Cover Your Dirt

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TENNESSEE YARDS & NEIGHBORHOODS

Extension
How can we cover our dirt?

- Turfgrass
- Native grasses
- Wildflowers
- Groundcovers
- Planting beds
- Mulches
Sustainable Development

- Capable of being maintained at a steady level without exhausting natural resources or causing severe ecological damage.

http://www.thefreedictionary.com
The Sustainable Lawn

A lawn managed using appropriate cultural, chemical and biological inputs judiciously and making efficient use of non-renewable natural resources to improve quality of life and enhance the environment.
The Sustainable Lawn

Why?
Environmental Issues / Public Concerns

- Several environmental issues and public concerns regarding lawn care are the potential for nutrient and pesticide contamination of surface and ground water; the transport of sediment and sediment-absorbed chemicals from turf to water; the use of water for irrigation; and an accumulation of operational wastes including batteries, cleansers, oil and tires.
The Sustainable Lawn

Cultural

Synthetic

Chemical

Organic

Biological

MIDATR
oreeoo
wrtrpl
iihidl
ngafri
atien
tccsg
ihas
oiti
nnin
gogn

FFIHP
rnegeGR
lctci
ziidcd
eieees
ersdss

FDIFHS
rtnsrim
thgebmg
iaiciiu
ltctcl
iciiaa
zhdcde
eiieet
rnsdss
sges
The Sustainable Lawn

How?
Select turfgrass species and varieties that are adapted to the local weather and soils.

National Turfgrass Evaluation Program Tall Fescue Trial (http://ntep.org)
Establish and maintain turfgrasses in full sun or light, open shade and in fertile, well-drained soils.
Effect of Tree Canopy on Light Quality
An estimated 25% or more of managed turfgrasses experience shade stress – J. B. Beard, 1973
Consider mixing organic matter (e.g., compost) into the soil before planting or after core aerifying.
The A horizon generally contains more organic matter than the other horizons.

A 1% increase in organic matter can increase the water holding capacity of 1 ac.-ft. of soil by ~6,000 gallons.
### Numbers and Live Weight of Microorganisms in Soil.*

<table>
<thead>
<tr>
<th>Organism</th>
<th>Number in one pound</th>
<th>Lbs. of organisms per 1,000 sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>910 billion</td>
<td>12</td>
</tr>
<tr>
<td>Fungi</td>
<td>450 million</td>
<td>35</td>
</tr>
<tr>
<td>Actinomycetes</td>
<td>20 billion</td>
<td>17</td>
</tr>
<tr>
<td>Protozoa</td>
<td>670 million</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>&gt; 930 billion</td>
<td>&gt; 70</td>
</tr>
</tbody>
</table>

### Numbers of Macroorganisms in Soil.*

<table>
<thead>
<tr>
<th>Organism</th>
<th>Numbers per 1,000 sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insects- earwigs, crickets</td>
<td>1.8 million</td>
</tr>
<tr>
<td>Myriapods- millipedes, centipedes</td>
<td>0.05 million</td>
</tr>
<tr>
<td>Arachnids- spiders, mites</td>
<td>0.1 million</td>
</tr>
<tr>
<td>Oligochaetes- earthworms</td>
<td>0.2 million</td>
</tr>
<tr>
<td>Nematodes- microscopic roundworms</td>
<td>0.2 million</td>
</tr>
<tr>
<td>Total</td>
<td>2.35 million</td>
</tr>
</tbody>
</table>

Fertilize according to soil test recommendations and the nutrient requirements of the turfgrass.
Soil Sampling Depth:
Six Inches

Sampling Locations: Random, 2 to 3 / 1,000 Sq. Ft.

Maintain Turfgrasses in the Landscape
Relative Level of Soil Phosphorus and Potassium Reported in Pounds Per Acre.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Phosphorus (P)</th>
<th>Potassium (K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW (L)</td>
<td>0 - 18</td>
<td>0 - 90</td>
</tr>
<tr>
<td>MEDIUM (M)</td>
<td>19 - 30</td>
<td>91 - 160</td>
</tr>
<tr>
<td>HIGH (H)</td>
<td>31 - 120</td>
<td>161 - 320</td>
</tr>
<tr>
<td>VERY HIGH (VH)</td>
<td>121+</td>
<td>321+</td>
</tr>
</tbody>
</table>
Common Turfgrasses in Tennessee

**Cool-season**
- Tall fescue
- Fine fescues
- Kentucky bluegrass
- Perennial ryegrass
- Annual ryegrass

**Warm-season**
- Bermudagrass
- Zoysia
- Centipede grass
Cool-season Turfgrasses

**Growth Rate**

- **Shoot Growth**
- **Root Growth**

**Periods of Highest Nutrition Need**

- **J**  
- **F**  
- **M**  
- **A**  
- **M**  
- **J**  
- **J**  
- **A**  
- **S**  
- **O**  
- **N**  
- **D**

**Month**

Select Turfgrasses in the Landscape
Warm-season Turfgrasses

Month

Growth Rate

Shoot Growth
Root Growth

Periods of Highest Nutrition Need

Grasses for TN Landscapes
Turf Climates in the U.S.

• Adaptation: Cool vs. Warm Season

• Transition Zone
  – 37° latitude: 200 miles wide
  – Tall fescue

• Arid/Humid (Cool and Warm)
• Elevational effects
Tall Fescue
*(Festuca arundinacea)*
Turfgrass Growth Habit

Bunch

- Annual ryegrass
- Chewings fescue
- Hard fescue
- Perennial ryegrass
- Tall fescue
Turfgrass Growth Habit

Sod-forming: Stolons

- Bermudagrass
- Centipedegrass
- St. Augustinegrass
- Zoysia
Turfgrass Growth Habit
Sod-forming: Rhizomes

- Bermudagrass
- Kentucky bluegrass
- Zoysia
Drought Tolerance
Cool-season Turfgrasses

- Tall Fescue
- Kentucky Bluegrass
- Red Fescue
- Perennial Ryegrass
High Temperature Hardiness
Cool-season Turfgrasses

- Tall fescue
- Kentucky bluegrass
- Red fescue
- Perennial ryegrass
Establishing Turf
Using Seed, Sod, Plugs or Sprigs
The 3F Planting Bed
(Fertile, Firm and Free of Troublesome Weeds)

- Topsoil
- Compost
- Limestone
- Starter fertilizer
Relative nutrient availability at varying pH values

<table>
<thead>
<tr>
<th>pH</th>
<th>4.0</th>
<th>4.5</th>
<th>5.0</th>
<th>5.5</th>
<th>6.0</th>
<th>6.5</th>
<th>7.0</th>
<th>7.5</th>
<th>8.0</th>
<th>8.5</th>
<th>9.0</th>
<th>9.5</th>
<th>10.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidity</td>
<td>extreme acidity</td>
<td>strong acidity</td>
<td>slight acidity</td>
<td>slight alkalinity</td>
<td>strong alkalinity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen</td>
<td>phosphorus</td>
<td>potassium</td>
<td>sulfur</td>
<td>calcium</td>
<td>magnesium</td>
<td>iron</td>
<td>manganese</td>
<td>boron</td>
<td>copper and zinc</td>
<td>molybdenum</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maintain Turfgrasses in the Landscape
LIMING TIPS

- Apply lime uniformly, according to soil test recommendations
- Pelletized lime is usually much easier to broadcast
- Do not apply lime without the benefit of a soil test
Starter Fertilizer

- 12-24-24
- 6-12-12
- 8-24-12

- 5-15-10
- 6-18-12
- 3-23-23
Care After Planting

- Water
- Mowing
- Fertilization
- Pest control
Plant at the proper time of year.
Preferred Seeding Dates:

- Seed cool-season lawngrasses in late August, September or early October.
Preferred Seeding Dates:

- Seed warm-season lawngrasses in May, June or early July.
Use the recommended amount of seeds, sprigs or plugs.
## Seeding Rates
### Pounds / 1,000 Square Feet

<table>
<thead>
<tr>
<th>Grass Type</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chewings fescue</td>
<td>3 to 5</td>
</tr>
<tr>
<td>Creeping bentgrass</td>
<td>1 to 2</td>
</tr>
<tr>
<td>Kentucky bluegrass</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td>4 to 6</td>
</tr>
<tr>
<td>Red fescue</td>
<td>3 to 5</td>
</tr>
<tr>
<td>Tall fescue</td>
<td>5 to 7</td>
</tr>
</tbody>
</table>
Mulch after seeding to conserve moisture and limit soil erosion.
Straw Mulch

½ of the soil surface should be covered with mulch
Maintain Turfgrasses in the Landscape

Fertilizing
Fertility
Organic or Inorganic

Definitions

- **Organic**
  Containing carbon

- **Inorganic**
  A material that is not derived from plant or animal-based materials
Fertilizer or Amendment

Fertilizer

- Guaranteed Analysis – Regulatory agency
- Minimum nutrient content displayed on the label

Amendment

- No guaranteed analysis of nutrient content
- No state testing
Synthetic Organic Nitrogen Sources

- Urea
- Methylene urea (MU)
- Urea formaldehyde (UF)
Nutrient Sources in Organic Fertilizers

- Animal wastes – poultry litter, manures (guano), processing (blood meal, bone meal, fish wastes, feather meal), ...

- Industry wastes – biosolids, processing (leather scraps, dye residues), ash, ...

- Plant wastes – mushroom debris, soybean extracts, corn gluten, yucca, kelp, molasses, ...
Fertilizers

42-0-0

19-4-8
Milorganite Fertilizer

Use on lawns, flowers, vegetables, shrubs and trees
- No need to water in; waits for moisture to activate
- Nonburning; use anytime, even in midsummer
- Contains iron for deep, even greening

For Better Results. Naturally.
Net Weight: 40 lbs.

4% IRON
Amendments

- Promotional claims and application recommendations

100% Great Results.
Reduce Fertilizer 25-50%!
- Detoxifies & heals diseased, depleted & toxic soils.
- Promotes soil health and deep rooting.
Willman’s exclusive Humic, Mineral, Enzyme & Growth Hormone Blend the key for dramatic results, organically!
IDEAL FOR TURF, TREES, CROPS & ORNAMENTALS.
Free Organic Turf Care Guide!

COMPOST
- Temperate, moisture controlled finished composted product.
- SINGLE SOURCE BEEF MANURE.
- ORDERLESS, SAFE TO USE ANYWHERE.
- COMPOSTED AEROBICALLY, AND WEED SEEDS ARE DESTROYED.
FERTILIZING TIPS

- Develop a plan based on soil test results and the fertility requirement of the turfgrass you are managing
- Consider using a product containing extended-release nitrogen
- Uniformly apply an appropriate amount of fertilizer
Tall Fescue Fertilization
Low soil P or K levels

Maintain Turfgrasses in the Landscape
Example Bermudagrass Lawn Fertilization Program
Medium to High soil P or K levels

<table>
<thead>
<tr>
<th>Month</th>
<th>Nitrogen</th>
<th>Phosphate</th>
<th>Potash</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.3</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>J</td>
<td>0.4</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Jl</td>
<td>0.5</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>S</td>
<td>0.6</td>
<td>0.4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Lb. per 1,000 sq. ft.
Mow often at an appropriate cutting height.
Recommended Cutting Height
Cool-season Turfgrasses

- Tall fescue
- Kentucky bluegrass
- Red fescue
- Perennial ryegrass
Change the direction in which the lawn is mowed.
MOWING TIPS

- Mow often at an appropriate cutting height
- Change direction each time you mow
- Sharpen or replace blades at least once each year
Core Aerification

Maintain Turfgrasses in the Landscape
Soil Compaction

Not Compacted

- Solids
- Air
- Water

Compacted

- Solids
- Air
- Water
Core Aerification

Ryan® Lawnaire V Plus

Cool-season Turfs
Topdressing

- Topdressing Turf After Core Aerification with $\frac{1}{4}$- to $\frac{1}{2}$-inch of Mature Compost can Improve the Biological Activity and Increase the Organic Matter Content of the Soil
Dethatch as needed.
Learn to identify and manage turfgrass pests.
Pre-emergence Herbicides

Smooth Crabgrass

Goosegrass

Summer Annual Weed Grasses
Post-emergence Herbicides

Prostrate Spurge

Common Purslane

Summer Annual Broadleaf Weeds
Post-emergence Herbicides

Winter Annual & Perennial Broadleaf Weeds

Purple Deadnettle

Ground Ivy
An Integrated Pest Management program can reduce the amount of pesticides applied and help protect beneficial organisms in the sustainable home lawn.
Why Not Native, Warm-season Grasses?

- Aesthetics
- Diversity
- Wildlife habitat
- Reduced maintenance cost
- Water quality protection
Native Grasses for Tennessee

- Big bluestem
- Broomsedge
- Eastern Gamagrass
- Indian grass
- Little bluestem
- Switchgrass
Groundcovers

- Use where grasses will not grow well
- Use in areas not subject to heavy traffic
- More compatible near trees than grasses