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**What's New  
in Alfalfa Varieties  
& Management**

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**Should I Grow  
Low Lignin Alfalfa?**

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## Low Lignin Alfalfa

### Two companies entering the market

<b>Marketer</b>	Alforex	<ul style="list-style-type: none"> <li>• Forage Genetics International</li> <li>• Monsanto</li> <li>• Noble Foundation</li> </ul>
<b>Variety name</b>	Hi-Gest 360 Hi-Gest 660	HarvXtra
<b>Availability date</b>	2015 (limited)	2017 (limited)
<b>Trait development</b>	Conventional breeding	GMO
<b>Stacked traits</b>	None	Roundup Ready
<b>Lignin reduction, % of lignin</b>	7-10%	10-15%
<b>Lignin reduction, percentage units</b>	0.5-0.8	0.8-1.2
<b>Digestibility improvement</b>	?	Up to 10%

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Graphics credit: Alforex

### The Sales Pitch

1. Equal yield and quality in fewer harvests
2. Longer window of opportunity to harvest dairy quality
3. Improved persistence

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### 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!**

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### 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

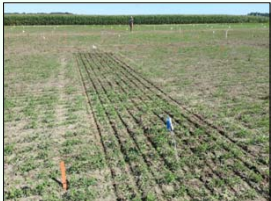

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### Adding Grass to RR Alfalfa

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





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## 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



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## Nitrogen Fertilizer for Alfalfa-Grass Mixtures


### 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.

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## 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




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## 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



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## “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!

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

Year	East Lansing (%)	Lake City (%)	Chatham (%)
1995	112	100	100
1996	113	100	100
1997	110	100	100
1998	120	100	100
1999	126	100	100
2000	108	100	100
2001	109	100	100
2002	125	100	100
2003	130	100	100
2004	125	100	100
2005	136	100	100
2006	130	100	100
2007	132	100	100
2008	125	100	100
2009	132	100	100
2010	112	100	100

**Figure 2. Mean 3-year DMY relative to Vernal in Michigan alfalfa tests.**

Year	East Lansing (%)	Lake City (%)	Chatham (%)
1995	120	100	100
1996	121	100	100
1997	116	100	100
1998	135	100	100
1999	138	100	100
2000	116	100	100
2001	118	100	100
2002	138	100	100
2003	145	100	100
2004	152	100	100
2005	148	100	100
2006	142	100	100
2007	145	100	100
2008	140	100	100
2009	150	100	100
2010	120	100	100

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## 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.

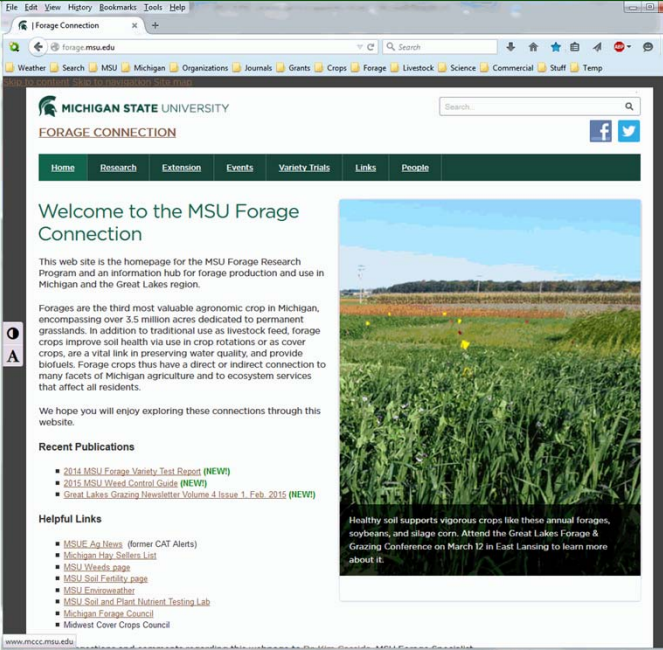
- Indeterminate growth habit retains leaves
- Branching roots
- Leafhopper resistant
- Good cold tolerance
- Highly persistent



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

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**FORAGE CONNECTION**

Home Research Extension Events Variety Trials Links People

Welcome to the MSU Forage Connection

This web site is the homepage for the MSU Forage Research Program and an information hub for forage production and use in Michigan and the Great Lakes region.

Forages are the third most valuable agronomic crop in Michigan, encompassing over 3.5 million acres dedicated to permanent grasslands. In addition to traditional use as livestock feed, forage crops improve soil health via use in crop rotations or as cover crops, are a vital link in preserving water quality, and provide biofuels. Forage crops thus have a direct or indirect connection to many facets of Michigan agriculture and to ecosystem services that affect all residents.

We hope you will enjoy exploring these connections through this website.

**Recent Publications**

- 2014 MSU Forage Variety Test Report (NEW)
- 2015 MSU Weed Control Guide (NEW)
- Great Lakes Grazing Newsletter Volume 4 Issue 1 Feb. 2015 (NEW)

**Helpful Links**

- MSUE Ag News (former CAT Alerts)
- Michigan Hay Sellers List
- MSU Weeds page
- MSU Soil Fertility page
- MSU Entomology
- MSU Soil and Plant Nutrient Testing Lab
- Michigan Forage Council
- Midwest Cover Crops Council

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# Questions?



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