Cool Season Grass Establishment

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Introduction

• Smooth Brome and tall fescue are important cool season grasses for eastern Kansas
  – Well adapted
  – High production
  – Quality
  – Expand grazing season
• Other cool season grasses can survive to Kansas environment
  – Orchard grass, timothy, perennial ryegrass, etc.
Cool Season Grass Performance

Yield of cool season grasses in 1982-1984 at Parsons (Moyer).

<table>
<thead>
<tr>
<th>Species</th>
<th>Yield 3-yr ton/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall fescue</td>
<td>4.3</td>
</tr>
<tr>
<td>Smooth bromegrass</td>
<td>4.2</td>
</tr>
<tr>
<td>Reed canarygrass</td>
<td>4.0</td>
</tr>
<tr>
<td>Orchardgrass</td>
<td>3.5</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>3.4</td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td>3.2</td>
</tr>
</tbody>
</table>

- Brome and fescue have good drought tolerance and adaptability to our clay-type soils
- Other perennial cool season grasses not as adapted
  - Less yield
  - Less drought tolerance
Timing of Brome Seeding

- Late summer or early fall optimum time to seed
- Can be seeded in the winter - spring but heat and dry of summer can be problematic
- Good weed control – Tillage vs. no-till
- Conserve moisture at planting

*Figure 1. Optimum seeding dates for smooth brome.*
Seeding Rates/Methods

• Brome needs 10-15 lbs of PLS / acre
  – Lbs x purity x germination = PLS
  – 100lbs x 0.95 purity x 0.95 germ = 90.25 lbs PLS

• Seeding methods include
  – No-till seeding
    • Depth of seeding is important (1/4” deep)
  – Broadcast shallow incorporation (harrow)
    • Bump up seeding rate 15-20 lbs PLS/a
  – Broadcast plus drilled cover crop
    • Cool season cereal hay harvest in spring
Seedling Fertility

• Soil test!
• Brome can tolerate lower pH
  – Long stand life so correct it as much at possible at planting
• Fertilization
  – New stand of brome needs 30-40 lbs N/acre
  – Phosphorus and Potassium based on soil test

<table>
<thead>
<tr>
<th>New Brome and Fescue P and K Recommendations</th>
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<tbody>
<tr>
<td>Phosphorus Sufficiency Recommendations for Brome and Fescue¹</td>
</tr>
<tr>
<td>Bray P1 Soil Test</td>
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<tr>
<td>ppm</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>0-5</td>
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<tr>
<td>5-10</td>
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<td>10-15</td>
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<tr>
<td>15-20</td>
</tr>
<tr>
<td>20+</td>
</tr>
<tr>
<td>Crop Removal²</td>
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</table>

<p>| Potassium Sufficiency Recommendations for Brome and Fescue¹ |
| Exch. K | Yield Goal (Ton/A) |</p>
<table>
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<tr>
<th>ppm</th>
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<th>3</th>
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<tbody>
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<td>110</td>
<td>115</td>
<td>120</td>
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<tr>
<td>130+</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Crop Removal²</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>140</td>
<td>160</td>
</tr>
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</table>
Established Brome Fertility

- Nitrogen is not the only nutrient brome needs!
- Brome yields can be significantly increased with additional P on low fertility soils
- Initial P soil test was 7ppm

![Bar Chart: Brome yield vs fertilizer rate]
Grazing / Haying

• Fall seeded stands of brome can be grazed the next spring
  – Keep 4-6” of forage height first spring to ensure successful establishment
• Fall seeded brome should be hayed at the bloom stage
• Spring seeded brome should be safe to hay or graze the following spring
Fescue Establishment

- Fescue establishment very similar to brome
- Fescue is an excellent choice for cool season grass
  - More hardy and grazing tolerant than brome
  - Can be utilized for fall and winter grazing
- Endophyte toxicity can be a concern with some fescue varieties
  - Fungus helps survival of fescue
  - Fungus produces endotoxin harmful to livestock
  - Endophyte-free fescue varieties are available
    - Max-Q, endophyte-free KY31, etc.
Fescue Seeding

- In general, fescue seeding is similar to brome
- Seeding rates 12-20lbs PLS / acre depending on seeding method
  - No-till: lower rate ~12lbs
  - Broadcast incorporation: high range ~20lbs
- Fertility similar to brome

Figure 1. Planting dates for cool-season grasses.
Interseeding Legumes Into Fescue

• Legumes are a benefit in fescue
  – Dilute endotoxin
  – Increased animal gains
• To establish, reduce grass competition in spring to favor legumes
• Adequate P, K, and pH are CRITICAL for legume establishment
• Careful grazing management to suppress grass but allow new legume seedlings to compete
  – Legumes should be big enough to resist physical root removal by grazing
Interseeding Legumes into Fescue

- No-Till, broadcast, or light incorporation with cool season grass
- Split seedings between spring and fall
- Reseed annually or biannually
- Seeding rates for common legumes:
  - White Ladino Clover 3 - 5 lbs/a
  - Annual Lespedeza 10 - 15 lbs/a
  - Red Clover 10 - 15 lbs/a
  - Alfalfa 10 - 12 lbs/a
  - Birdsfoot Trefoil 8 lbs/a
Converting Endophyte Infected Pastures

- Endophyte fungus will survive in the seed up to 14 months
  - Prevent seed production on established endophyte pasture for 14 months
    • Any volunteer that emerges will not have viable fungus
- Kill existing endophyte fungus
  - Glyphosate at 32-64oz/a when new growth is ~4” tall
    • Fall easier to control fescue than spring
  - Grow a row crop for one year to allow use of herbicides to control volunteer fescue
- Replant field to endophyte free KY 31 or a novel endophyte variety such as Max Q
Summary

• Brome and fescue are the most adapted cool season perrenial grass to grow in eastern KS
  – Fescue is a good option if considering winter grazing in addition to spring and fall
• Good soil moisture and seedbed preparation at the time of planting is critical
• Fertilize with 30-40 lbs of N and apply P, K, and lime based on soil test recommendations
Questions?