LAWN CARE
TOPICS TO COVER

- Turfgrass Types
- Seeding
- Fertilizer
- Lawn Care
- Lawn Pests & Problems
TURFGRASS TYPES

- Kentucky Bluegrass
- Ryegrass
- Fine Fescue

Most northern lawns are a combination of Kentucky bluegrass, ryegrass and fescue(s).
Kentucky Bluegrass

- **Width**: 1/8" wide
- **Tip/blade**: V-shaped blade with a canoe pointed tip
- **Color**: darker green than any other grass; same color on both sides
- **Feel**: soft
- **Growth**: aggressively through rhizomes
- **Additional**: mows cleanly and won't "crush" easily; goes dormant during drought

*Photo Courtesy of scotts.com*
Ryegrass – Annual & Perennial

- **Width:** 1/8" wide
- **Tip/blade:** pointed tip
- **Color:** dark green, but lighter than bluegrass, and shiny on one side of the blade
- **Feel:** soft
- **Growth:** grows quickly from seed; a bunch-type grass that won't fill in naturally like bluegrass
- **Additional:** has visible veins on the blade; shreds when mowed with a dull blade; broad collar; sheaths below ground are reddish in color

*Photo Courtesy of scotts.com*
Fine Fescue

- **Width**: 1/16" or less
- **Tip/blade**: blade is "hair-like" with a fine tip
- **Color**: dull, or gray-green color
- **Feel**: very soft feel
- **Growth**: grows fast
- **Additional**: red or purplish colored base; crushes easily; does not tolerate drought
Tall Fescue

- **Width:** 3/16" or more; widest blade among cool-season grasses
- **Tip/blade:** pointed tip
- **Color:** dark like Kentucky bluegrass
- **Feel:** coarse, stiff blades
- **Growth:** grows in clumps
- **Additional:** prominent veins visible on the blade; won't survive extreme cold temperatures; jagged edge on the side of the blade

Photo Courtesy of scotts.com
SEEDING

• Labels
• Characteristics
• What grass needs to grow
Panther GLS Perennial Ryegrass

- **Seed Variety Name & Purity:** 99.82% Pure Seed, 0.00% Other Crop Seed, 0.18% Inert Matter, 0.00% Weed Seed
- **Sell By:** September 2012
- **Noxious Weed Seeds:** None Found
- **Lot:** B39-10-15
- **Net Weight:** 50 lb.
- **Germination:** 90%
- **Origin:** Oregon
- **Tested:** August 2011
  - **AMS:** 722
- **State of Origin:**
- **Producer Name & Address:**
  - Bonide Products Inc
  - 6301 Sutliff Rd.
  - Oriskany, NY 13424

1. Seed Variety Name & Purity
2. Other Crop Seed Present
3. Inert Matter
4. Weed Seeds Present
5. Sell By Month & Year
6. Noxious Weed Seed
7. Lot Number
8. Package Net Weight
9. Percent Germination
10. State of Origin
11. Test Date
12. Agricultural Marketing Service Number
13. Producer Name & Address
# Seed Label Example

![Seed Label Example](Image)

**LANDSCAPER MIX LAWN SEED**

**Size:** 5lbs/2.27 kg

<table>
<thead>
<tr>
<th>Purity %</th>
<th>Name</th>
<th>Germ</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.84</td>
<td>KENTUCKY BLUEGRASS 98/85</td>
<td>90</td>
<td>MN</td>
</tr>
<tr>
<td>19.84</td>
<td>ATLANTIS KENTUCKY BLUEGRASS</td>
<td>85</td>
<td>OR</td>
</tr>
<tr>
<td>19.76</td>
<td>CREEPING RED FESCUE VNS</td>
<td>88</td>
<td>CAN</td>
</tr>
<tr>
<td>14.96</td>
<td>PERENNIAL RYEGRASS VNS</td>
<td>90</td>
<td>MN</td>
</tr>
<tr>
<td>9.78</td>
<td>PALMER V PERINNIAL RYEGRASS</td>
<td>90</td>
<td>OR</td>
</tr>
<tr>
<td>9.98</td>
<td>ANNUAL RYEGRASS VNS</td>
<td>89</td>
<td>OR</td>
</tr>
</tbody>
</table>

**Other:** 0.03

**Inert:** 0.81

**Weed:** 0.00

**Lot:** L4AU12

**Item #:** D02749

**NOXIOUS WEED:** (USUALLY NONE)

**VARiETY NOT STATED (VNS)**

**Prince Corporation**

WI 20000080

8351 Cty Rd H Marshfield, WI 54449
<table>
<thead>
<tr>
<th>Species</th>
<th>Days to Establish</th>
<th>Rhizomes Self-Repairing</th>
<th>Grey Leaf Spot Resistance</th>
<th>Wear Tolerant</th>
<th>Drought Tolerant</th>
<th>Shade Tolerant</th>
<th>Cold Tolerant</th>
<th>Endophyte (Disease/ Insect Resistant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perennial Ryegrass</td>
<td>5-10</td>
<td>No</td>
<td>Yes</td>
<td>Very Good</td>
<td>Fair</td>
<td>Fair-Good</td>
<td>Fair</td>
<td>High</td>
</tr>
<tr>
<td>Kentucky Bluegrass</td>
<td>21-26</td>
<td>Yes</td>
<td>No</td>
<td>Good</td>
<td>Good</td>
<td>Poor</td>
<td>Very Good</td>
<td>None</td>
</tr>
<tr>
<td>Tall Fescue</td>
<td>14-21</td>
<td>Some</td>
<td>No</td>
<td>Very Good</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
<td>High</td>
</tr>
<tr>
<td>Chewings Fescue</td>
<td>14-21</td>
<td>No</td>
<td>No</td>
<td>Good</td>
<td>Good</td>
<td>Very Good</td>
<td>Good</td>
<td>Low</td>
</tr>
<tr>
<td>Creeping Red Fescue</td>
<td>14-21</td>
<td>Yes</td>
<td>No</td>
<td>Fair</td>
<td>Good</td>
<td>Very Good</td>
<td>Good</td>
<td>Medium</td>
</tr>
<tr>
<td>Hard Fescue</td>
<td>14-21</td>
<td>No</td>
<td>No</td>
<td>Fair-Poor</td>
<td>Good</td>
<td>Very Good</td>
<td>Good</td>
<td>Low</td>
</tr>
</tbody>
</table>
# What Grass Seeds Need to Grow

## Soil to Seed Contact
- Well prepared seed bed
- Even distribution of seed
- Right variety for conditions
- Fresh seed – tested and labeled
- Correct timing and soil temperature

## Consistent Moisture Levels
- Moist soil – Pre-moisten if dry
- Source of moisture – irrigation
- Avoid over watering or puddles
- Use mulch if necessary
- Know germination days
- Avoid “Wet-Dry-Wet” situations
## What Grass Seeds Need to Grow

### Consistent Soil & Air Temperatures
- **Avoid Extremes**
  - Too Hot – Seed will die or dry out
  - Too Cold – Poor germination
- **Time for Best Results**
  - Fall planting – Temperatures and Water

### Nutrient Sources
- Use a starter fertilizer
- Provide long lasting nutrients that last while grass is germinating
Use Proper Seeding Rates

- Kentucky blue – 1-2 lbs./1000 sq. ft.
- Fine fescue – 3.5-4.5 lbs./1000 sq. ft.
- Tall fescue – 7-9 lbs./1000 sq. ft.
- Buffalograss – 1-2 lbs./1000 sq. ft.
FERTILIZER

- 3 Major Plant Nutrients
- Understanding Phosphorus
- Understanding Fertilizer Labels
- Applying the Fertilizer
3 Major Plant Nutrients  N-P-K

Nitrogen (N)
- Leaf Growth
- Deep Green Color
- Photosynthesis

Phosphorus (P)
- Root Growth
- Disease Resistance in Roots
- Energy Transfer and Storage

Potassium (K)
- Stimulates Growth
- Water and Nutrient Transfer
- Plant Vigor and Disease Resistance

Secondary Nutrients
- Sulfur (S)
- Calcium (Ca)
- Magnesium (Mg)
- Iron (Fe)
- Boron (B)
- Copper (Cu)
- Zinc (Zn)
- Manganese (Mn)
Understanding Fertilizer Labels

### Guaranteed Analysis

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen</td>
<td>26%</td>
</tr>
<tr>
<td>Ammoniacal Nitrogen</td>
<td>3.2%</td>
</tr>
<tr>
<td>Water Insoluble Nitrogen*</td>
<td>9.7%</td>
</tr>
<tr>
<td>Urea Nitrogen</td>
<td>3.4%</td>
</tr>
<tr>
<td>Other Water Soluble Nitrogen*</td>
<td>9.7%</td>
</tr>
<tr>
<td>Available Phosphate (P₂O₅)</td>
<td>4%</td>
</tr>
<tr>
<td>Soluble Potash (K₂O)</td>
<td>12%</td>
</tr>
<tr>
<td>Total Sulfur (S)</td>
<td>1.5%</td>
</tr>
<tr>
<td>Combined Sulfur (S)</td>
<td></td>
</tr>
<tr>
<td>Chlorine (Cl)</td>
<td>10.0%</td>
</tr>
<tr>
<td>Slowly Available Nitrogen from Methylene Ureas and IBDU</td>
<td>19.4%</td>
</tr>
</tbody>
</table>

Nutrient Sources: Ammonium Phosphate, Ammonium Sulfate, Isobutylidene Diurea, Urea, Methylene Urea, Muriate of Potash.

Information regarding the contents and levels of metals in this product is available on the Internet at [http://www.regulatory-info-lebsea.com](http://www.regulatory-info-lebsea.com)

1. Total nitrogen (N)%
2. Total phosphate (P)%
3. Total soluble potash (K)%
4. Any micronutrients (if any) will follow the main nutrients
5. The total percentage of the bag that is slow release nitrogen
6. The total percentage of fast release nitrogen
7. Ammonical nitrogen and sulfur nutrients provide fast early green up.
### Fertilizer Label Examples

#### Guaranteed Analysis 10-10-10

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen (N)</td>
<td>10%</td>
</tr>
<tr>
<td>8.0% Ammoniacal Nitrogen</td>
<td></td>
</tr>
<tr>
<td>6.2% Water Insoluble Nitrogen*</td>
<td></td>
</tr>
<tr>
<td>1.8% Urea Nitrogen</td>
<td></td>
</tr>
<tr>
<td>11.0% Other Water Soluble Nitrogen*</td>
<td></td>
</tr>
<tr>
<td>Soluble Potash (K$_2$O)</td>
<td>5%</td>
</tr>
<tr>
<td>Sulfur (S)</td>
<td>11.0%</td>
</tr>
</tbody>
</table>

*Derived from: Diammonium Phosphate, Muriate of Potash, Urea F1290

#### Guaranteed Analysis 16-0-8

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen (N)</td>
<td>16%</td>
</tr>
<tr>
<td>0.82% Ammoniacal Nitrogen</td>
<td></td>
</tr>
<tr>
<td>11.18% Urea Nitrogen</td>
<td></td>
</tr>
<tr>
<td>4.00% Water Soluble Nitrogen*</td>
<td></td>
</tr>
<tr>
<td>Soluble Potash (K$_2$O)</td>
<td>8%</td>
</tr>
<tr>
<td>Boron (B)</td>
<td>0.02%</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>0.05%</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>0.10%</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>0.05%</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>0.05%</td>
</tr>
</tbody>
</table>

*Derived from: Ammonium Sulfate, Urea, Muriate of Potash, Urea Formaldehyde, Sodium Borate, Copper Oxide, Iron Oxide, Manganese Oxide, Zinc Oxide.

*4.00% Slowly Available Nitrogen from Urea Formaldehyde.*
Soil Fertility

Fertilizer Timing for Cool-Season Turf

- Memorial Day
- Fourth of July
- Labor Day

Soil Fertility Factors

Kentucky bluegrass in North Dakota:

- High quality: 4 to 5 lbs. N/1,000 sq. ft./yr.
- Med. Quality: 2 to 3 lbs. N/1,000 sq. ft./yr.
- Low quality: 0 to 1 lb. N/1,000 sq. ft./yr.

Other Factors

- Soil texture
- Rainfall and irrigation
- Clippings management
- Intensity of use
Apply a half-rate in two directions
LAWN CARE BASICS

- Watering
- Mowing
- Thatch Control
- Weeds
Watering Basics

Average 1 inch per week

• Best to apply at once
• Water the top 5-6 inches where the root system is
• Morning is the best time to apply
Mowing Basics

- Keep turf 2 ½” – 3 ½” tall
- 1/3 Rule – never remove more than 1/3 of leaf tissue (ex. Turf 4” tall then set mower no lower than 2 ½”)
- Frequency – better to mow when needed rather than a fixed schedule
- Mow when turf is dry
- Keep mower blades sharp
What is thatch?

- Thatch is a tightly interwoven layer of living and dead tissue existing between the green vegetation and soil surface.

- It is composed primarily of products from stems, leaf sheaths, and roots that are fairly resistant to decay.

- Although a little thatch improves the wear tolerance of a lawn, excessive thatch harbors disease organisms and insects making the lawn more susceptible to damage from disease and drought.

How much is too much?

- Anything more than a half-inch to an inch
Thatch Control

**Thatch Removal**
- Biological
- Aeration
- Mechanical (Power Rake)

**Thatch Prevention**
- Fertilization
- Aeration
- Mowing
- Pesticides
Thatch Control

Thatch Removal

- Aeration
Weeds

Annual
- Complete lifecycle from seed within a year
- Ex: Crabgrass

Biennials
- Live for more than 1 year but not more than 2 years
- Ex: Bull Thistle

Perennial
- Live for more than 2 years
- Ex: Dandelions, Ground Ivy
Here are 2 Main Types of Weeds

**Broadleaf Weeds**
- Leaves with branched veins within the leaf
- Dandelion
- Ground Ivy (Creepy Charlie)
- Chickweed
- Clover
- Plantain
- Black Medic

**Grassy Weeds**
- Look like grass with parallel veins within the leaves
  - Crabgrass
  - Goose Grass
  - Annual Bluegrass
  - Barnyard Grass
  - Nutsedge (Nutgrass)
  - Johnson Grass
Weeds

- The best weed control is a healthy, vigorous lawn.
**Weeds**

**Chemical Control** *pre-emergence* herbicides.
No need to apply these in dense or shady turf.
Usually crabgrass control
it germinates earlier than others.
it is the most prevalent.

Calendar based.
Apply 2-3 weeks earlier than average date of crabgrass germination
(around May 1 in ND, therefore apply ~April 15)
Problem: Each year is different.
Still, 8 out of 10 years this approach works well.

Indicator plants.
Monitor soil temperature (50 degrees F to a 4-inch depth).
Crabgrass will start to germinate at 55 degrees F
Weeds

Chemical Control  *pre-emergence* herbicides.

- Scott’s Halts, Pre-M (pendimethalin)
- Team (benefin + oxadiazon)
- Dimension (dithiopyr)
- Pendulum (Pendimethalin)
- Barricade (prodiamine)
- Supersan (siduron)
Weeds

but Barricade and Dimension require repeat applications for season-long control.
Usually 8-10 weeks apart
Siduron: 4-6 weeks apart

Barricade and Dimension can be applied earlier in the spring.
Longer residual
Barricade can even be applied in the fall for control the next season.

Dimension also has early-postemergence activity (i.e., before tillering) on crabgrass.
Can be applied later than others (early to mid-May).
Weeds

Chemical Control - Postemergence

Phenoxy herbicides have been the standard for selective control of broadleaf weeds since WWII.

2,4-D, MCPP

Dicamba has also been important. Excellent broad spectrum activity.

Problems with uptake by tree roots has injured trees in urban landscapes.
Triumph (2,4-D + MCPP + dicamba) has been a standard combination product:

2,4-D is very effective against dandelions, only poor to fair against clover...

MCPP better against clover

Dicamba is very effective, especially against tough weeds (e.g., thistles, buckhorn plantain, wild violet, round ivy).
Veeds

postemergence Annual Grass Herbicides

Acclaim Extra (fenoxaprop-p-ethyl)
excellent activity on annual grasses.
causes some injury to KBG and creeping bentgrass
highly injurious to bermudagrass!

Rive (quinclorac)
excellent control of crabgrass (even tillered).
not effective for goosegrass.
very safe to most turfgrasses.
can be used 4 weeks after turf seedlings emerge
   —Maybe sooner
Non-Selective Herbicides

Roundup (glyphosate)
- Systemic
- Slow-acting (~7 days)
- Very effective
- Several other trade names

Nato (glufosinate)
- Systemic/Contact action
- Faster (3-5 days)
- Effective (not quite as effective on warm-season species as Roundup???)
LAWN PROBLEMS

- Insects
- Improper Cultural Practices
- Disease
- Voles
here are 2 Main Types of Insects

Below Ground
- Grubs
- Earthworms

Above Ground
- Sod webworm
- Leaf hoppers
- Aphids
- Chinch Bugs
- Ants
- Grasshoppers
Improper irrigation – too much, too little, wrong time
Wrong turfgrass species and cultivar – turfgrass decline
Improper mowing - too high, too low

Plant nutrition - misapplication of fertilizers

Soil physical properties – clay/sand, compaction
Diseases

What Causes Turfgrass Diseases?

Turfgrass decline, particularly in midsummer, may be due to abiotic stresses ung, bacteria, viruses, nematodes

Take a sample that includes dead turf, the dead/living interface, healthy turf, and about 3 inches of the root profile.
Voles

- Narrowing animal
- Surface trails/runways
- Active all year
- Feed on vegetation: grasses, tubers, bulbs, bark, flower/garden plants, etc.

Possible Controls
- Anticoagulant baits
- ¼ in. wire mesh fence, 1 ft. tall*
- Plastic tree guards*
  - Bury base 2-3 inches below ground
- Mow down tall vegetation
  - 15 foot buffer around your garden
QUESTIONS?
How Much Nitrogen is in the Bag?

**GUARANTEED ANALYSIS**

Label on all fertilizer bags is required to show the percentage by weight of nitrogen, available phosphate and soluble potash. This is called the guaranteed analysis of the fertilizer.

The first number is Nitrogen (N), which promotes overall grass shoot growth.

The second number is available Phosphate (P₂O₅), which promotes strong root growth.

The third number is soluble Postash (K₂O), which helps grass withstand stress, drought or disease.

For example, a 24-2-8 fertilizer has 24% nitrogen, 2% available phosphate and 8% soluble potash. Nitrogen, phosphate and potash are also sometimes referred to as N-P-K.

To understand how much of each nutrient is being applied to your lawn, you must multiply the weight of the fertilizer bag by the percentage of each nutrient. For example, a 30 lb. bag of fertilizer rated 24-2-8 is:

- \(30 \text{ lbs} \times 24\% = 7.2\ \text{ lbs. Nitrogen}\)
- \(30 \text{ lbs} = 0.6\ \text{ lbs. Available Phosphate}\)
- \(30 \text{ lbs} = 2.4\ \text{ lbs. Soluble Potash}\)
How Much Nitrogen is in the Bag?

To Calculate the Amount of Nitrogen in a Fertilizer Bag

You might be misled by a large nitrogen number on the fertilizer bag (the first number in the N-P-K designation). To find the amount of nitrogen in a bag of fertilizer, you must calculate the pounds of nitrogen per 1,000 sq. ft.

To calculate the pounds of nitrogen in a bag of fertilizer, multiply the weight of the bag by the percentage of nitrogen (this is the first number in the N-P-K designation on the front of the bag). This will tell you the pounds of nitrogen in the bag.

Divide the pounds of nitrogen by the area the bag states it will cover to get the pounds of nitrogen per 1,000 sq. ft. Note: Fertilizer bags usually come in 5,000 or 10,000 sq. ft.

Example: A 19 lb. bag of fertilizer with an analysis of 26-4-12 (N-P-K) covering 5,000 sq. ft.

\[
\text{Total nitrogen in the bag} = \frac{19 \times (26/100)}{5,000} = 4.94 \text{ lbs}
\]

This nitrogen in the bag ÷ 5,000 ft² bag = 0.98 lbs. of nitrogen / 1,000 ft²