Turfgrass literally touches millions of lives in physical and social ways every day.
Social Benefits of Turfgrass

- Increased feelings of well being
- Aesthetically pleasing
- Improving the physical environment of inner cities
- Community bonding
- Increase property values
- Safety cushion for recreation
Environmental Benefits of Turfgrass

- Prevents soil erosion and stabilizes dust
- Filters contaminants from ground and surface water
- Releases oxygen to the atmosphere
- Sequesters carbon
- Moderates the air temperature
- Reduces noise
Improperly maintained turfgrass:

- Pollute ground and surface waters (nitrogen, phosphorus, pesticides)
- Waste excessive amounts of our clean water resource
- Deplete nutrient resources that would otherwise help feed the world (phosphorus)
- Expends precious fossil fuels (natural gas used for nitrogen production, gasoline and diesel)
- Negatively impact off-target species

All are related to how we manage lawns.
Work of art, by accident

Tuesday, 21 April 2015

The owner of Wanaka's green and brown-patterned lawn, Paul Currie, of Christchurch, says he likes to think of it as having a Polynesian look. Photo / Stephen Jaquiery.
NEED TO CONSIDER THE SPECIES, THE SITUATION, AND RECONSIDER EXPECTATIONS
Turfgrass species that meet public expectations in MN

- Kentucky bluegrass
- Perennial ryegrass
- Fine fescue species
  - Strong creeping red, slender creeping red, chewings, hard, sheeps
- Tall fescue
- Bentgrasses
  - Creeping, colonial, velvet
Cool-season turf species that are not acceptable (visually or sustainably)

- Annual ryegrass
  - Unsightly and annual
- Rough bluegrass
  - Intolerant to heat
  - Doesn’t blend well
- Supina bluegrass
  - Light green
- Annual bluegrass
  - Unsightly and annual
- Certain varieties of the popular species
  - ‘Linn’ perennial rye, ‘Kentucky-31’ tall fescue
Kentucky Bluegrass  
*Poa pratensis*

- Most popular turfgrass in the northern United States
- **Uses**: Lawns, golf courses, parks, athletic fields
- **Positives**
  - Aesthetics
  - Recoverative ability
  - Winter hardy
  - Mowing quality
  - Establish from seed or sod
Kentucky Bluegrass

- Negatives
  - High fertility needs
  - High water requirement
  - Summer dormancy
  - Heat-stress intolerant
  - Shade intolerant
  - Susceptible to disease
Perennial Ryegrass
*Lolium perenne*

- **Uses**: home lawns, parks, golf fairways, athletic fields

- **Positives**
  - Quick germination and establishment

- **Negatives**
  - Not winter hardy
  - Summer-stress intolerant
  - High input
Turfgrass species that meet public expectations in MN

- Kentucky bluegrass
- Perennial ryegrass
- Fine fescue species
  - Strong creeping red, slender creeping red, chewings, hard, sheeps
- Tall fescue
- Bentgrasses
  - Creeping, colonial, velvet
Low-Input Characteristics

- Disease resistance
- Insect resistance
- Drought tolerance
- Slow vertical growth
- Low fertility needs

Photo credit: S. Andersen, SDSU
Current U of MN Breeding Efforts

Dr. Eric Watkins

• Lower input
  – Hard fescue
  – Sheep fescue
  – Tall fescue

• New species for turf
  – Tufted hairgrass
  – Prairie junegrass
# Fine Fescues: No-Mow Lawns

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Festuca rubra</em> ssp. <em>rubra</em></td>
<td>strong creeping red</td>
</tr>
<tr>
<td><em>Festuca rubra</em> ssp. <em>litoralis</em></td>
<td>slender creeping red</td>
</tr>
<tr>
<td><em>Festuca rubra</em> ssp. <em>commutata</em></td>
<td>chewings fescue</td>
</tr>
<tr>
<td><em>Festuca trachyphylla</em></td>
<td>hard fescue</td>
</tr>
<tr>
<td><em>Festuca ovina</em></td>
<td>sheep fescue</td>
</tr>
</tbody>
</table>
Living Laboratory

LOW-MAINTENANCE TURFGRASS

Reducing the amount of water and fertilizer needed to maintain a pleasing and functional campus.

italladdsup.umn.edu/livinglab
Hard Fescue
Festuca trachyphylla

• **Uses**: home lawns, parks, golf course fairways

• **Positives**
  – Low fertility needs
  – Slow-growing
  – Shade or sun
  – Drought tolerance

• **Negatives**
  – Disease under wear
  – Snow mold
Hard Fescue
## Other Fine Fescue Species

<table>
<thead>
<tr>
<th>Strong creeping red fescue</th>
<th>Chewings fescue</th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Often mixed with Kentucky bluegrass for partial shade</td>
<td>❖ Excellent density</td>
</tr>
<tr>
<td>❖ Rhizomatous growth</td>
<td>❖ Very aggressive</td>
</tr>
<tr>
<td>❖ Disease problems</td>
<td>❖ Summer-stress tolerance</td>
</tr>
<tr>
<td>❖ Not as good in heat/drought</td>
<td>❖ Snow-mold susceptibility</td>
</tr>
<tr>
<td>❖ Bunch-type</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slender creeping red fescue</th>
<th>Sheeps fescue</th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Similar to strong creeping red fescue</td>
<td>❖ Slow vertical growth rate</td>
</tr>
<tr>
<td>❖ Salt-tolerance</td>
<td>❖ Lowest input</td>
</tr>
<tr>
<td></td>
<td>❖ Grayish-green color</td>
</tr>
</tbody>
</table>
Management:
- Mowing- 1x per year
- Irrigation- not really
- Fertilizer- 1x per year
- Weed control- hand removal of weeds
- Other management- aeration, leaf cleanup
Tall Fescue
*Festuca arundinacea*

- Introduced in United States as a forage grass
- First used as turf in 1940s and 1950s
- *Uses*
  - Home lawns
  - Athletic fields
  - Golf course roughs
  - Parks
Tall Fescue

• **Positives**
  – Drought avoidant
  – Wear tolerant
  – Disease resistant

• **Negatives**
  – Not winter hardy under ice cover
  – Some varieties have a coarse leaf texture
  – Young seedlings will not survive winter
Drought Resistance of turfgrasses

- Tall fescue
- Fine fescue
- Kentucky bluegrass
- Perennial ryegrass
- Bentgrasses

Best recommendation for balancing low maintenance with average expectations

Turgeon, 2005
Drought Resistance

Drought resistance = avoidance + tolerance

1. Drought avoidance
   - Deep/extensive root system, thick cuticle, small stomata openings, dormancy, escape
   - Tall fescue (deep roots), Kentucky bluegrass (dormancy)

2. Drought tolerance
   - Ability to tolerate drought and survive desiccation, low water users
   - Fine fescues (low water use)
Non-traditional Turfgrass Species (Native)

- Buffalograss
- Blue grama
- Texas bluegrass
- Tufted hairgrass
- Prairie junegrass

Currently have not gained public acceptance, costly, lower density
Buffalograss trial
Tufted Hairgrass

• Low-input turfgrass
• Used in Europe

**Positives**
  – Heavy metal tolerance
  – Shade grass
  – Reduced fertility needs

**Negatives**
  – Heat and drought problems
  – Poor seed production
  – Billbug damage
  – Rust disease
Prairie Junegrass

• North American prairie
• Very good low-input potential
• **Positives**
  – Heat stress tolerance
  – Reduced water needs
  – Reduced fertility
  – Slow vertical growth rate
• **Negatives**
  – Establishment
  – Seed availability and cost
  – Leaf spot susceptibility
Consumer seed mixtures

Are the right species mixtures available to you on the marketplace?

Yes and no
PEBBLE BEACH FAIRWAY GRASS SEED MIXTURE

PURE SEED

90.56% BARVERDI ANNUAL RYEGRASS
19.58% BOREAL CREEPING RED FESCUE
09.73% ADELLE PERENNIAL RYEGRASS *
09.63% KENBLUE KENTUCKY BLUEGRASS
04.72% OXFORD HARD FESCUE *
00.50% OTHER CROP SEED
01.18% INERT MATTER
00.10% WEED SEED
15.00% WATER SAVER SEED COATING *
NOXIOUS WEED SEED PER POUND : NONE FOUND

GERMINATION ORIGIN
90% OR
85% CN
85% DENMARK
85% WA
85% OR
AMS 480
IN MN, IN, IL SELL BY: 8/15

LOT: 63572
REF# (BT-SPEC)

NET WT.: 20 LBS.
BARENBRUG USA
P.O. BOX 239
TANGENT, OR 97389
# Standard Minnesota mixture

## 4 Midwest Mix

The Scotts Company

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Species</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jump Start</td>
<td>Kentucky Bluegrass</td>
<td>9.48</td>
</tr>
<tr>
<td>Wendy Jean</td>
<td>Creeping Red Fescue</td>
<td>8.50</td>
</tr>
<tr>
<td>Right</td>
<td>Kentucky Bluegrass</td>
<td>7.71</td>
</tr>
<tr>
<td>Silver Dollar</td>
<td>Perennial Ryegrass</td>
<td>7.55</td>
</tr>
<tr>
<td>Defender</td>
<td>Perennial Ryegrass</td>
<td>6.83</td>
</tr>
<tr>
<td>Treasure II</td>
<td>Chewing's Fescue</td>
<td>4.87</td>
</tr>
<tr>
<td>Midnight II</td>
<td>Kentucky Bluegrass</td>
<td>3.00</td>
</tr>
<tr>
<td>Other</td>
<td>Super Absorbent Coating</td>
<td>50.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product / 1000ft²</th>
<th>Seed / 1000ft²</th>
<th>$ / 1000 ft²</th>
<th>$ / lb. of seed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.31 lbs</td>
<td>1.10 lbs</td>
<td>$11.53</td>
<td>$10.39</td>
</tr>
</tbody>
</table>
Tall fescue blends are becoming more common

10 Tall Fescue
The Scotts Company

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Species</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic II</td>
<td>Tall Fescue</td>
<td>17.08</td>
</tr>
<tr>
<td>Gazelle II</td>
<td>Tall Fescue</td>
<td>17.00</td>
</tr>
<tr>
<td>Faith</td>
<td>Tall Fescue</td>
<td>14.88</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Super Absorbent Coating</th>
<th>50.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product / 1000ft²</td>
<td>Seed / 1000ft²</td>
<td>$ / 1000 ft²</td>
</tr>
<tr>
<td>4.00 lbs</td>
<td>1.96 lbs</td>
<td>$10.29</td>
</tr>
</tbody>
</table>
Low-Grow and No-Mow Mixtures

### Low Grow

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Species</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>V.N.S.</td>
<td>Sheep Fescue</td>
<td>20.00</td>
</tr>
<tr>
<td>Minatour</td>
<td>Hard Fescue</td>
<td>20.00</td>
</tr>
<tr>
<td>Intrigue</td>
<td>Chewing’s Fescue</td>
<td>25.00</td>
</tr>
<tr>
<td>Celestial</td>
<td>Red Fescue</td>
<td>25.00</td>
</tr>
<tr>
<td>V.N.S.</td>
<td>Annual Ryegrass</td>
<td>10.00</td>
</tr>
</tbody>
</table>

**Other**

<table>
<thead>
<tr>
<th>Product / 1000 ft²</th>
<th>Seed / 1000 ft²</th>
<th>$ / 1000 ft²</th>
<th>$ / lb. of seed</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.67 lbs</td>
<td>6.67 lbs</td>
<td>$46.66</td>
<td>$6.99</td>
</tr>
</tbody>
</table>
Where to find the best varieties?

• Local unbiased source
  – www.turf.umn.edu
• National Turfgrass Evaluation Program
  – www.ntep.org
• Other public turfgrass research programs
Where to purchase seed?

http://turf.umn.edu/purchasing-turfgrass-seed/

- Professional distributors
- Online sources
- Local garden centers- specifically ask what you are looking for
- Big box stores- look at the fine print
Species demonstrations on 3-mile drive at the Arboretum in Chaska

- Tall fescue
- Hard fescue
- Slender creeping red fescue
- Strong creeping red fescue
- Sheep fescue
- Chewings fescue
- Kentucky bluegrass
- Perennial ryegrass
- Creeping bentgrass
- Colonial bentgrass
- Annual bluegrass
- Rough bluegrass
Lawn Care in 2025

- Turfgrass species:

<table>
<thead>
<tr>
<th>Present</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky bluegrass</td>
<td>Increase fine fescues</td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td>Prairie junegrass</td>
</tr>
<tr>
<td>Annual ryegrass</td>
<td>Tufted hairgrass</td>
</tr>
<tr>
<td>Fine fescues</td>
<td>Colonial bentgrass</td>
</tr>
<tr>
<td>Annual bluegrass</td>
<td>Tall fescue</td>
</tr>
</tbody>
</table>
Lawn Care in 2025

• Water management strategies:
  – Smart irrigation controllers
  – Rain sensors
  – Soil moisture meters
  – Low-water requiring species
  – Allowing lawns to go dormant
  – Well balanced nutrition and cultivation practices
Lawn Care in 2025

• Fertility practices:
  – Slow release nitrogen sources
  – Application timing is critical
  – Omit nutrients that aren’t required
    • Soil tests
    • Researched recommendations
    • Reduce application rates
  – Low input species
Learn More

Websites:

• www.turf.umn.edu
• www.extension.umn.edu/garden/turfgrass/
• www.sustland.umn.edu
• http://blog.lib.umn.edu/efans/ygnews/

Yard and Garden Info:

• Facebook: “University of Minnesota Garden Info”
• Twitter: @urbanturfmn and @UMNgardeninfo

Sam Contact:

• Email: sjbauer@umn.edu
• Phone: 763-767-3518