CHALLENGES AND BENEFITS OF INTERSEEDING LEGUMES INTO GRASS DOMINATED STANDS

Joe Brummer, Colorado State University
Glenn Shewmaker, University of Idaho
Chanda Engel, Oregon State University
Interseeding

• AKA: Sod seeding, no-till seeding, overseeding
• Introduction of seeds of new forage species into existing stands
  – Add legumes to grass dominated stands
  – Add grasses to thinning stands of alfalfa (or other legumes) to prolong stand life
  – Thicken declining grass stands
  – Add annual forages to perennial stands
Benefits of Interseeding

• Increased forage yield and quality
• Reduced need for nitrogen fertilizer when interseeding legumes

• Compared to complete renovation:
  – More cost effective
  – Erosion potential is minimized
  – Less down time and loss of productivity
Challenges of Interseeding

• Established plants compete very effectively
  – Risk of failure is higher compared to complete renovation
  – Establishment success improves significantly if existing vegetation is suppressed prior to seeding
  – Can take 2 to 3 years before interseeded plants achieve full productivity
    • Must be patient!!!!

• Interseeding drills that effectively seed into existing vegetation are expensive and often difficult to find
Methods of Reducing Competition

• Herbicides
  – Consistently most successful method
  – Roundup (apply at sublethal rates)
  – Gramaxone (burndown)

• Heavy grazing up until time of seeding
  – Use electric fence to concentrate animals
  – Can graze after seedlings emerge if done properly

• Mechanical
  – Light disking
  – Shallow rototilling
  – Flail mowing
Use of Herbicides for Interseeding

- Roundup (glyphosate) consistently gives good sod control for most pasture species
- Apply $\frac{3}{4}$ to 2 qts/acre with a surfactant when existing vegetation is 4 to 6 inches tall and actively growing
  - Fall application after the first hard frost has also been successful
- Wait a minimum of 2 weeks after application before seeding
Demonstration Trials

• Conducted near:
  – Fort Collins, CO
    • Flood irrigated from gated pipe
    • Dominated by orchardgrass, meadow brome, and smooth brome with minor amounts of tall fescue and perennial ryegrass
  – Kimberly, ID
    • Irrigated with pivot sprinkler
    • Dominated by orchardgrass with minor amounts of smooth brome, perennial ryegrass, and Kentucky bluegrass
  – Klamath Falls, OR
    • Flood irrigated mountain meadow
    • Dominated by meadow foxtail and Kentucky bluegrass
Treatments

• Legumes evaluated:
  – ‘Rugged’ alfalfa @ 8 lbs PLS/ac
  – ‘Norcen’ birdsfoot trefoil @ 6 lbs PLS/ac
  – ‘Shoshone’ sainfoin @ 18 lbs PLS/ac
  – ‘Starfire’ red clover @ 5 lbs PLS/ac
  – ‘Kopu II’ white clover @ 3 lbs PLS/ac

• Suppression treatments:
  – No suppression (seeded directly into existing veg.)
  – Mowed (2 in. stubble height just prior to seeding)
  – Glyphosate (1 qt/acre 2 weeks prior to seeding)
Treatments (cont.)

• Controls
  – No fertilizer/no seed
  – Nitrogen fertilizer
    • 60 or 80 lbs N/ac in the spring

• Randomized complete block design with 4 reps
  – Plot size was 6 by 20 ft.

• Larger scale strip plots were also established
Interseeding Drill Used in Idaho

Modified John Deere Powr-till
- Reduced from 8 to 4 ft.
- 6 openers on 8 in. centers
- Cone seeder attachment
Interseeding Drill Used in Colorado and Oregon

Great Plains No-till
- 5.6 ft.
- 9 double-disk openers on 7.5 in. centers
- 17 in. Fluted coulter
- Cone seeder attachment
Examples of Suppression Treatments

Idaho

Colorado

Oregon
## Frequency of Occurrence

<table>
<thead>
<tr>
<th>Species</th>
<th>No Suppression</th>
<th>Mow</th>
<th>Glyphosate</th>
<th>Mean</th>
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<tr>
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<td>Colorado (%)</td>
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<tr>
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<tr>
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<td>0.2</td>
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<tr>
<td>Idaho (%)</td>
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## Total Seasonal Yield

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<sup>a</sup>Plot was not fertilized in 2011.
Idaho Results

Alfalfa - Glyphosate

Red Clover - Glyphosate

2010 Strip Plots - October 4, 2011 Harvest

2010 Planting--October 4, 2011 Harvest
Colorado Results

Alfalfa - Glyphosate

Red Clover - Glyphosate
Colorado Results

Birdsfoot trefoil - Glyphosate
Colorado Results

Sainfoin - Glyphosate

White Clover - Glyphosate
Management Implications

• Confirmed the importance of suppressing the existing vegetation and seeding a vigorous legume species to improve establishment.
  – Glyphosate suppression = most consistent est.
  – Close mowing = generally did not improve est.
  – Alfalfa and red clover = best est., most vigorous
  – Birdsfoot trefoil and white clover = intermed. est.

• Although sainfoin established, it did not compete and contribute to forage yield.