HOME LAWN CARE
Using Weeds, Insects and Diseases as Indicators of Turf Problems

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Turfgrasses grow best in full sun and deep, fertile and well-drained soils.
Primary Cultural Practices (PCP)

1. Mowing
2. Fertility
3. Irrigation
4. Cultivation
5. Pest Management
Primary Cultural Practices

- Mowing
- Irrigation
- Fertilizing
- Cultivation
- Pest Management
Sound Management = Integrated Thinking

Mowing

Irrigation ← Fertility
The 1/3 rule states…

Never remove more than 1/3 of the turfgrass leaves with a single mowing.

\[(\text{Desired mowing height} \times 1.5) = \text{mow at height}\]
## Suggested mowing heights for major cool-season turfgrasses

<table>
<thead>
<tr>
<th>Species</th>
<th>Min.</th>
<th>Mow</th>
<th>Max</th>
<th>Mow</th>
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<tbody>
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<tr>
<td>Tall Fescue</td>
<td>1.0</td>
<td>1.5</td>
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<tr>
<td>Perennial Ryegrass</td>
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<td>0.375</td>
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<td>Kentucky Bluegrass</td>
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<td>1.125</td>
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<td>Creeping Bentgrass</td>
<td>0.10</td>
<td>0.15</td>
<td>0.25</td>
<td>0.375</td>
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</table>

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**Note:** Heights in inches
Suggested mowing heights for major warm-season turfgrasses

<table>
<thead>
<tr>
<th>Species</th>
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<th>Max</th>
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<tr>
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<td>St. Augustine</td>
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<td>4.0</td>
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Improper Cutting Causes A Drop in Turf Quality

- Dull or out of adjustment mower
- Problem will look worse as grass grows
- Improperly cut grasses can use up to 20% more water
Fertilization

Scotts SpeedyGreen® Rotary
Scotts EasyGreen® Rotary
Scotts Drop
Precision (Red Devil) Broadcast
Precision (Red Devil) Drop
Earthway Broadcast

Applicable Pattern

Apply at half rate in two directions.

NOTE: Sprinkle applicator evenly to avoid clumping near drops.
Yearly Nitrogen Management of Grasses
General Model

Cool-Season

Warm-Season
Irrigation: Measuring Soil Moisture
Water Loss - Evaporation (inches/day)

Penman's Equation for Saturated Grass

Calculated @ 70F Min/90F Max Temperature

www.weather.nmsu.edu/math/Penman.xls
Weeds as Indicators of Turf Problems
Turfgrass Weeds

Weeds do not cause bad turf –
They are the cause of bad turf!
Monocots
a.k.a. grasses
Rush Species

Photos courtesy of Plants Database- USDA: http://plants.usda.gov/java/
Sedges

*Cyperus esculentus*
Sedges

Shortleaf Spikesedge
*Kyllinga brevifolia*

Picture courtesy of Larry Allain @ USDA-NRCS PLANTS Database
Dicots
a.k.a. Broadleaves
• Moist, clayey soils are very prone to compaction

• Water infiltration is often as slow as $\frac{1}{10}$th of an inch per hour
Indicator Weeds

Compacted Soil: Crabgrass

Digitaria ischaemum
Indicator Weeds

Compacted Soil: Goosegrass

Eleusine indica
Indicator Weeds

Compacted Soil: Virginia Buttonweed

*Diodia virginiana*
Indicator Weeds

Compacted Soil:

- Prostrate Knotweed
- Common Purslane

Polygonum aviculare
Portulaca oleracea
Low Nitrogen
Indicator Weeds

Low Nitrogen:

- White Clover
  - *Trifolium repens*

- Black Medic
  - *Medicago lupulina*
Poorly Drained Soils
Indicator Weeds

Poor Drainage: Sedges, Rushes

- *Cyperus esculentus*
- *Juncus sp.*
Indicator Weeds

Poor Drainage: Annual Bluegrass

Poa annua
Indicator Weeds

Poor Drainage: Algae

Photos courtesy of North Carolina State University
Subsurface Drainage
Shade
Shade
Indicator Weeds

Shade: Moss

Bryum argenteum and others
Indicator Weeds

Shade: Wild Violet
Indicator Weeds

**Shade: Heal-all**

*Prunella vulgaris*

Picture courtesy of Forrest and Kim Starr
Indicator Weeds

Shade: Nimblewill

Muhlenbergia schreberi
Indicator Weeds

Shade: Japanese Stiltgrass

Microstegium vimineum
Acidic Soil
Acidic Soil
Acidic Soil
Indicator Weeds

Acidic Soil pH: Sheep Sorrel (pH 4)

*Rumex acetosella*
Indicator Weeds

Acidic Soil pH: Ground Ivy

Puccinia glechomatis
Indicator Weeds

Acidic Soil pH: Common Cinquefoil

Photo courtesy of North Dakota State University: http://www.ag.ndsu.edu/
### Relative Nutrient Availability at Varying Soil pH Values

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- Nitrogen
- Phosphorus
- Potassium
- Sulfur
- Calcium
- Magnesium
- Iron
- Manganese
- Boron
- Copper and Zinc
- Molybdenum
Indicator Weeds

Basic Soil pH: Common Plantain

*Plantago major*
Detecting Insect Activity in Turf

- Type of damage
- Location
- Time of year
Three Habitat Areas for Insects in Turf
Surface-feeding Insects

*armyworms, chinch bugs, cutworms, sod webworms*

- Large numbers of birds feeding in turf
- Small moths flying zigzag patterns over the turf surface, especially in late evening
- Rapid loss of green color similar to fertilizer burn or drought injury, even though the soil is moist
- Frass on or near the soil surface
Fall Armyworm

Spodoptera sp.
Sod Webworm

*Crambus sp.*
Black Cutworm
Subsurface-feeding Insects

*billbugs, white grubs*

- Turfgrasses shallowly rooted, poor footing
- Damage to turf by insect feeding mammals (moles, skunks and raccoons)
- Overall thinning of turf
- Patches of yellowing turf
Sphenophorus sp.

Billbug
Masked Chafer Beetle

*Cyclocephala sp.*
Green June Beetle

Cotinis sp.
May Beetle

Japanese Beetle

Phyllophaga sp.

Popilla sp.
Moles in the Landscape

- **Eastern**
  *Scalopus aquaticus*

- **Hairy-tailed**
  *Parascalops breweri*

- **Star-nosed**
  *Condylura cristata*

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http://fur-n-featherswildlifemanagement.com
Several Diseases of Turf

- Large Patch: *Rhizoctonia* spp.
- Dollar Spot: *Lanzia* and *Mollерodiscus* spp.
- Fairy Ring: *Marasmius* sp., *Lepiota* sp., *Psalliota* sp.
- Pink Snow Mold: *Microdochium nivale*
- Pythium Blight: *Pythium* spp.
- Red Thread: *Laetisaria fuciformis*
- Slime Mold: *Mucilago crustacea, Physarum* sp., *Fuligo* sp.
- Spring Dead Spot: *Ophiophaerella herpotricha*
Large Patch of Bermudagrass at Spring Greenup

- Favored by cool, wet weather in the spring at the time of, or soon after green-up
Dollar Spot

- Often indicates low nitrogen
Fairy Ring

- Favored by an accumulation of organic matter
- Turfgrass plants may die within the ring
- A dark green band may appear on the inside or the outside of the ring of dead turfgrass plants
Pink Snow Mold of Perennial Ryegrass

- Favored by poor air flow and high nitrogen levels
Pythium Blight

- Favored by warm air temperatures, wet weather, poor drainage and standing water
Red Thread of Kentucky Bluegrass

- Favored by poor air flow and low nitrogen levels
Slime Mold

- Favored by warm, wet weather, and moist soil and thatch
- Not considered harmful although may eventually block sunlight and limit photosynthesis
Spring Dead Spot of Bermudagrass

- Favored by a high level of nitrogen fertility in late summer, compacted and poorly drained soil, and excessive thatch.
Primary Cultural Practices

- Mowing
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- Cultivation
- Pest Management