What’s New in Alfalfa Varieties & Management

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Should I Grow Low Lignin Alfalfa?
Low Lignin Alfalfa

Two companies entering the market

<table>
<thead>
<tr>
<th>Marketer</th>
<th>Alforex</th>
<th>Forage Genetics International</th>
<th>Monsanto</th>
<th>Noble Foundation</th>
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</thead>
<tbody>
<tr>
<td>Variety name</td>
<td>Hi-Gest 360 Hi-Gest 660</td>
<td>HarvXtra</td>
<td></td>
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<tr>
<td>Availability date</td>
<td>2015 (limited)</td>
<td>2017 (limited)</td>
<td></td>
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<td>Trait development</td>
<td>Conventional breeding</td>
<td>GMO</td>
<td></td>
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<tr>
<td>Stacked traits</td>
<td>None</td>
<td>Roundup Ready</td>
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<tr>
<td>Lignin reduction, % of lignin</td>
<td>7-10%</td>
<td>10-15%</td>
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<tr>
<td>Lignin reduction, percentage units</td>
<td>0.5-0.8</td>
<td>0.8-1.2</td>
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<tr>
<td>Digestibility improvement</td>
<td>?</td>
<td>Up to 10%</td>
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The Sales Pitch

1. Equal yield and quality in fewer harvests
2. Longer window of opportunity to harvest dairy quality
3. Improved persistence
The Catch
Extremely limited performance testing leads to many unanswered questions

? Is lignin reduction and yield stable over a wide variety of environments and management choices?

? Will it lodge?

? Is it truly persistent under real life management?

? How does it feed? ONE animal performance trial!

Low lignin trials beginning in 2015

1. Participating universities: CA, KS, MI, OH, PA, WI

1. Cutting Management Trial: Evaluate low lignin varieties across range of environments
   • 3 genotypes
   • 3 cutting schedules (every 23, 28, or 33 days)
   • Yield and quality measured

2. Forage Quality Trial
   • “scissors-cut” samples taken every 4 days across typical harvest period in selected spring and summer growth cycles
Adding Grass to RR Alfalfa

1. Grass adds digestibility and energy to alfalfa
   - Orchardgrass, tall fescue, and meadow fescue tested
   - Interseed at planting, after null removal, after buctril 4 wk after planting, after first seedling cut, or at green-up following spring

2. With spring planting
   1. MI: no difference among planting methods for any grass, but all yielded ~20% more than alfalfa alone
   2. PA, OH, and WI: establishment failed
3. With fall planting, no difference among grass establishment methods
   - NONE were successful
Nitrogen Fertilizer for Alfalfa-Grass Mixtures

1. The Question: does a little bit of N relieve the competition between alfalfa and grass?

2. Compared light N application to orchardgrass and tall fescue in East Lansing and Chatham

3. 50 lb N/year in split application

RESULTS
• Stands were > 80% grass in most cuttings, and adding N further increased grass proportions
• Alfalfa-orchardgrass mixes yielded more than alfalfa-tall fescue mixes, but reduced CP and RFQ
• Supplemental N increased total forage yield in East Lansing, but not in Chatham
• N response did not differ across grass species.
• Apparent biological N fixation decreased as N rates increased in most environments

CONCLUSIONS
1. Orchardgrass was more competitive than tall fescue
2. Supplemental N increased DMY in East Lansing, but reduced N fixation.
3. There was little economic benefit to supplementing N to alfalfa-grass mixtures.
Best Management Practices for RR Alfalfa

Objective: determine optimal practices for intensive alfalfa production in Michigan

Treatments
1. “normal” P&K fertility
2. 125% of normal P&K fertility
3. Bioforge growth regulator
4. Foliar application of Mn and B
5. Headline fungicide

6. 2015 will be the first full harvest

MSU Variety Test Summary

1. Conventional alfalfa
2. Roundup-Ready alfalfa
3. Perennial grasses
4. Annual grasses
5. Grazing tolerance – horses
6. Cover crops
7. Five sites
“Why not just use Vernal?”

If not Certified Seed, ‘Vernal’ on a seed tag is likely equivalent to VNS or common...
which means, you don’t know what it is!

1. Old seed (will it be vigorous?)
2. Overstocked seed, or old seed fields (could be good?)
3. Whatever (could be bad?)
4. Are you a gambler?

It is almost certainly not Vernal!

Figure 1. Mean 3-year DMY relative to Vernal in Michigan alfalfa tests.

Figure 2. Mean 3-year DMY relative to Vernal in Michigan alfalfa tests.
Falcata Alfalfa Update – ‘Yellowjacket’

*With appreciation to Dr. Rich Leep, Dr. Tim Dietz, and John Durling for doing the bulk of the Michigan work, and Dr. Arvid Boe in SD

Developed as an alternative for 1- and 2-cut alfalfa hay systems in northern regions.
- Indeterminate growth habit retains leaves
- Branching roots
- Leafhopper resistant
- Good cold tolerance
- Highly persistent

Joint variety release in progress - Michigan State, South Dakota State, & NRCS
Questions?

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