Sustainable Lawns and Lawn Alternatives

Matt Jones
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

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
Climate

**Cool season grass**
- Green in winter, not so happy in summer

**Warm season grass**
- Brown in winter, happy in summer
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+
- St. Augustine +

* Not well adapted to the piedmont
+ More prone to winter damage
Choosing the Right Turf

<table>
<thead>
<tr>
<th>Can Be Seeded?</th>
<th>Tolerance Ratings</th>
<th>Appearance</th>
<th>Rate of Establishment*</th>
<th>Cutting Height (in.)</th>
<th>Fertilizer (lb N/1,000 sq ft/yr)</th>
<th>Mowing Frequency**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shade</td>
<td>Heat</td>
<td>Cold</td>
<td>Drought</td>
<td>Wear</td>
<td>Color</td>
</tr>
<tr>
<td>PIEDMONT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Bermudagrass (common)</td>
<td>Yes</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>Medium</td>
</tr>
<tr>
<td>Bermudagrass (hybrid)</td>
<td>No</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>Light-dark</td>
</tr>
<tr>
<td>Bahiagrass</td>
<td>Yes</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>Med-dark</td>
</tr>
<tr>
<td>Centipeedagrass</td>
<td>Yes</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>Light</td>
</tr>
<tr>
<td>Kentucky bluegrass/tall fescue mix</td>
<td>Yes</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>Med-dark</td>
</tr>
<tr>
<td>Kentucky bluegrass/tall fescue/fine fescue mix</td>
<td>Yes</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>Med-dark</td>
</tr>
<tr>
<td>St. Augustinegrass</td>
<td>No</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>Med-dark</td>
</tr>
<tr>
<td>Tall fescue</td>
<td>Yes</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>Medium</td>
</tr>
<tr>
<td>Zoysiagrass</td>
<td>Yes</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>Med-dark</td>
</tr>
</tbody>
</table>

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
Tall Fescue

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\textsuperscript{rd} Millenium
Varieties Should Be Listed on Label

<table>
<thead>
<tr>
<th>PURE SEED</th>
<th>VARIETY/KIND</th>
<th>GERMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.06%</td>
<td>TAR HEEL II TALL FESCUE*</td>
<td>85%</td>
</tr>
<tr>
<td>17.06%</td>
<td>WOLFPACK II TALL FESCUE*</td>
<td>85%</td>
</tr>
<tr>
<td>14.62%</td>
<td>ENDEAVOR II TALL FESCUE*</td>
<td>85%</td>
</tr>
</tbody>
</table>

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

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
Other Cool Season Grasses

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?
Warm Season Grasses

Compared to tall fescue:
- More heat tolerant
- More drought tolerant
- More wear tolerant
- “Self-healing”

Many varieties must be sodded
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!
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

‘Princess’ is an improved seed strain
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
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
# If Turfgrass Weeds Could Talk

<table>
<thead>
<tr>
<th>Condition</th>
<th>Indicator Weeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Soil</td>
<td>Spurge, black medic, oxalis, goosegrass, knotweed, lespedeza</td>
</tr>
<tr>
<td>Wet Soil</td>
<td>Annual Bluegrass, pearlwort, moss, sedges</td>
</tr>
<tr>
<td>Compacted soils</td>
<td>Annual bluegrass, sedges, goosegrass, spurge, knotweed, broadleaf plantain</td>
</tr>
<tr>
<td>Low Nitrogen</td>
<td>Black medic, clovers, hawkweed, moss, crabgrass</td>
</tr>
<tr>
<td>Excess Nitrogen</td>
<td>Annual bluegrass, chickweed, ryegrass</td>
</tr>
<tr>
<td>Infrequent Mowing</td>
<td>Thistle, chicory, wild carrot</td>
</tr>
<tr>
<td>Close/Frequent mowing</td>
<td>Annual bluegrass, moss, crabgrass, pearlwort</td>
</tr>
</tbody>
</table>
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
• 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*

*J. effusus ‘Spiralis’*
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

*Viola walteri* ‘Silver Gem’
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*
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
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

https://mellowmarshfarm.com/

Silk Hope, NC
Other Chatham Co. Native Nurseries

http://www.curenursery.com/

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
919-545-2715