

Extension
Gardener Series



Lawns & Lawn Alternatives

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Today's Class

- The Place for Lawns in Sustainable Landscapes
- Lawn Alternatives
- Turf Options
- Tips and Resources

Review these slides and find more resources:

<http://go.ncsu.edu/lawn-resources>



Sustainable Landscaping Principles

- **Increase diversity**
 - # of species
 - Vertical layers
- **Support ecosystems**
 - Include native plants
- **Reduce inputs**
 - Select plants adapted to site and climate
- **Enhance beauty and functionality**
 - Manage stormwater



Where do lawns fit?

- **Typically monocultures**
 - no weeds allowed
 - Support few species other than pests
- **High input** – water, fertilizer, pesticides



Lawns are appropriate for areas that:

- Are sunny – at least 4 hrs/day
- And relatively flat, smooth
- **Need to maintain very low vegetation for visibility**
- **Receive regular wear/traffic** (play/recreation)



Lawn grasses are the only species tolerant of daily wear!

Sustainable Lawns

- **Minimized to appropriate areas**
- **Adapted to site conditions**
 - Require less inputs
- **Allowed to go dormant during drought**
- **Tolerate diversity (weeds)!**
 - Many provide important resources for pollinators - especially early spring bloomers



The Wrong Place for Lawns

- **Covering acres**
- On steep slopes – cannot maintain
- **Strips that are hard to mow/irrigate/fertilize**
- Narrow areas with frequent concentrated traffic
- **Shade**
- Poorly drained, wet areas



Difficult to maintain!

Wrong Place: Steep Slopes

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



Wrong Place: Wet

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

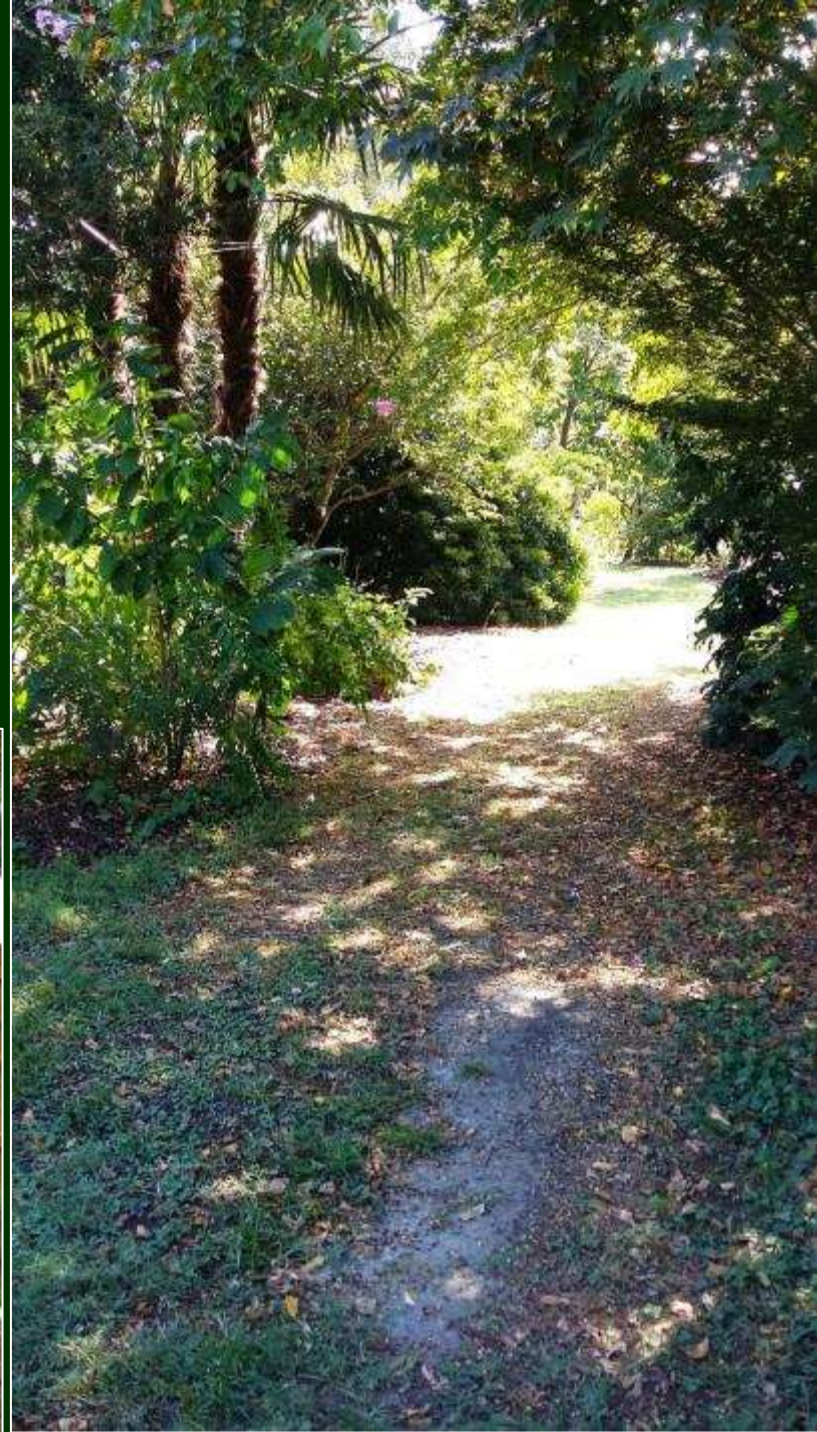


Common Rush, *Juncus effusus*



Wrong Place: Concentrated Traffic

- Add a path!
- Gravel, mulch, stepping stones



Low groundcover with stepping stones

Mazus
reptans

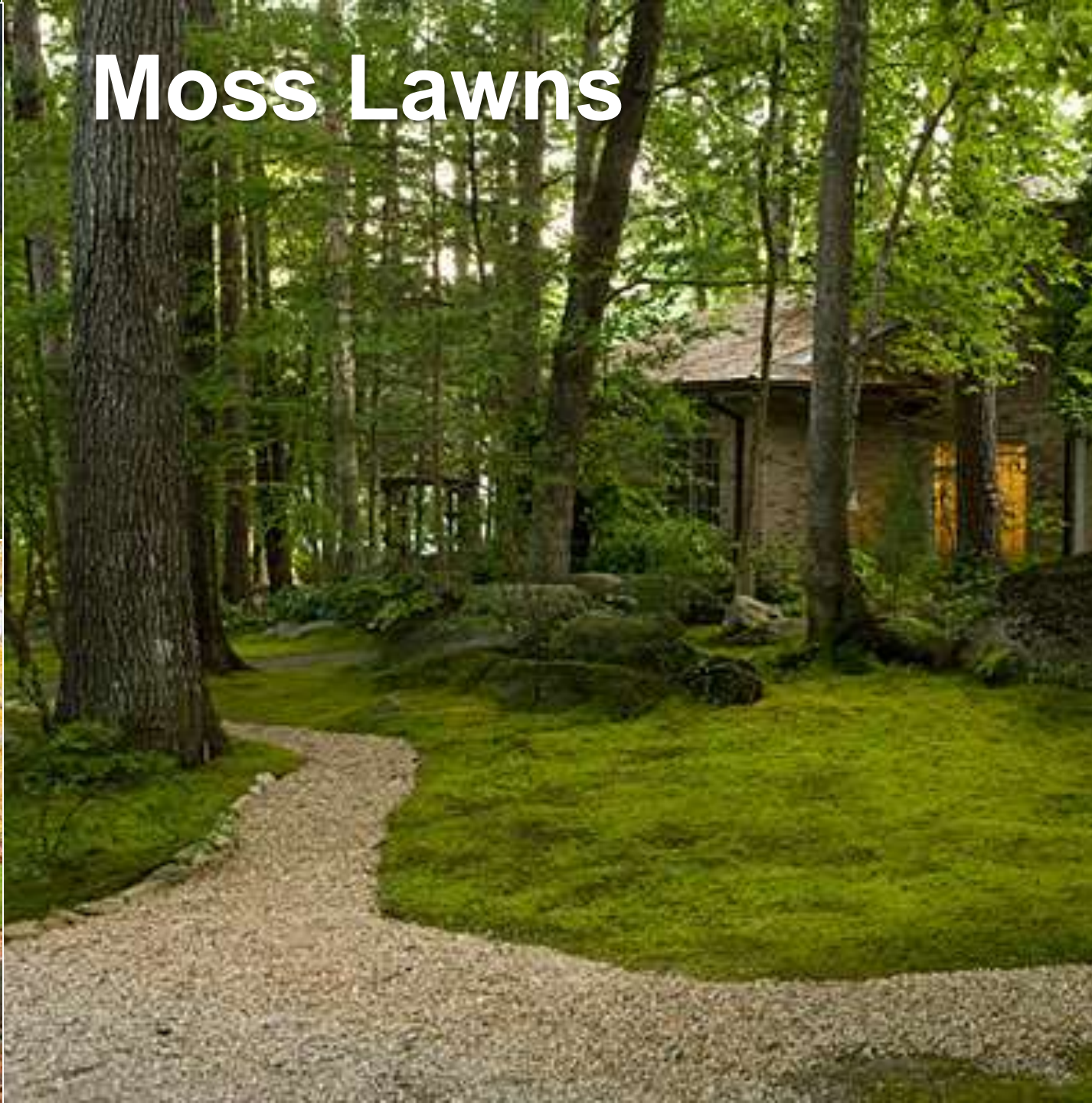


Wrong Place: Shady

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



Moss Lawns





Pennsylvania Sedge
Carex pensylvanica

Dwarf Mondo Grass



Native Ferns



Wrong Place: Turf Should Not Be a Default!

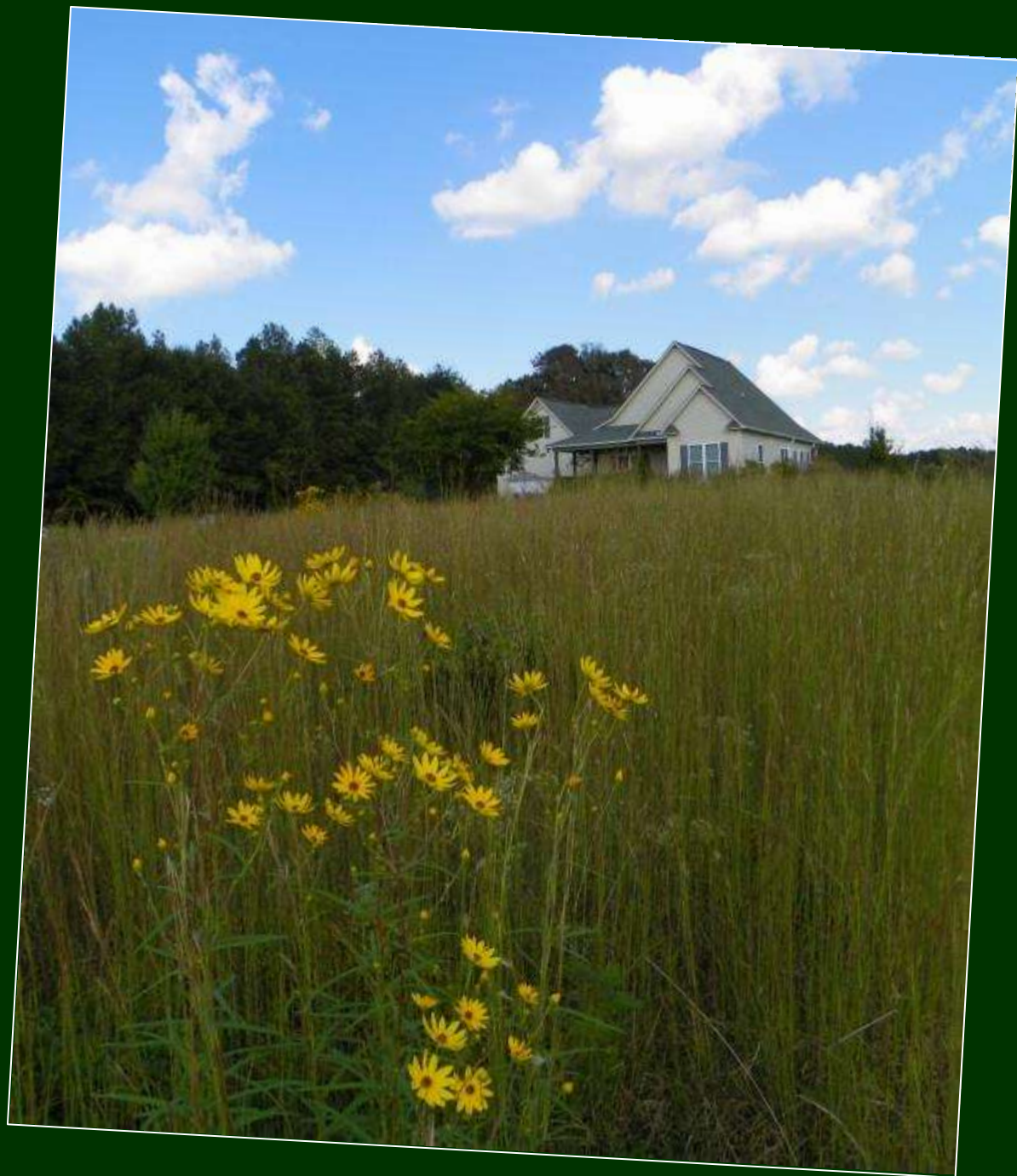


Alternative: Meadow

**Dominated by
native grasses:**

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

**Native perennials
mixed in**



Longwood Gardens, Kennett Square, PA



Meadows

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



Meadows

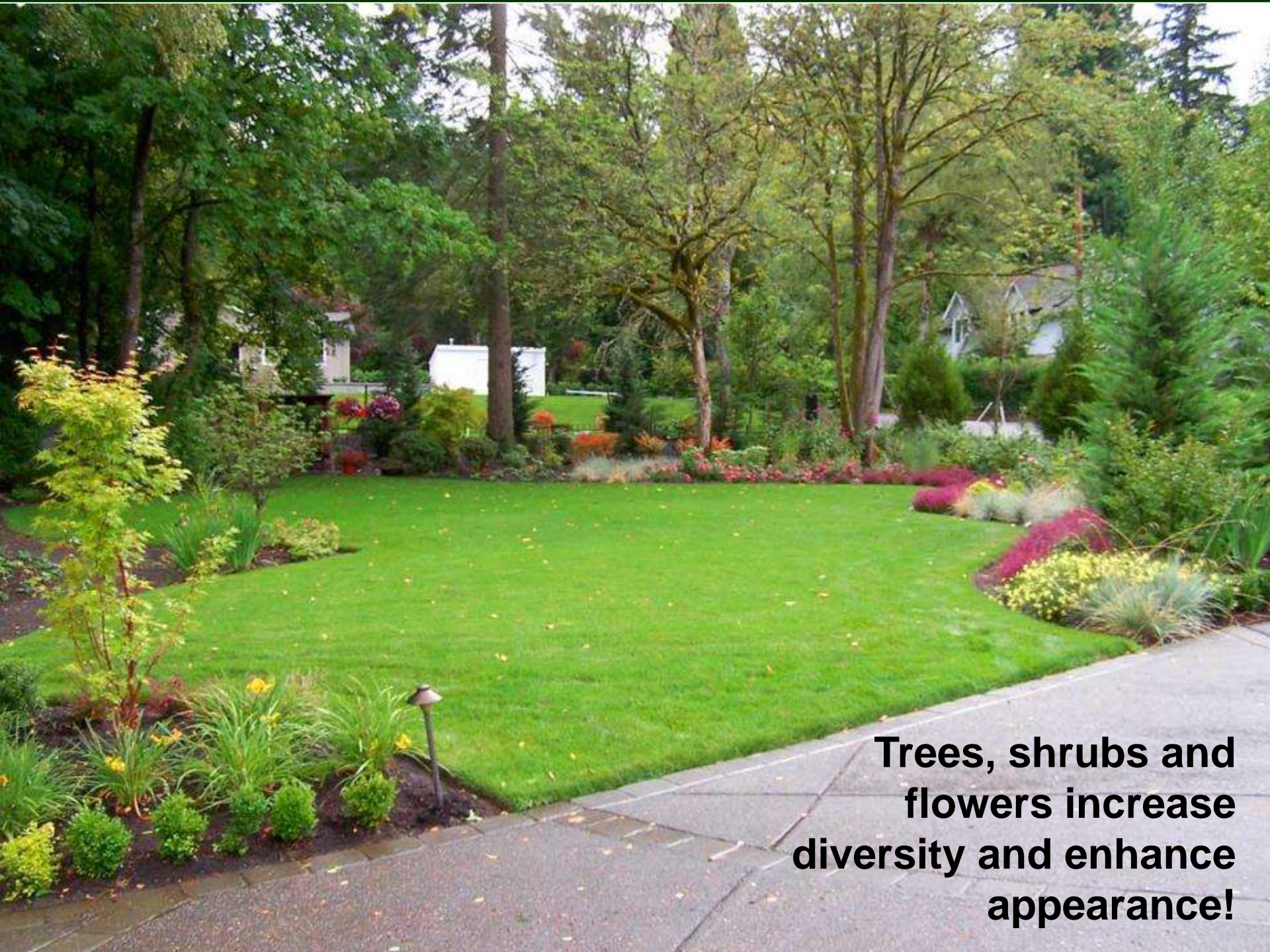
- Paths and mowed edges serve as “cues to care”
- Add birdhouses, habitat signs
- Mow once a year to prevent woody plants invading



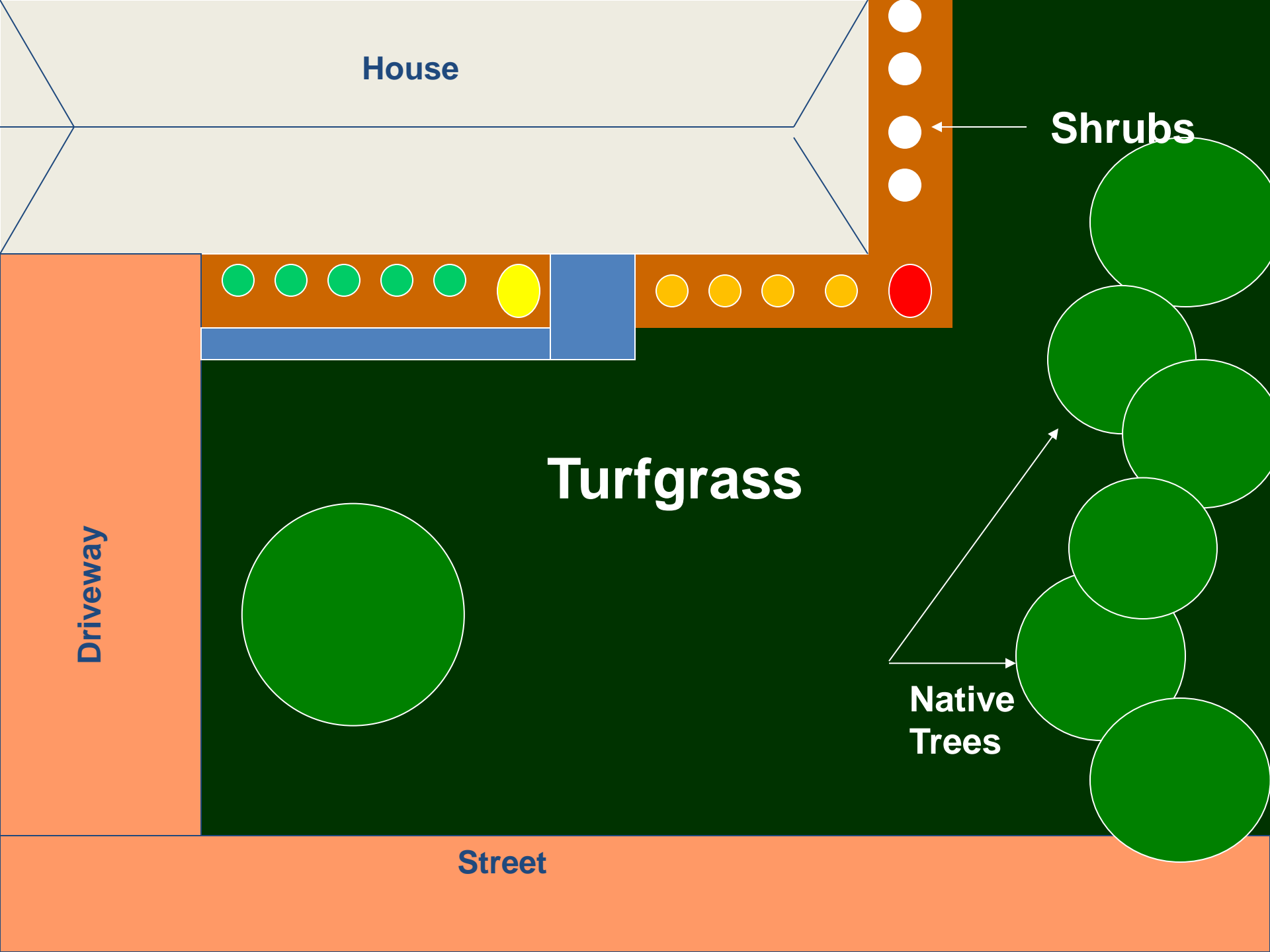
Sustainable Landscapes: Reducing Lawn Area

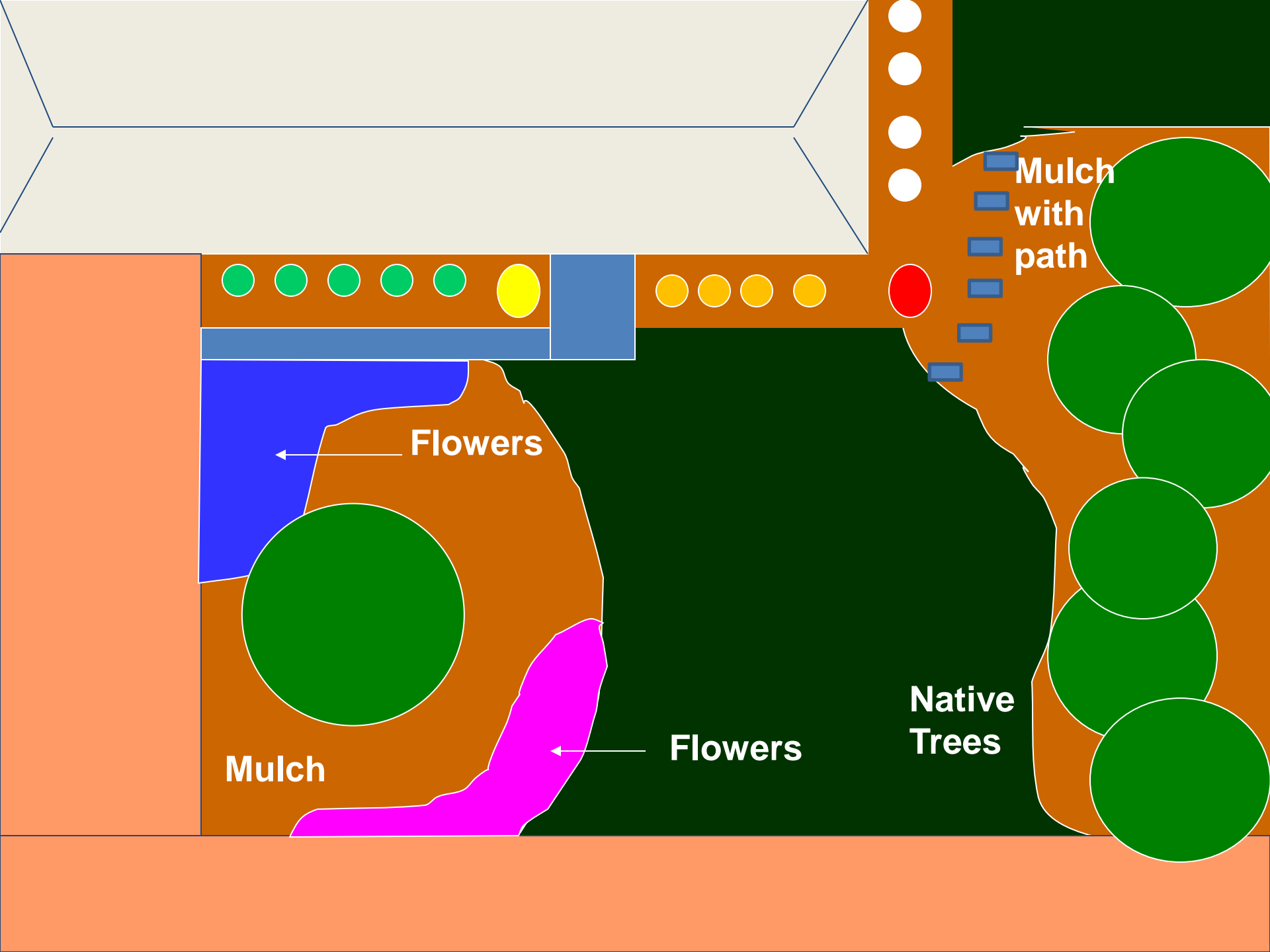
- **Cut out problem areas**
 - Wet and/or shady areas
 - Constant, heavy traffic areas
 - Difficult to maintain areas
- **Expand mulched area around trees and beds**
- **Add or expand beds on perimeter and side yard**





**Trees, shrubs and
flowers increase
diversity and enhance
appearance!**





The Right Place for Lawns

- **Where you need a wear tolerant surface**
 - Recreation/Play
- **Where you need a very low surface**
 - Safety – line of site
 - Preserve/enhance view
- **Where you need to maintain an access route**



Grass Options

- Of 10,000 grass species worldwide, ~ 50 adapted to use as turf
 - **Tolerate wear and frequent, low mowing**
- **9 common lawn species in NC**
- **No single species adapted to all areas of the state!**



Bermuda is used for golf and sports fields – highest wear tolerance

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 don't eat them!



Northwind Panic Grass

The Right Turf for Your Lawn

Depends on:

- Climate
- **Site conditions: SUN!**
- Need for wear tolerance
- Maintenance you can provide
- Budget
- **Aesthetic preferences**
 - Shade of green
 - Green winter or summer



'Empire' Zoysia

Climate

Will you grow:

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



Turf Species for North Carolina

Cool Season

- Tall fescue
- Fine fescues*
- Kentucky bluegrass*

Warm Season

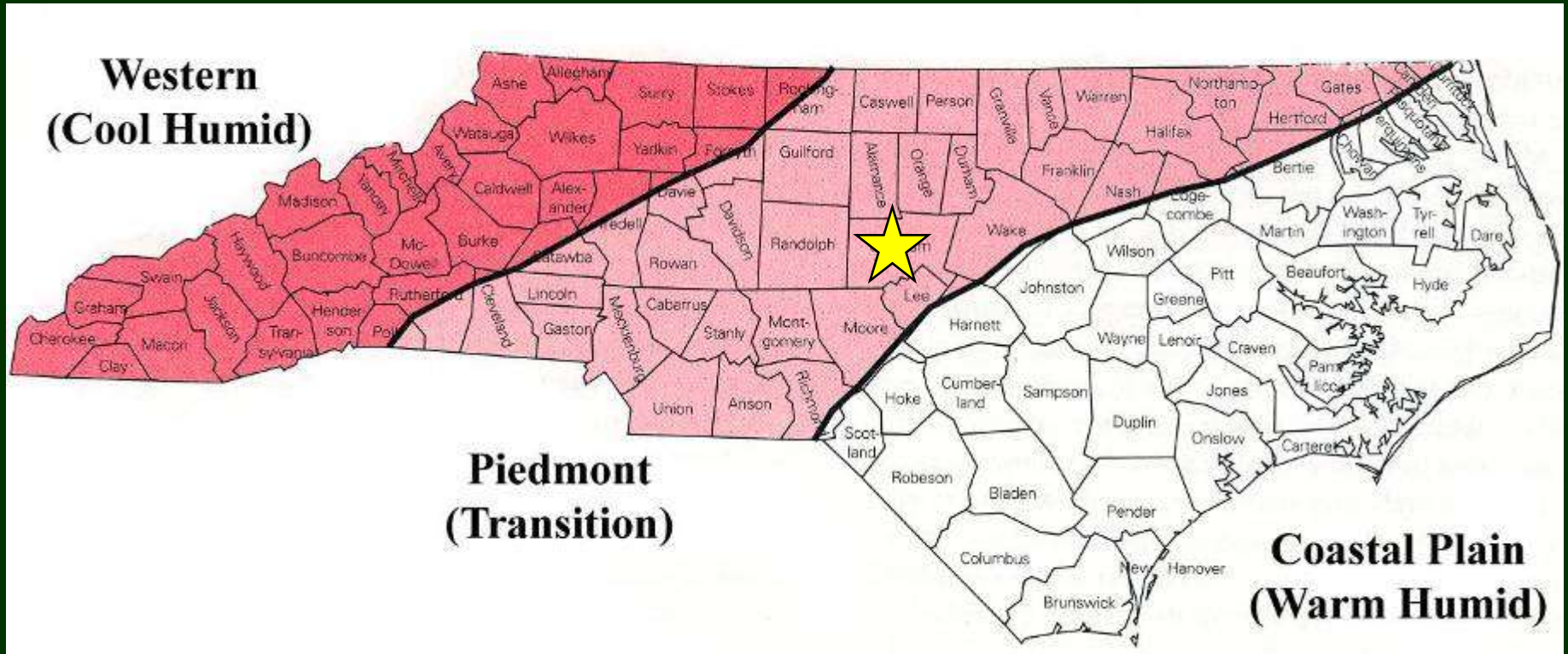
- Zoysia
- Bermuda
- Centipede⁺
- St. Augustine⁺

* Not well adapted to the piedmont

⁺ More prone to winter damage

Piedmont = Transition Zone

Not ideal for either!



West:
Cool Season
Only

Piedmont:
Warm & Cool
Season

Coastal Plain:
Warm Season Only

Site Conditions

How much sun?

- Even “shade tolerant” grasses need 4 hrs/day
- **Shade reduces light quality and quantity**
- Tree roots compete for water and nutrients

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 – low pH
- **Lime increases pH** – soil test to determine how much needed
- **Soil test recommendations:** fertilizer needs based on soil nutrient status
 - Soil testing free if submitted before peak season (Dec-March)



Site Conditions

Soil Compaction

- No turf is adapted to highly compacted soil
- Construction equipment, lawn mowers, even foot traffic compact clay soils
- **Screwdriver test** – if difficult to push screwdriver into moderately moist soil, compaction needs to be alleviated



Core Aeration

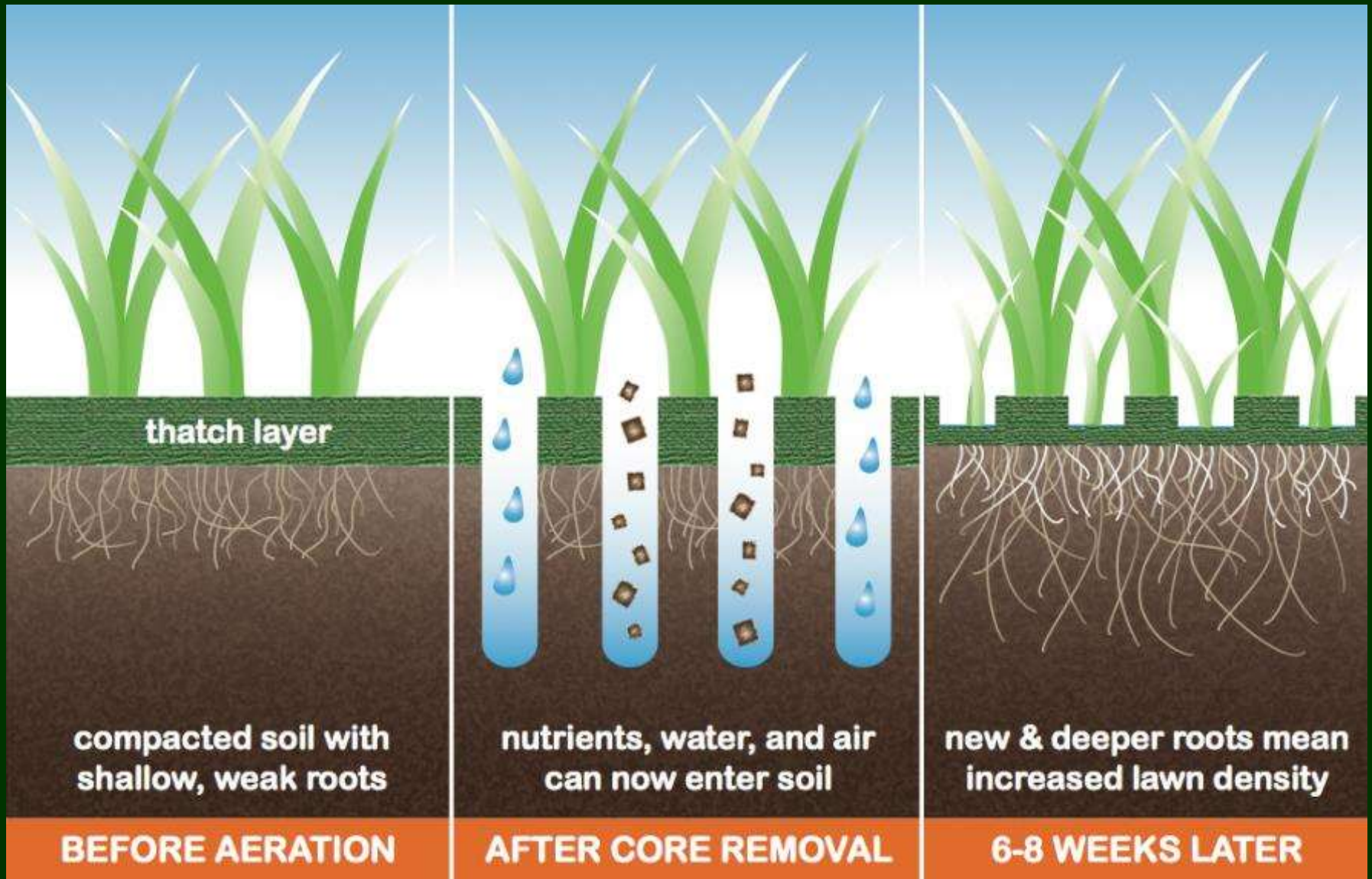
Alleviates
compaction in
established lawns

Timing:

- Cool season grasses:
Sept/Oct or
Feb/March
- Warm season grasses:
May/June/July



Core Aeration



Wear Tolerance

- All grasses have their limit!
 - **Most wear tolerant:**
 - Bermuda
 - Tall Fescue
 - **Least wear tolerant:**
 - Centipede
 - St. Augustine
- Large dog, small yard
= poor turf



Carolina Lawns, Page 8

	Can Be Seeded?	Tolerance Ratings				
		Shade	Heat	Cold	Drought	Wear
Bermudagrass (common)	Yes	1	5	1	6	6
Bermudagrass (hybrid)	No	1	5	2	6	6
Bahiagrass	Yes	4	4	2	6	4
Centipedegrass	Yes	4	4	2	4	1
Kentucky bluegrass/tall fescue mix	Yes	4	4	5	5	5
Kentucky bluegrass/tall fescue/ fine fescue mix	Yes	5	4	5	5	5
St. Augustinegrass	No	5	5	2	4	1
Tall fescue	Yes	4	4	5	5	5
Zoysiagrass	Yes	4	5	4	6	4

Table 1

Table 1. Characteristics of principal lawn grasses grown in North Carolina.

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

<https://content.ces.ncsu.edu/carolina-lawns>

Maintenance

- **How much time and money do you want to spend maintaining your lawn?**
 - Mowing, edging, fertilizing, spraying
- **Maintenance, high-low:**
 - Bermuda
 - Tall fescue
 - St. Augustine
 - Zoysia
 - Centipede



Budget

- How much can you spend to establish your lawn?
- By seed – cheapest
 - Tall fescue: quick, high quality
 - Bermuda: quick, lower quality
 - Centipede, zoysia: slow, lower quality
- By sod – expensive
 - Better quality varieties of all except tall fescue



Aesthetic Preferences

- How important is green grass in winter?
- Do you like taller turf or shorter turf?
- Shade of green
- Wide blade (coarse texture) or narrow blade (fine texture)



Aesthetic Preferences

Cool Season:

Tall Fescue

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

Warm Season:

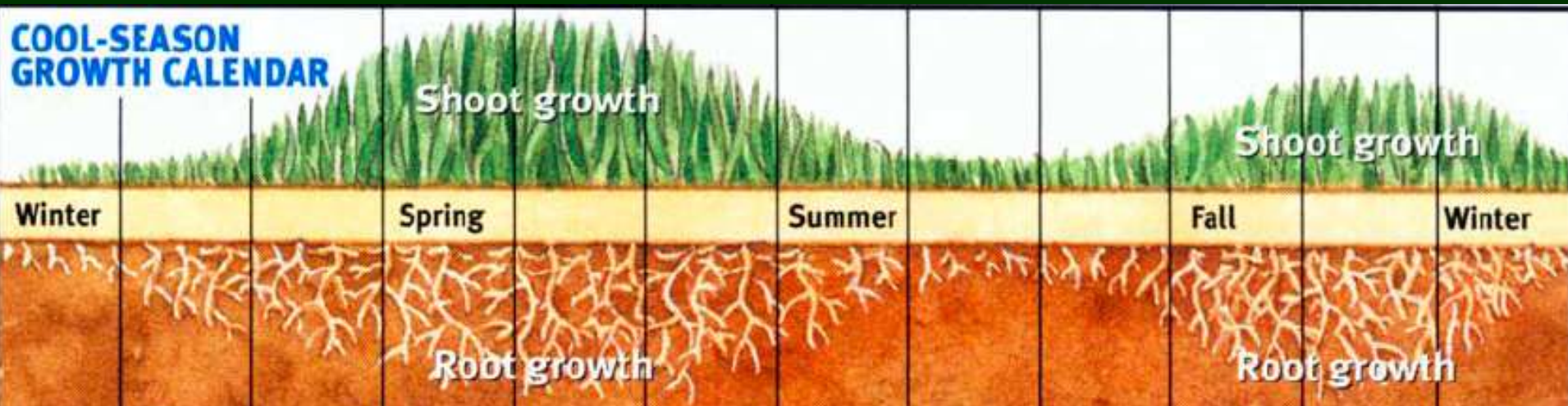
Zoysia and Bermuda

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



Cool Season Grasses

- From Europe/Northern Asia
- Grow during cool times of year: Spring & Fall
- Green in winter, struggle during heat of summer
- Best adapted to western half of state



Traditional Piedmont Lawn:

Tall Fescue

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

Pastures and hayfields in our area are predominantly tall fescue



Traditional Piedmont Lawn:

Tall Fescue

Benefits/Advantages:

- Can be established from seed
- Clumping/bunch grass – does not run into beds and gardens
- Dark green color
- Green year-round
- Relatively shade tolerant



Bunch Grass



Traditional Piedmont Lawn:

Tall Fescue

Disadvantages:

- May go dormant during summer drought if not irrigated
- Becomes spotty/patchy over time
- Has to be overseeded every 2-3 years to maintain thickness/coverage
- Not well adapted to sandy or drought prone soils – best on well drained clay



Other Cool Season Grasses

Sometimes included in mixes for shade:

- **Kentucky bluegrass**
- **Fine fescues**
 - Chewings, Creeping Red = preferable
 - Hard, Sheep = poor heat tolerance

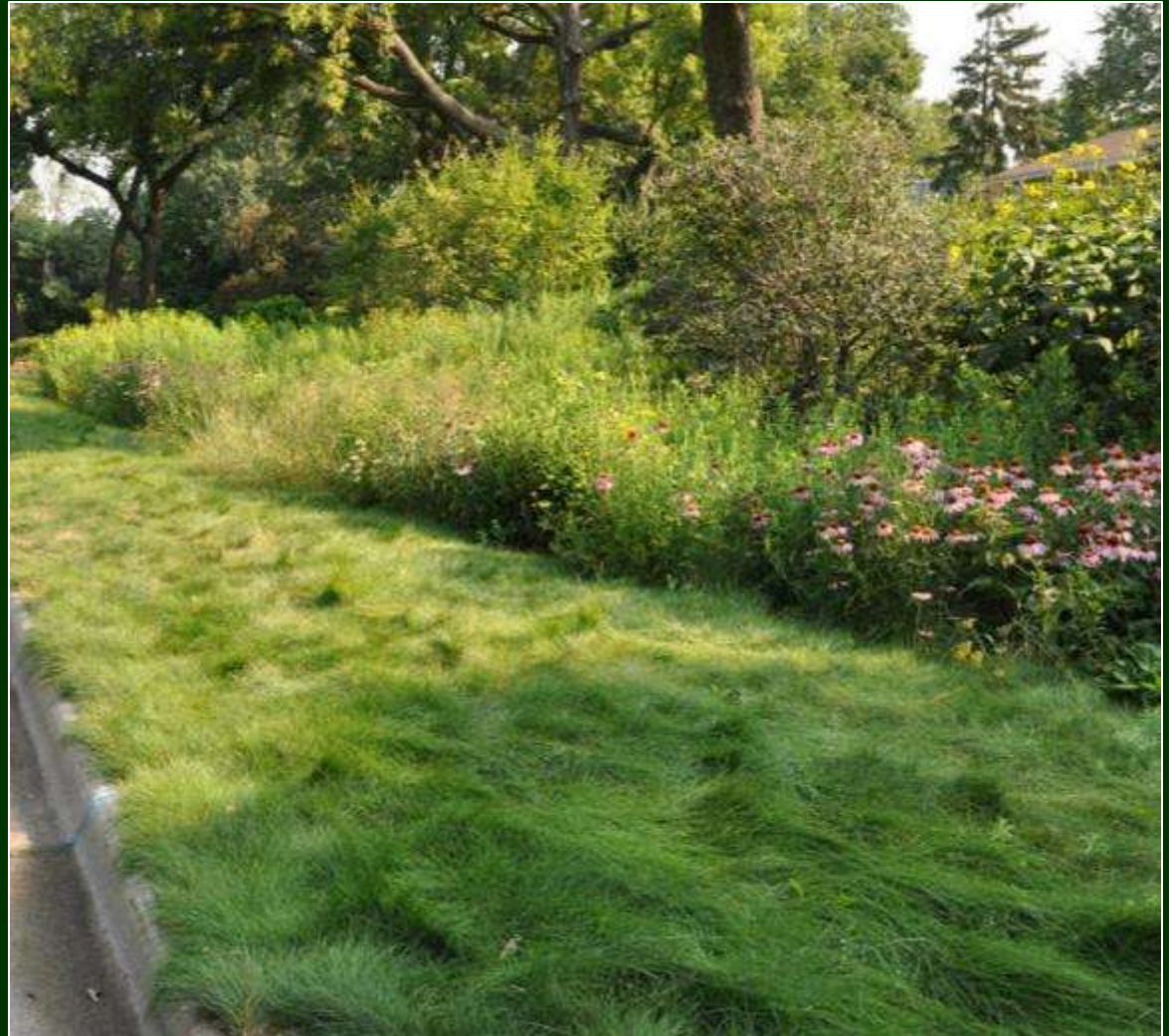
Tall fescue should make up majority of blend

- Looks for 5:1:1 blend
- Tall fescue: KY bluegrass: fine fescue



“No Mow” Lawns

- Typically mix of fine fescues
- Suited to northern states, Pacific NW
- Too hot here?



Alternative Flowering Lawns

- Seed mixes of fine fescues and cool season annual flowers:
 - Baby blue eyes
 - Alyssum
 - Chamomile
 - English daisy
 - CA Poppy
 - Johnny jump ups
- Will not persist in Piedmont



If It Sounds To Good To Be True...

- Many blends include unknown varieties and/or non adapted species
- AVOID!

grassology™ Grass Seed Mixture

PURITY	VARIETY/KIND	GERM	ORIGIN
27.13%	CREeping RED FESCUE*	80.00%	OR/CN
20.05%	TALL FESCUE*	85.00%	OR
16.91%	PERENNIAL RYEGRASS*	85.00%	OR/DK
9.91%	KENTUCKY BLUEGRASS*	85.00%	OR/WA
8.70%	SHEEPS FESCUE*	80.00%	OR
8.95%	HARD FESCUE*	80.00%	OR
5.36%	CHEWINGS FESCUE*	80.00%	OR
0.08%	OTHER CROP	80.00%	OR
1.85%	INERT MATTER		
0.08%	WEED SEED		

NOXIOUS WEED SEEDS: NONE FOUND

Date Tested 02/2014, Sell By 11/2014
 In FL Sell By 09/2014
 In MT, SD, and WY Sell By 02/2015
 In AK, AZ, CA, CO, CT, DE, ID, IL, IN, MD, MA, NC, NE, ND, NH, NJ, NV, NY, OH, OR, PA, SC, UT, VA, VT, WA, WI, and DC Sell By 05/2015

LOT NO. L68-14-0127
 NET WEIGHT 3 LBS (1.36 kg.)
 Variety Not Stated*

Telebrands
 One Telebrands Plaza
 Fairfield, NJ 07004
 AMS 68

NOTICE: ARBITRATION/CONCILIATION/MEDIATION REQUIRED BY SEVERAL STATES. Under the seed laws of several states, arbitration, mediation or conciliation is required as a prerequisite to bringing a legal action based upon the failure of seed to which this notice is attached to produce an agreement. The consumer shall file a complaint (sworn for AK, FL, HI, MS, MT, SC, TX, WA; signed only CA, agriculture, Seed Commissioner (SC), or Chief Agricultural Officer within such time as to permit inspection of the crops, plants or trees by the designated agency and the seedsman from whom the seed was purchased. A copy of the complaint shall be sent to the seller by certified or registered mail or as otherwise provided by state statute.

Protects Against Disease, Weeds & Insects
 Guaranteed To Grow

SEEDS UP TO 750 SQ FT!

Net Weight 3 lbs. (1.36 kg)

USA BLENDED

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**
 - This is very damaging!
 - **NOT Recommended**



Alternative:

Tall Fescue-Clover Blend

- **Clover = legume = fixes nitrogen**
 - Reduce N fertilizer needs by 1/2
- **Dutch white clover**
 - Perennial
 - Creeping habit
- **Disadvantages:**
 - Attracts bees (stings)
 - Slick/clumpy when mown



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



Image source: [University of Maryland](#)

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.
- More clover seed =
clover dominated lawn

Ideal time: mid-Sept!



Tall Fescue Varieties Recommended for the Piedmont

- Many named varieties (cultivars) available
- **Plant a blend of varieties**
- Trials at NCSU have identified best for NC, including:
 - Wolfpack II
 - Rebel IV
 - 3rd Millennium
- **NOT Kentucky 31** – old pasture variety



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

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

LOT NO. 16020003

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

Expanding Options:

Warm Season Grasses

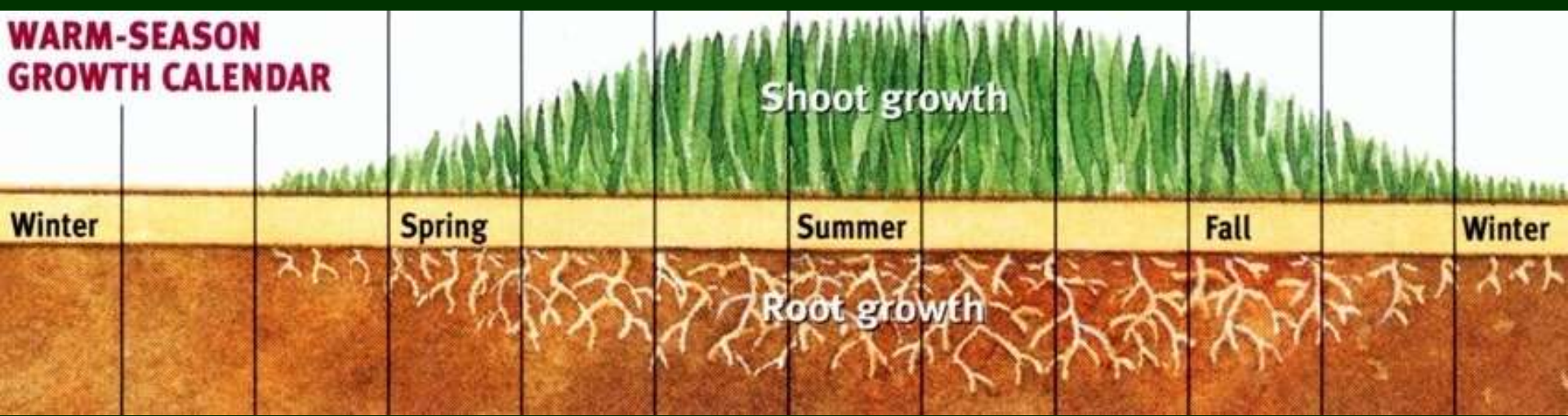
- Actively grow spring-fall
- Dormant in winter
- Compared to tall fescue:
 - More heat tolerant
 - More drought tolerant
 - More wear tolerant
- Many varieties must be sodded



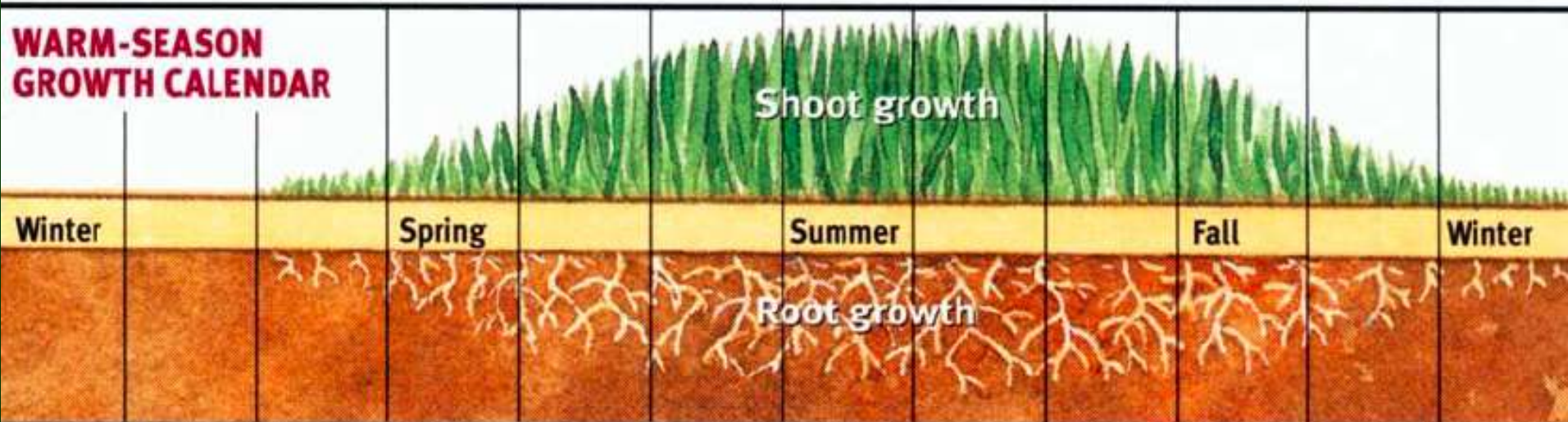
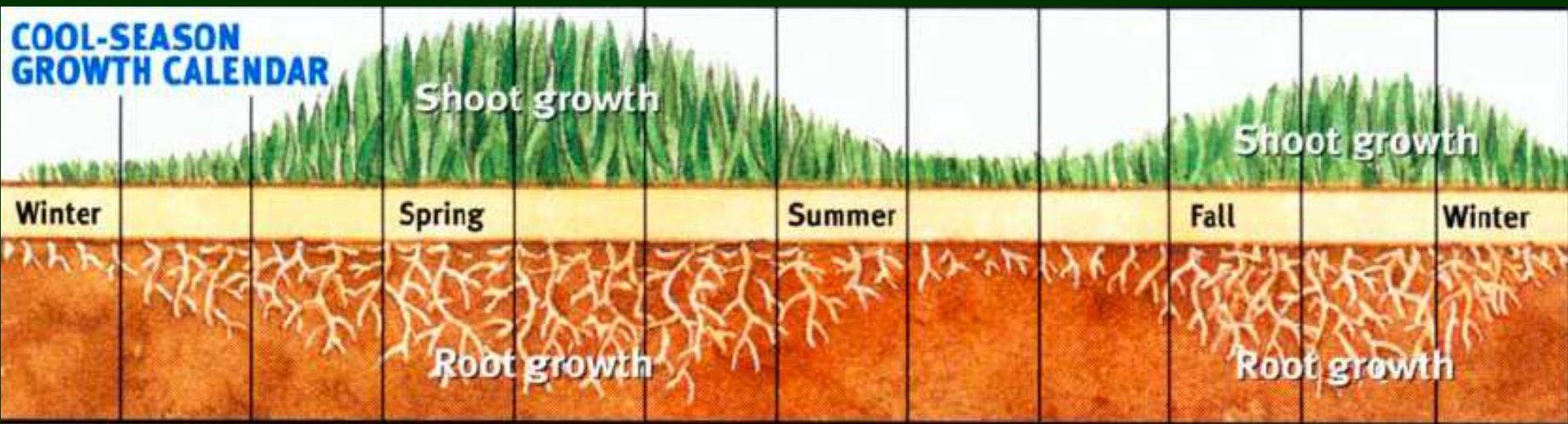
Winter Color

Warm Season Grasses

- From Africa, SE Asia
- Best adapted to eastern half of NC
- **Bermuda**, **Zoysia**, Centipede, Carpetgrass, St. Augustine



Season of active growth unfluences when to establish, when to fertilize, when diseases most damaging



You Can't Have Both!

- Warm and cool season lawns don't mix
- If have mix, **select preferred species and manage for that species**
- **Healthy, sustainable lawn begins with knowing your turf type**



How Warm Season Grasses Grow

Spread by:

- **Stolons** - above ground stems
- **Rhizomes** -below ground stems
- **Stolons only:**
 - Centipede, St. Augustine,
 - Less cold, drought, & wear tolerant
- **Stolons and Rhizomes:**
 - Bermuda, Zoysia
 - More difficult to keep out of beds



Bermuda Rhizome



Centipede Stolon

Bermudagrass

Narrow blade, gray-green to blue-green color

Advantages:

- **Excellent wear tolerance**
 - Best for high traffic areas
- **High drought tolerance**
 - Survives and recovers quickly but will turn brown if not irrigated
- **Establishes quickly** from seed, sod or plugs



Bermudagrass

Disadvantages:

- Not shade tolerant
- **High maintenance** = frequent mowing and fertilization
 - Mow low, 1"-2", 2 x week
- **Invades landscape and garden beds** = more maintenance



Bermudagrass

- **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 publication**



Princess is an improved seed strain

Zoysiagrass

Fine to medium texture,
medium- dark green

Advantages

- **Good wear resistance**
- **Very drought tolerant**
- **Tolerant of moderate shade**



'Empire' Zoysia

Zoysiagrass

Disadvantages

- **Moderate Maintenance**
 - Fertilize 2-3 times, mow 1/week
 - Spreads but not as fast as bermuda
- Most varieties must be sodded – seed strains slow to establish



Zoysiagrass - Older Cultivars

'Emerald' and 'Meyer' were the major cultivars for many years

- **'Emerald'** has fine leaf texture, good winter hardiness
- **'Meyer'** has medium leaf texture and is lighter in color than 'Emerald', but it exhibits excellent cold tolerance.
- **VERY SLOW LATERAL GROWTH AND RECOVERY FROM DAMAGE**



Zoysiagrass - Newer Cultivars

All have Fast Lateral Growth



Wider Leaf Blade

- Crowne
- Empire
- El Toro
- Zenith*
- Compadre*

Mow 2-3"

* Can be seeded

Finer Texture Leaf Blade

- Zorro
- Zeon
- Cavalier
- Diamond
- GN-Z

Mow lower

Centipedegrass

- Low maintenance
- Spreads slowly by stolons
- Coarse texture, medium green
- **Low wear tolerance**
- Low fertilizer needs: 1 application/year
- **Slow growing – mow infrequently**
- Mow at 1" – 2"



Centipedegrass

- **Prefers acidic (pH <6) soil**
- Tolerates light shade
- **Sensitive to many herbicides**
- Common centipede establish from seed, sod or plugs
 - Seed takes 2-3 years to establish
- **'Tifblair'** recommended for piedmont – more cold tolerant



Stolons

Carpetgrass

- Appearance and care similar to centipede - produces more seed heads
- **Tolerates wet conditions, sun**
- Often sold mixed with centipedegrass seed
- Establishes much faster from seed than centipede
- **Centipede and Carpetgrass are only 2 warm season grasses that can grow together**



St. Augustinegrass

- Broadest bladed grass (coarse texture)
- Medium green
- **Most shade tolerant turf grass**
- Spreads by stolons (above ground) only
- **Not very wear tolerant**
- Annual nitrogen requirement
 - 2 – 3 applications/year



St. Augustinegrass

- Used at coast- high salt tolerance
- **Mow higher** than other warm season grasses, 2" – 3"
- Grows quickly in summer, mow frequently to prevent thatch
- **Must be sodded or plugged**
 - ‘Raleigh’ hardier variety



Buffalo Grass

- From Great Plains
- Adapted to low rainfall climate, ~ 20"/yr
 - We get 40"+ high humidity
- Fungal diseases a major issue
- Prefers alkaline soils
 - Ours are predominantly acidic
- **Same is true for blue grama grass**



Tips for Establishing Turf

- **Water is essential!**
 - 2-3/day for 5-15 minutes first 2-3 weeks
- **Do not apply herbicides before seeding/sodding!**
 - Mow at least 3 times before applying any herbicide
- **Sow/sod at right time**
 - **Cool Season: September**
 - **Warm Season: April-July**



Site Preparation

- **SOIL TEST!!!**
 - Lime and phosphorous should be tilled in
- **Alleviate compaction**
- **Incorporate organic matter – compost**
- **Never 2-3" of topsoil!**



Hard work but worth it!

Avoid many problems with a good start!

Amend Before Planting!



Compacted Clay Soil

Amended
Soil

Site Preparation

New lawn/total renovation

- Remove weeds, debris, existing turf
- Grade – rake level

Overseed tall fescue

- Core aerate and de-thatch before sowing



Mowing

- Mow at correct height and frequency for your turf species
- **Cut off less than 50% of blade** - 1/3 recommended, e.g. if mowing at 2", mow when 3" tall



WHEN TO MOW YOUR LAWN?

GRASS TYPE	SUGGESTED MOWING HEIGHT	MOW WHEN GRASS REACHES THIS HEIGHT
BERMUDA GRASS	1"-1½"	1½"-2"
CENTIPEDE	1½"-2"	2"-3"
ST. AUGUSTINE	2½"-3"	3¾"-4½"
TALL FESCUE	2"-3"	3"-4¾"
ZOYSIA	1"-1½"	1½"-2"

Scalping



Grasscycle!

- Leave clippings on the lawn to decompose
- **Reduces Nitrogen needs by 25%**
- Does not contribute to thatch when mown at correct height and frequency
- Only remove clippings when mowing delayed or weed seed abundant



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!**



Resources You Should Know About!

Chatham Gardener email list

- Sustainable gardening information
- Weekly email updates
- What to plant, pest alerts, timely tips
- Upcoming classes and events
- **To subscribe:**
 - <http://go.ncsu.edu/subscribecg>



Chatham County Website

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

- News
- Upcoming events
- Staff directory
- Contact information
- More!

The screenshot shows the homepage of the Chatham County Extension website. At the top left, there is a red box with "NC STATE" and the logo for "NC COOPERATIVE EXTENSION" with the tagline "Empowering People - Providing Solutions". To the right is a search bar with the text "Search below or ask an expert" and "Enter Your Keywords Here". Below the logo are navigation links: Home, About, Contact Us, Meet Our Staff, Events, NC A&T, and Our County Centers. A large banner image features a collage of photos: two young girls, a woman reading a book, a watermelon, a young girl holding a watermelon, and a sunflower. Below the banner is a vertical menu on the left with categories: Growing Small Farms, 4-H Youth Development, Agriculture & Food (with sub-items: Animal Agriculture, Commercial Horticulture, Nursery & Turf, Farm Health & Safety, Field Crops, Food Safety & Processing, Local Foods, Pest Management, Specialty Crops), Community (with sub-items: Forest Resources, Health & Nutrition, Home & Family, Lawn & Garden, Soil, Water & Air), and Chatham County Center. The main content area is titled "FEATURED CONTENT" and features a "Gardening E-Newsletter" section with a description and a "READ THE REST" button. To the right of this section is a vertical list of featured content items: Plant Sciences Initiative, Soil 101: Introduction to Soil - Online!, Gardening E-Newsletter, Food Processing and Manufacturing Initiative, and Soil Testing. Below this is a "FEATURED EXTENSION VIDEO" section with two video thumbnails: "How to take a soil sample" and "Preparing Insect and Plant Disease Samples". At the bottom, there are sections for "NEWS" (with a "View All" link) and "EVENTS" (with a "View All" link). The footer includes "Chatham County Center", a logo, "Horsekateer Members Win at", and "Chatham Landscape Conference".

Carolina Lawns

*A Guide to Maintaining
Quality Turf in the Landscape*



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

Available:
[https://content
.ces.ncsu.edu
/carolina-
lawns](https://content.ces.ncsu.edu/carolina-lawns)

Also be sure to
download **lawn
maintenance
calendar** for
your turf type!

Extension Gardener Handbook

<https://content.ces.ncsu.edu/extension-gardener-handbook>

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NC STATE
NC State University
A&T State University
**COOPERATIVE
EXTENSION**
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NC Cooperative Extension Resources

Resource Catalog Log in Search Search Print

Extension Gardener Handbook Extension Gardener Handbook

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Chapter 9: Lawns

Gardening Portal

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



Search below or [ask an expert](#)

Enter Your Keywords Here



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Gardening

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FEATURED PROGRAMS

GARDENING

[How-To](#)

INTEGRATED PEST MANAGEMENT

[Diseases](#)

[Insects](#)

FEATURED CONTENT



Extension Gardener Newsletter

Extension Gardener Newsletters Extension Gardener Newsletters[/caption] **Subscribe** to the Extension Gardener email listserv to receive notification when new editions of the newsletter have been posted to the Extension


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 [Searchable Database of Plants](#)

 [Extension Gardener](#)

Going Native Website

<http://www.ncsu.edu/goingnative/>

Searchable plant database!

NC STATE UNIVERSITY



GOING NATIVE

URBAN LANDSCAPING FOR WILDLIFE WITH NATIVE PLANTS

HOME | NATIVE PLANTS ATTRACTIVE TO WILDLIFE | WHERE TO GET NATIVE PLANTS | INVASIVE, EXOTIC PLANTS OF THE SOUTHEAST | MY PLANT LIST



Home >

WHY GO NATIVE

HOW TO GO NATIVE

CREATE YOUR OWN NATIVE LANDSCAPE

Going Native: Urban Landscaping for Wildlife with Native Plants

You can go native!...with native plants in your landscape.

- See [why](#) landscaping with native plants is better for wildlife and for the environment.
- Find out about the problems caused by [invasive, exotic plants](#). Odds are you have invasive exotics in your own backyard!
- Discover the [native plants](#) you can use as alternatives to exotic plants. We even tell you [where](#) you can

Pollinator Conservation

<http://www.protectpollinators.org>



The screenshot shows the homepage of the 'Growing Small Farms' website. At the top, there is a banner image of a garden with the text 'Growing Small Farms' overlaid. Below the banner is a navigation menu with links: 'Chatham Extension Center', 'News', 'Farmer Resources', 'Web Resources', 'Workshops', and 'What's New'. On the left side, there is a quote: 'Whatever lofty things you might accomplish today, you will do them only because you first ate something that grew out of dirt. - Barbara Kingsolver'. Below the quote is a vertical list of navigation links: 'Home', 'Photos', 'Crop Production', 'Pest Management', 'Direct Marketing', 'Local Farms', 'Farmers' Markets', 'Buy Local Guide', and 'Pollinator Conservation'. In the center, the main heading is 'Pollinator Conservation Guide' in green, with a sub-headline 'Photos by [Debbie Roos](#)[®], Agricultural Extension Agent.' and a 'Print Content Only' link. At the bottom, there are three small images: a bumblebee on a purple flower, a wasp on a yellow flower, and a bee on a white flower.

Visit the Pollinator Paradise Garden in Pittsboro!

Search Extension Nationwide

<https://search.extension.org>



One Search Hundreds of Cooperative Extension Sites

Easy search access to resources provided by your Land-Grant institutions

 
powered by Google™

About Cooperative Extension Search

This service allows you to search the resources provided by your [Cooperative Extension Service](#) using a [Google Custom Search Engine](#) that includes many of the Cooperative Extension web sites provided by your Land-Grant institutions.

These resources are brought to you by the Cooperative Extension System and your Local Institution. eXtension provides objective and research-based information and learning opportunities that help people improve their lives. eXtension is a critical part of the Cooperative Extension System and an educational partner with 75 land-grant universities in the United States.

Help Us Grow:
**Become an Extension Master
Gardener Volunteer!**



Learn more:
<http://go.ncsu.edu/chathamemg>

Answers to Your Questions, Solutions for Your Problems

Contact your local Extension office

- <http://www.ces.ncsu.edu>

In Chatham County,

- 919-542-8202
- charlotte_glen@ncsu.edu

Ask an Expert

- <http://www.ces.ncsu.edu/ask-an-expert>

