The Truth about Bluegrass

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Kentucky bluegrass (*Poa pratensis*)

- High quality
- Great recuperator
- Sod-former
- Stress-resistant
- Thatch-former
- Poor shade tolerance
- Disease- and insect-prone?
- Higher water and N requirements???
KBG is drought resistant

KBG cultivars vary in ability to remain green during extended drought
KBG Varieties for Drought Resistance

SR2000
Livingston
America
Unique
Apollo
Showcase
Brilliant
Classic
Compact
Newer Kentucky Bluegrass Cultivars

*Excellent Quality (color, density, texture)*

- **Excellent traffic tolerance**
  - Avalanche
  - Award
  - Midnight II
  - NuDestiny
  - Julia
  - Moonlight
  - Limousine
  - Coventry
  - Brilliant
  - P105

- **Fair to Good Traffic Tolerance**
  - Arcadia
  - Awesome
  - Barrister
  - Impact
  - Liberator
  - Moonshadow
  - Odyssey
  - Perfection
  - Total Eclipse

Traffic tolerance ratings based on Rutgers University research
Necrotic Ring Spot on KBG

Ascochyta Leaf Blight on KBG
The IA also estimates that more than 20 million acres of residential and commercial landscape are irrigated today, consuming approximately 20 million acre-feet of water a year.
Drought Tolerance

- Can tolerate dehydration
- Often possess excellent dormancy mechanisms
- Good ability to recover from dormancy

Examples:
- Kentucky bluegrass
- Buffalograss
- Bermudagrass
- Bromegrass
- Quackgrass
Drought Avoidance

- Maintain growth when drought stressed
- Deep, extensive root systems
- High ratio of roots to shoots
- Xeromorphic characteristics (leaf rolling, hairy leaves, thick cuticle)
- May not possess good dormancy mechanism
- Recovery from extended, severe drought may be poor

Examples:
- Tall fescue
- Perennial ryegrass
- St. Augustine grass
Drought Escape

Plant completes its life cycle prior to the onset of drought

Example: Poa annua var. annua
Turfgrass Water Use

Total amount of water used for growth plus that lost by transpiration and evaporation from plant and soil surfaces.

J. B. Beard, 1973

May or may not be related to drought resistance
### Turfgrass ET Classification

<table>
<thead>
<tr>
<th>Relative Ranking</th>
<th>Relative ET (mm day(^{-1}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>&lt; 4.0</td>
</tr>
<tr>
<td>Low</td>
<td>4.0-4.9</td>
</tr>
<tr>
<td>Medium-low</td>
<td>5.0-5.9</td>
</tr>
<tr>
<td>Medium</td>
<td>6.0-6.9</td>
</tr>
<tr>
<td>Medium-high</td>
<td>7.0-7.9</td>
</tr>
<tr>
<td>High</td>
<td>8.0-8.9</td>
</tr>
<tr>
<td>Very high</td>
<td>&gt;9.0</td>
</tr>
</tbody>
</table>

*J. B. Beard, 1985*

- **Tall fescue**
- **Kentucky bluegrass, buffalograss**
<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>ET*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall Fescue</td>
<td><em>Festuca arundinacea</em></td>
<td>7-13</td>
</tr>
<tr>
<td>Perennial Ryegrass</td>
<td><em>Lolium perenne</em></td>
<td>7-11</td>
</tr>
<tr>
<td>St. Augustinegrass</td>
<td><em>Stenotaphrum secundatum</em></td>
<td>6-11</td>
</tr>
<tr>
<td>Seashore Paspalum</td>
<td><em>Paspalum vaginatum</em></td>
<td>6-8</td>
</tr>
<tr>
<td>Bahiagrass</td>
<td><em>Paspalum notatum</em></td>
<td>6-8</td>
</tr>
<tr>
<td>Kikuyugrass</td>
<td><em>Pennisetum clandestinum</em></td>
<td>6-9</td>
</tr>
<tr>
<td>Creeping Bentgrass</td>
<td><em>Agrostis Palustris</em></td>
<td>6-10</td>
</tr>
<tr>
<td>Centipedeggrass</td>
<td><em>Eremochloa ophiuroides</em></td>
<td>5-9</td>
</tr>
<tr>
<td>Bermudagrass</td>
<td><em>Cynodon spp.</em></td>
<td>4-9</td>
</tr>
<tr>
<td>Zoysiagrass</td>
<td><em>Zoysia spp.</em></td>
<td>5-8</td>
</tr>
<tr>
<td>Kentucky Bluegrass</td>
<td><em>Poa pratensis</em></td>
<td>4-7</td>
</tr>
<tr>
<td>Buffalograss</td>
<td><em>Buchloe dactyloides</em></td>
<td>3-6</td>
</tr>
</tbody>
</table>

* ET rates when water is non-limiting; Potential Evapotranspiration

**Inches/ wk**
- Tall Fescue: 2.0-3.8
- Kentucky Bluegrass: 0.8-2.0
Turf Survival Without Water

**BEST:** buffalograss, blue grama, bromegrass, wheatgrasses, bermudagrass can survive without ANY supplemental irrigation

**FAIR:** Kentucky bluegrass, fine fescues, bentgrass and zoysiagrass can become dormant and survive for many (3-6) months without irrigation; some thinning will occur

**POOR:** perennial ryegrass and tall fescue may survive 2-4 months without ANY irrigation, but will be severely thinned

**VERY POOR:** annual bluegrass
Factors Affecting Drought Survival

- Condition/health of turf entering drought
- Exposure to sun, wind
- Soil type (better survival on fine-textured soils)
- Excess thatch will reduce survivability
- Varietal differences
- Traffic will reduce ability to survive prolonged drought
Water Requirements of Annual Bedding Plants in CO

- 19 annuals tested
- 3 sites in CO
- Drip irrigation; mulched
- Irrigated using different percentages of bluegrass ET
100 % ET
Supplemental irrigation requirements for the following lawn grass species assume:

- “Normal” precipitation (10-11 inches, April-October) and summer temperatures
- Good irrigation coverage (80% efficient irrigation system coverage)
- Extended drought and/or higher temperatures increase water needs for ALL grasses

- Kentucky bluegrass (KBG) will need 24-26 inches of supplemental irrigation per growing season to produce a lawn of good to excellent quality.
- Lower (but acceptable) quality KBG lawns can be grown with as little as 15-20 inches of irrigation (with normal precipitation and good irrigation coverage)
- Tall fescue may need 10% less irrigation than KBG (20-22 inches) IF it can grow deep roots AND substantial subsoil moisture exists
- Tall fescue may require MORE irrigation than KBG if planted on poor/shallow soil, when subsoil moisture is deficient, or where deep rooting does not occur
- Fine fescue lawns will require 18-20 inches (where it can form deep roots)
- Buffalograss and blue grama lawns will require 8-10 inches (1-2 inches of irrigation per growing month) for a GOOD quality lawn that will tolerate moderate traffic/use
- Bermudagrass irrigation requirement is similar to that of buffalograss, or slightly less
- Kentucky bluegrass, fine fescue, buffalograss and bermudagrass can become dormant and survive prolonged periods (1-2 months) without precipitation and irrigation; tall fescue lawns often die or become thin when deprived of water for similar time periods
The first hybrid bluegrass, ‘Reveille’, was developed by Texas A&M University.

Kentucky bluegrass + Texas bluegrass = Hybrid Bluegrass ‘Reveille’ 1999
Hybrid Bluegrass Heat Tolerance

Kansas State University

- ‘Thermal Blue’ remained green after 14 days at 104 F day/86 F night
- ‘Dynasty’ tall fescue became dormant
- ‘Apollo’ KBG became half dormant

Heat tolerance and drought resistance are not the same thing!
Hybrid Bluegrass Varieties

- Gardner Turfgrass
  - Reveille
- The Scotts Company
  - Thermal Blue
  - Solar Green
  - Thermal Blue Blaze
  - Dura Blue
- Seed Research of Oregon
  - Bandera, Spitfire
- Turf-Seed Inc.
  - Longhorn
- Others
  - Fire and Ice, Fahrenheit 90
Hybrid Bluegrass Management

- **Mowing**
  
  1.5-3 inches (or even lower!)

- **Fertilization**
  
  Performs well at low (1-2 lbs/yr), but can be maintained under high fertility for heavy-use fields (3-5 lbs. N/year)

- **Irrigation**
  
  Good drought resistance and lower ET may save water with low-traffic turf, but ample irrigation is likely required under heavy use

- **Cultivation**
  
  Standard, as for other species and turf use situations

- **Pest Management**
  
  Billbugs may be a concern
  Disease should not be a problem in Colorado; wait and see as use increases
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