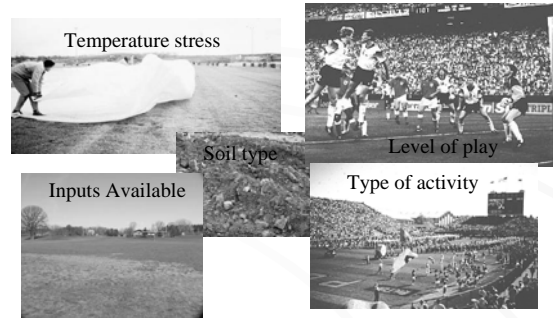


Cool Season Turfgrass Selection



Dr. John Stier
University of Wisconsin-Madison

Turfgrass Selection Depends on Many Factors



Desirable Attributes

- Wear tolerance
- Rapid recovery
- Traction
- Density
- Compaction resistance
- Environmental stress tolerance
- Pest/Disease resistance
- Appearance



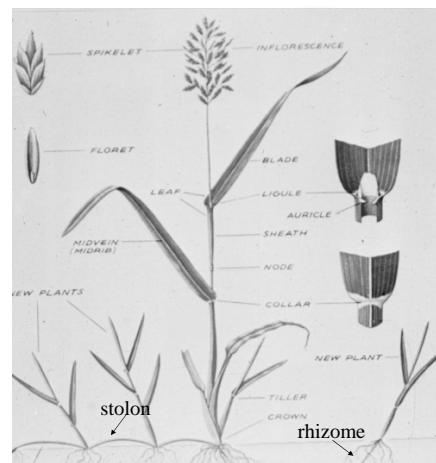
Origin of Cool-Season Turfgrasses

- Grazing pressure from cattle
 - Wear tolerance
 - Defoliation tolerance



Limiting Factors for Cool-Season Turfgrass Growth

- HEAT!
 - Intensity and duration
 - Denatures proteins/enzymes
 - Photorespiration wastes energy
- Optimal temperature: 60-75 F



How a
Turfgrass
Plant
Grows

Kentucky Bluegrass (*Poa pratensis*)

- Rhizomatous growth habit
- Moist, well-drained soils
- Germination: 7-21 days
- Establishment rate: Fair
- Root system: perennial
- Most commonly used cool-season turf



Kentucky Bluegrass Management

- Mowing height: 0.75 - 2.5"+
- Irrigation: Prevent dormancy
 - Water use rate: moderate
- Fertility: 4 lb/M+ annual
- Diseases
 - Necrotic ring spot
 - (Summer patch)
 - Leaf spot
 - Powdery mildew (shade)



Kentucky Bluegrass Traits

- Wear tolerance: Fair
- Recuperative ability: Fair
- Cold tolerance: Good to excellent
- Leaf texture: Fine to medium
- Color: Medium to dark
- Shade tolerance: Poor
- Management requirements: Low to high*



*Cultivar-dependent

Perennial ryegrass (*Lolium perenne*)

- Bunch type growth habit
- Moist, acid to neutral soils
- Germination: 5-7 days
- Establishment rate: Good
- Root system: annual
- Commonly used for overseeding



Perennial Ryegrass Management

- Mowing height: 0.5 - 2"
 - Tough vascular bundles require sharp blades
- Irrigation: Survive long drought periods
- Fertility: 4 lb/M+ annually
- Diseases
 - Crown rust
 - Brown patch
 - Pythium
 - Typhula blight
 - Red thread
- Endophytes: insect resistance

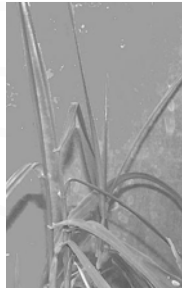
Perennial Ryegrass Traits

- Wear tolerance: Fair to good
- Recuperative ability: Poor
- Cold/Heat tolerance: Poor to good
- Leaf texture: Medium
- Color: Light to dark
- Shade tolerance: Fair
- Management requirements: Medium



Annual Ryegrass (*Lolium multiflorum*)

- ANNUAL!
- Bunch type growth habit
- Light green color
- Coarse leaf texture
- Inexpensive
- *Short-term soil stability



Tall Fescue (*Festuca arundinacea*)

- Bunch type growth habit
- Wide soil range (sandy OK)
- Germination: 4-12 days
- Coarse leaf texture
 - Mixes poorly with other species
 - “Turf-types” include “dwarf” cultivars
- Deep-rooted but high water use rate
- Endophytes: insect resistance



Tall Fescue Management

- Mowing height: > 1.5”
 - Tough vascular bundles require sharp blades
- Irrigation: Necessary for top quality
 - Survives gradual dormancy
- Fertility: Early spring, fall
- Diseases
 - Brown patch, Snow molds
- Overseeding required for uniformity

Tall Fescue Traits

- Wear tolerance: Excellent
- Recuperative ability: Poor
- Cold tolerance: Poor!
- Heat tolerance: Excellent!
- Color: Light to medium
- Shade tolerance: Good
- Management requirements: Low

Fine Fescues

- Creeping red fescue (*F. rubra*)
 - Rhizomes
- Chewings fescue (*F. rubra* var. *commutata*)
 - Bunch type growth
- Hard fescue (*F. longifolia*)
 - Bunch type growth
- Sheeps fescue (*F. ovina*)
 - Bunch type growth

Fine Fescues

- Fine (narrow) leaf texture
 - Mixes OK with bluegrass
- Low maintenance turf
 - Slow-growing
 - Avoid traffic
- Endophytes: insect resistance



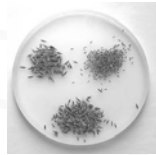
Fine Fescue Management

- Mowing height: > 1.5"
- Irrigation: Necessary for top quality
 - Survives gradual dormancy
- Fertility: Early spring, fall
- Diseases
 - Leaf spot, red thread
- Little/no traffic

Species Not Useful for Lawns in Cool-Season Zone

- Rough bluegrass (*Poa trivialis*)
 - OK in moist shade
 - Poor traffic and summer stress tolerance
- Creeping bentgrass (*Agrostis palustris*)
 - Very high maintenance, poor traffic tolerance
- Bermudagrass, Zoysiagrass
 - Warm-season grasses

Seeding Rates



- † Rate may be cultivar-dependent or establishment-rate dependent.
‡ Usually mixed at 3-10% with other species.

Why Use Mixtures and Blends?

Mixture: 2 or more species

Blend: 2 or more cultivars of same species

- Achieve multiple attributes
 - Wear tolerance
 - Stability
 - Disease resistance
- Avoid incompatible mixes/blends
 - Leaf textures, color
 - e.g., Tall fescue in Kentucky bluegrass

Kentucky Bluegrass Categories

- Common: Upright growth, leaf spot disease; low maintenance
- BVMG: Medium growth, density, texture, disease rs (except stripe smut)
- Aggressive: Dense, prostrate growth
- Compact: Low growth habit, tolerate close mowing, long winter dormancy
- Mid-Atlantic: Long, deep rhizomes; med. maint.
- Julia: Leaf spot resistance, susceptible to dollar spot
- Bellevue: Fall, early spring color; medium ht., texture, density, disease and billbug resistance

Types of Kentucky Bluegrass

Common	Improved
– Upright growth	– Prostrate growth
– Early spring greenup	– Denser turf
– Environmental stress tolerance	– Slower growth rate
– Low maintenance	– Higher quality
– Susceptible to leaf spots	– High maintenance
	– Better disease resistance

Adapted from: Murphy, J. 1996. Selection of turfgrass species and varieties. Mich. Turf Conf. Proc. pp. 125-127.

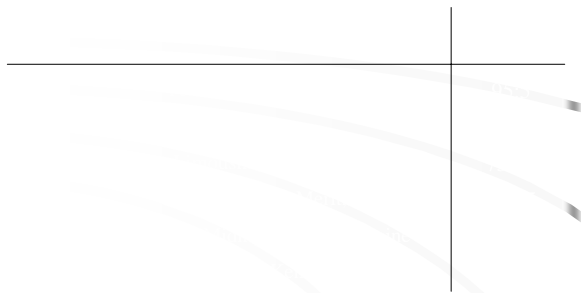
Cultivars of Kentucky Bluegrass

Common	Improved
• Alene	• Touchdown
• Kenblue	• Limousine
• Park	• SR 2100
• Ronde	• Rugby II
• South Dakota	• Nuglade
	• Fairfax
	• Award

Kentucky Bluegrass and Perennial Ryegrass Seed Mixtures

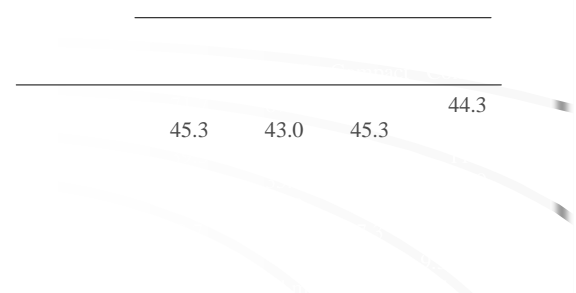
- Why do recommendations for KBG/P. rye mixtures differ?
- Client dissatisfaction: a 50:50 mixture \neq 50:50 stand
- Objective:
 - Determine if turf characteristics depend on type of KBG used in mixtures with perennial ryegrass

Species and Cultivars Used in Athletic Seed Mixture Study[†]



[†] O.J. Noer Turfgrass Research Facility, Verona, WI, 1998-2001.

Turf Composition Depends on Type of Kentucky bluegrass in Mixture, Nov. 1999[†]



[†] 14 month turf subjected to 30 simulated football games (Verona, WI).

Conclusion

- Use the best mixture and blends for the site!

