- Lower growing
- Less vigorous
- Smaller leaves
- Less flowers



# Bloom Season: Spring-Early Summer



# Tall Fescue–Clover Blend

## Seeding rate:

- 3 – 5% by volume
- Tall Fescue seeding rate:  
6 lbs/1000 sq. ft.
- Add 0.2 – 0.3 lbs. clover  
per/1000 sq. ft.
- Ideal time: mid-Sept



# Other Cool Season Grasses

## Annual & Perennial Ryegrass

- Quick fix - Not permanent
- Often included in “contractor’s blend”
- Sometimes used to overseed warm season lawns in winter
  - NOT Recommended



**Sometimes included in mixes for shade:**

- Kentucky bluegrass
- Fine fescues

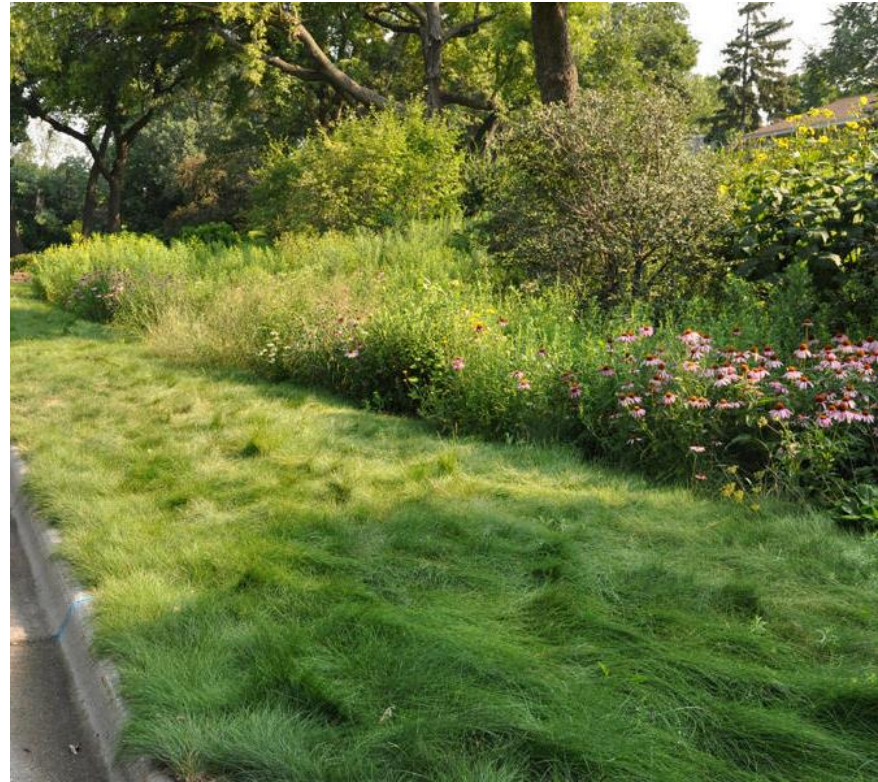
**Tall fescue comprise majority of blend**

- Look for 5:1:1 blend



# “No Mow” Lawns

- Typically mix of fine fescues
- Suited to northern states, Pacific NW
- Too hot here?
- May work for shady areas?



## Compared to tall fescue:

- More heat tolerant
- More drought tolerant
- More wear tolerant
- “Self-healing”

**Many varieties must be sodded**



Winter Color

# How Warm-Season Grasses Grow

- Spread by stolons and rhizomes
- “Self Healing”
  - Fill in damaged areas
  - More difficult to keep out of beds
- Seed/plug or sod April-July
  - Keep moist during establishment!



Rhizome



Stolons



# Bermudagrass

- Fine to medium texture, narrow blade
  - Mow at 1"-2" with rotary mower, lower with reel mower
- Gray-green to blue-green color

## **Advantages:**

- Excellent wear tolerance
- High drought tolerance



# Bermudagrass

## Disadvantages

- Full sun, not shade tolerant
- Spreads rapidly: stolons and rhizomes
- Mow frequently = twice a week
- High fertilizer requirements
- HIGH MAINTENANCE



# Bermudagrass Varieties

## Common Bermuda

- Coarser texture
- Seeded – established fast
- Often considered a weed!
- Spreads rapidly

## Hybrid Bermuda

- Finer texture
- Some varieties can be seeded
- Others must be established from plugs or sod

**See varieties listed in Carolina Lawns**



# Zoysiagrass

- Fine to medium texture, medium- dark green
- Spreads by stolons and rhizomes
- Good wear resistance
- Very drought tolerant
- Tolerant of moderate shade
- Developed for residential lawns



'Empire' Zoysia

# Zoysiagrass

## Moderate maintenance

- Average mowing 1/week
- Several varieties, most are sodded
- Zenith and Compadre can be seeded



# Zoysiagrass

## Coarser Texture

- Crowne
- Empire
- El Toro
- Zenith
- Compadre
- Mow 2-3”



## Finer Texture

- Zorro
- Zeon
- Cavalier
- Diamond
- GN-Z
- Mow lower

# Organic Lawn Care

- Healthy lawns out-compete weeds, resilient to pests and diseases
- Site and species selection
- Proper establishment
- Proper fertilization
  - Split applications

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## ORGANIC LAWN CARE

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A Guide to Lawn Maintenance and Pest  
Management for North Carolina

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**NC STATE**

EXTENSION

Prepared by A. H. Bruneau, Crop Science Extension Specialist (Turf)  
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North Carolina Cooperative Extension Service  
College of Agriculture and Life Sciences  
North Carolina State University

# If Turfgrass Weeds Could Talk

## Condition

Dry Soil

Wet Soil

Compacted soils

Low Nitrogen

Excess Nitrogen

Infrequent Mowing

Close/Frequent mowing

## Indicator Weeds

Spurge, black medic, oxalis, goosegrass,  
knotweed, lespedeza

Annual Bluegrass, pearlwort, moss, sedges

Annual bluegrass, sedges, goosegrass, spurge,  
knotweed, broadleaf plantain

Black medic, clovers, hawkweed, moss,  
crabgrass

Annual bluegrass, chickweed, ryegrass

Thistle, chicory, wild carrot

Annual bluegrass, moss, crabgrass, pearlwort



# Turf Alternatives

**There are no living lawn alternatives that tolerate regular wear**

**The right choice for your yard will depend on:**

- Site conditions (sun/shade, drainage)
- Personal preference (appearance)
- Landscape goals



## The Wrong Place for Lawns

- Narrow strips
- Narrow areas with concentrated traffic
- On steep slopes
- Poorly drained, wet areas
- Shade
- Covering acres



Plant narrow strips with groundcovers and perennials

# Narrow Strips

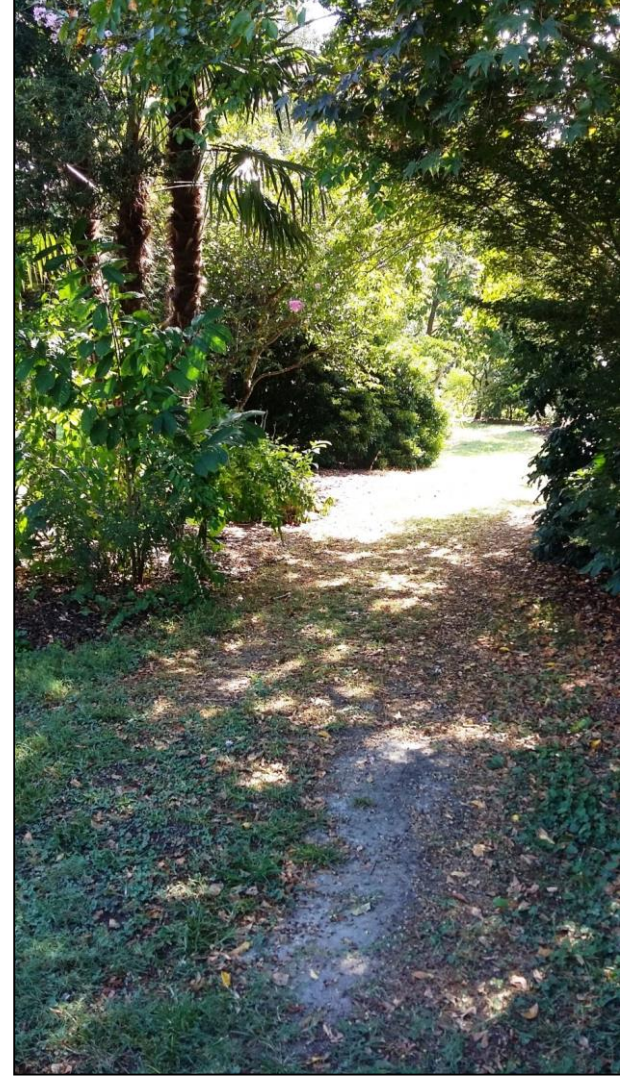
- **Plant perennials for pollinators!**
- For ideas:
- [www.carolinapollinatorgarden.com](http://www.carolinapollinatorgarden.com)
- Visit the Pollinator Paradise Garden at Chatham Mills, Pittsboro
  - [Top 25 Plant List](#)



# Concentrated Traffic

**Add a path!**

Gravel, mulch, stepping stones



# Steep Slopes

- Native trees are the best option on slopes too steep to mow
- Shrubs and ornamental grasses also work – not as long lived



## Wet Sites

- Poor drainage = disease problems!
- Plant moisture tolerant trees, perennials and sedges & rushes
  - River birch
  - Willow oak
  - Bald cypress





## Common Rush *Juncus effusus*

# Wet Sites



**Rain Lily**  
*Zephyranthes candida*



**Sweet Flag**  
*Acorus species*



# Shady Sites

- Over 50% shade, no turf will grow well
- Alternative:  
groundcover with path  
or let moss grow!



# Cultivating Moss

- For shady, moist areas
- Transplant patches spring
  - Press into loosened soil
  - Keep moist for 3-4 weeks
- Make a moss slurry:
  - Mix 2 parts moss, 2 parts water, and 1 part buttermilk in a blender
  - Spread over soil surface and keep moist until established



# Groundcovers for Shade

**None tolerate foot traffic**

## **Perennials**

- Low-growing, evergreen
- Spreaders or clumpers

## **Sedges**

- Grass like plants
- Deer resistant



# Sedges



**Pennsylvania Sedge**  
*Carex pensylvanica*

# Sedges

Rosy sedge

*Carex rosea*



# Low Growing, Shade Tolerant Sedges

## Cherokee Sedge

*Carex cherokeensis*

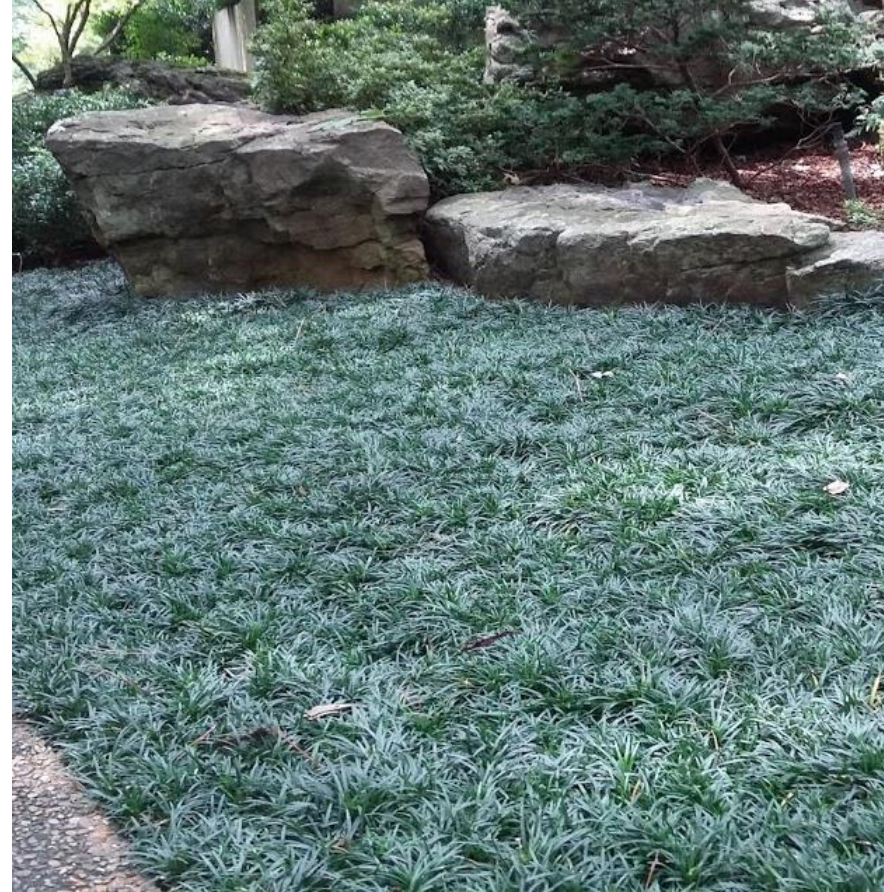


## Appalachian Sedge

*Carex appalachica*

# Groundcovers for Shade

- **Dwarf Mondo Grass**  
*Ophiopogon japonicus*



# Groundcovers for Shade

## Woodland Stonecrop

*Sedum ternatum*





# Groundcovers for Full Shade

**Green and Gold**

*Chrysogonum virginianum*



# Groundcovers for Full Shade



**Foamflower**

*Tiarella cordifolia*

# Native Ferns



## Christmas Fern

*Polystichum acrostichoides*

# Groundcovers for Dry, Sunny Sites



**Cheddar pinks**

*Dianthus gratianopolitanus*



# Groundcovers for Dry, Sunny Sites



**Moss Pink**

*Phlox subulata*



# Junipers

## Creeping Juniper

### *Juniperus horizontalis*

- Lowest growing, 1' x 6'
- Many named varieties

## Shore Juniper

### *Juniperus conferta*

- Grows 18" x 4'
- 'Blue Pacific' is popular



# Wildflower Meadows

## Dominated by native grasses

- Little and Big Bluestem
- Big Bluestem
- Indian Grass
- Broomsedges
- Panic Grass

**Native perennials mixed in**





**Longwood Gardens, Kennett  
Square, PA**



# Meadows

- Paths and mowed edges serve as “cues to care”
- Add birdhouses, habitat signs
- Mow once a year to prevent woody plants invading



# Meadows

- Select seed mix for local region
- Sow Nov-Feb
- Eliminate weeds and cultivate first!
- Need full sun
- Smaller areas can be established with transplants



# Site Preparation: Meadows, Lawns, Groundcovers

- SOIL TEST!!!
  - Lime and phosphorous should be tilled in
- Alleviate compaction
- Incorporate organic matter – compost
- Eliminate weeds BEFORE planting



Hard work but worth it!

# Native Seed Mixes for NC

 Mellow Marsh Farm, Inc. Phone: (919) 742-1200  
Wholesale Native Plants

AVAILABILITY CATALOG NATIVE SEED MIXES BARE ROOT

## Native Seed Mixes

Our staff has over 40 years of native seed "know how." We offer custom seed mixes and consultation.

- Help with selecting the right seed mix for your site
- Custom mixes
- Application rates, methods, and times to seed
- Cover crops

Contact us for a quote on a custom mix or a large quantity.

### Mellow Marsh Farm Standard Mixes:

#### MMF Shade Mix

Recommended application rate: 20 to 25 lbs. per acre

Species	Common Name	Percent
<i>Andropogon gerardii</i>	Big bluestem	18
<i>Bidens aristosa</i>	Bidens	3
<i>Carex vulpinoidea</i>	Fox sedge	11
<i>Chamaecrista fasciculata</i>	Partridge pea	14
<i>Desmodium canadense</i>	Showy tick trefoil	5
<i>Elymus virginicus</i>	Virginia wildrye	35



Mellow Marsh Farm, Inc.  
Wholesale Native Plants

<https://mellowmarshfarm.com/>

Silk Hope, NC

# Other Chatham Co. Native Nurseries



<http://www.curenursery.com/>

GROWING  
WILD  
NURSERY

<https://www.growingwildnursery.com/>

# Sustainable Lawns

- Begin by choosing right location for turf, then choose best adapted species for location
- Soil preparation is essential!
- Fertilize and lime based on soil test results
- Add trees, shrubs, perennials to increase diversity and beauty!



# Need help? Contact:

**NC STATE** EXTENSION

## Master Gardener | Chatham County

Plant Clinic: MW 1:00-4:00, F 9:00-12:00

[chathamemgv@gmail.com](mailto:chathamemgv@gmail.com)

919-545-2715