Evaluation of Cereal Species for Cover Crop and Forage Production

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Maryland Grain Producers

Maryland Soybean Board
Making Your Checkoff Pay Off.

Maryland Crop Improvement Association

Thank You!!
Cereal Cover Crops
Triple Option for Dairy Farmers

• Cereals for forage production can provide good cover crop service plus eligible for incentive payment when signed up.
• Cereals have rapid spring growth that will produce silage forage by mid-spring.
• Mid-spring forage harvest provides timely field access for planting silage corn.

**BONUS OPTION**

– Opportunity to apply fall manure.
  • Manure application in accordance with NMP and with NM regulations.
  • No other acres available to receive manure.
  • Acres that receive manure are reported on fall cover crop certification.
– If cannot apply fall manure, a spring application after March 1 is okay.
> 600,000 acres signed up for 6th year

### TRADITIONAL COVER CROPS
- Rye
- Wheat
- Barley
- Triticale
- Spring Oats
- Ryegrass

<table>
<thead>
<tr>
<th>Cover Crops</th>
<th>No-Till</th>
<th>Conventional</th>
<th>Broadcast with light, minimum or vertical tillage</th>
<th>Aerial or ground broadcast &amp; stalk chop, or broadcast cultipacker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Wheat</td>
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</tr>
<tr>
<td>Barley</td>
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</tr>
<tr>
<td>Triticale</td>
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<tr>
<td>Spring Oats</td>
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<tr>
<td>Ryegrass</td>
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</tr>
</tbody>
</table>

### Base Payment

<table>
<thead>
<tr>
<th>Plant by Oct. 1, add:</th>
<th>$45</th>
<th>$45</th>
<th>$45</th>
<th>$50</th>
<th>$45</th>
</tr>
</thead>
<tbody>
<tr>
<td>or Plant by Oct. 15, add:</td>
<td>$10</td>
<td>$5</td>
<td>$5</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

### Additional Payments
- Plant rye (no mixes): $10, $10, $10, $10, $10
- Maximum payment amount: $75, $65, $65, $60, $55

### WHAT SPECIES DO I USE FOR FORAGE?

- $45 $45 $45 $50 $45
- Plant by Oct. 1, add:
  - $20 $20 $20 $10 $10
  - $10 $10 $10 $10 $10
- Plant by Oct. 15, add:
  - $10 $10 $10 $10 $10

### Maximum Payment Amount

- $75 $65 $65 $60 $55
Choosing the Cereal Species

1. A species that provides good cover crop service.
   1. Good nutrient (Nitrogen) uptake.
   2. Good stand establishment.
2. A species that produces good forage yield.
3. A species that supplies acceptable forage quality to the ration.
Cereal Rye
Pros and Cons

• Rye (Pros)
  – Best scavenger of nitrogen
  – Best choice for late planting date
  – State pays extra $10 incentive

• Rye (Cons)
  – Seed is not as easy to get & more expensive
    • Maryland seed producers/processors not interested in producing it.
  – Spring growth can be rapid
    • Requires vigilance to kill before rank growth occurs.
Cover Crop Service
25 Wheat Varieties Compared to Rye

Wheat and Barley
Pros and Cons

• Pros
  – Seed is easily obtained.
  – Good scavenger of N if planted either early or during optimum timeframe.
  – Easier to manage and kill than rye.

• Cons
  – Barley generally performs poorly if planted late.
  – Barley not good on poorly drained soils.
Cover Crop Service
Barley, Wheat and Rye
Kratochvil et al. 2011

- Barley: 80%
- Rye: A
- Wheat: A

Lb N/acre

Barley
Rye
Wheat
Triticale
Pros and Cons

• Is comparable to rye for N uptake.
• Seed can be easily obtained.
• Produces more forage biomass than wheat or barley.
• More breeder emphasis for development of forage quality varieties compared to other cereals.
Cover Crop Service - Cereals
2015-2017

Lb N/acre

Triticale N=20
Rye N=5
Wheat N = 5
Barley N = 2

N Uptake (lb/a)
Cover Crop Service: More than Species Choice
Planting Date and Technique Important

• Early is better than late
• Drilling seed or BC with incorporation via vertical tillage or disk produce good stands.
  – Both offer opportunity to incorporate manure into soil to minimize N loss via ammonia volatilization.
Cover Crop Biomass Production 2017

Harvested at Late Boot Growth Stage

<table>
<thead>
<tr>
<th>Biomass Produced</th>
<th>Top Producer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triticale N=5</td>
<td>Arcia</td>
</tr>
<tr>
<td>Rye N=4</td>
<td>Aroostock</td>
</tr>
<tr>
<td>Wheat N = 1</td>
<td>Jamestown</td>
</tr>
<tr>
<td>Barley N = 1</td>
<td>Nomini</td>
</tr>
</tbody>
</table>

Lb Dry Matter/acre
Cereal Cover Crop – Forage Quality
Crude Protein

Higher protein is associated with better feed quality

Best = 12.9
Best = 13.1
Best = 13.2
Best = 13.2
Cereal Cover Crop – Forage Quality

Acid Detergent Fiber (ADF)

<35% is considered good quality
The lower the ADF the greater the digestibility

Best = 35.7
Best = 38.3
Best = 33.6
Best = 37.1
Cereal Cover Crop – Forage Quality

Neutral Detergent Fiber (NDF)

For grass forages

<50% is considered good quality
>60% considered low quality
Cereal Cover Crop – Forage Quality

Relative Feed Value (RFV)

Indicates how well a forage will be utilized if only source of energy. Full bloom alfalfa has RFV = 100.

- Triticale (N=5): Best = 92.5
- Rye (N=4): Best = 84.5
- Wheat (N=1): Best = 100.5
- Barley (N=1): Best = 86
Cereal Species for Cover Crop & Forage Production
Bob’s Ranking

• Cover Crop Service
  – Rye ≥ **Triticale** > Wheat > Barley

• Forage Yield
  – **Triticale** = Rye > Wheat > Barley

• Forage Quality
  – Wheat > **Triticale** = Barley > Rye

• Variety Improvement Potential for Cover Crop/Forage
  – **Triticale** > Wheat = Barley > Rye
Saving On-farm Grown Seed for Planting Cover Crop

Know Before You Plant.

- Two laws govern this practice.
  - **Plant Variety Protection Act (1970)**
    - For a variety with PVP, you can only save enough seed from on-farm production to plant your next crop acreage.
    - You cannot buy PVP seed from a neighbor to do this.
  - **Plant Patent**
    - No seed can be saved and planted to the next crop with seed from a patented variety.
  - Nearly all small grain varieties have either PVP or a Patent.
    - Regulation is no longer in effect 20-years after release.
  - **Variety Not Stated (VNS)**
    - It is illegal to label a PVP or a Patented variety as VNS.
How Do You Know?  
The Seed Tag

Example of PVPA Protected Seed Tag

Example of Patent Protected Seed Tag
Maryland Crop Improvement Association

Thank You!!
Questions??