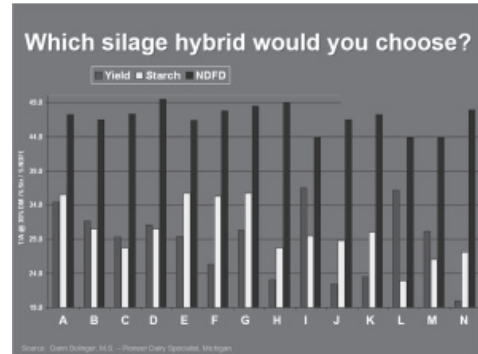


# Making Low-Lignin Highly Digestible Forages Work on the Dairy

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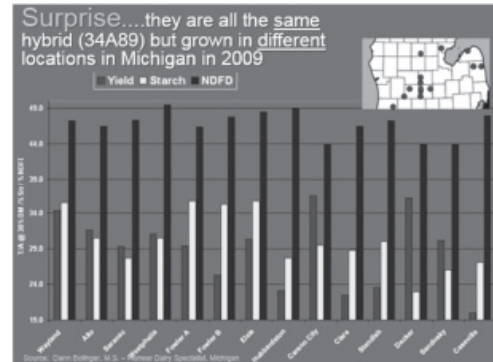
## Understanding the Impact of Growing Season Environments



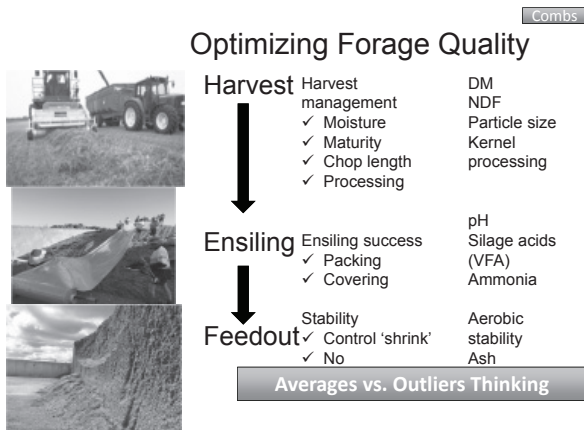
Cow Comfort + Quality Forage + DIM = Milk



## Understanding the Impact of Growing Season Environments



## Optimizing Forage Quality

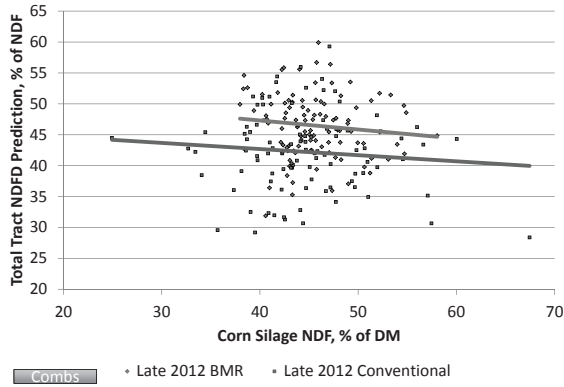


## Understanding the Impact of Growing Season Environments

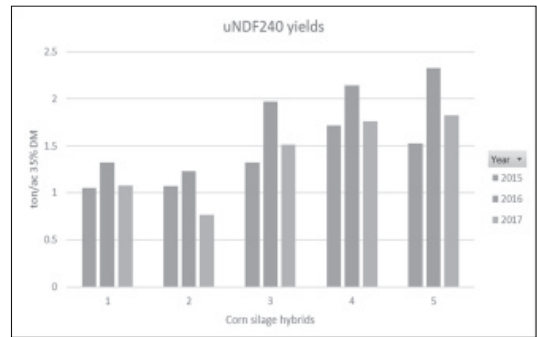


- Weather likely accounts for 2/3 or more of the NDFd variation from year-to-year within the same hybrid or across fields the same growing year.
- Lower lignin forage varieties impact the direction, or quartile, of expected NDFd and pdNDF, relative to other varieties, while weather largely drives the NDFd variation and actual NDFd from year-to-year and across different fields

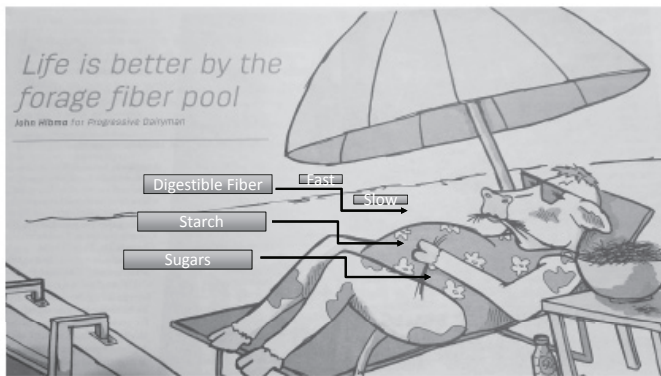
### TTNDFD: BMR vs Conventional Corn Silage



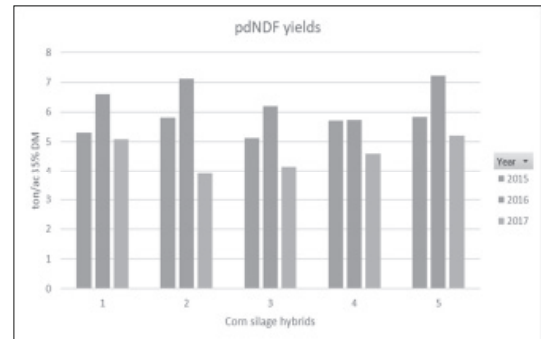
### NNY corn hybrid study uNDF240 yields



Grant, 2018

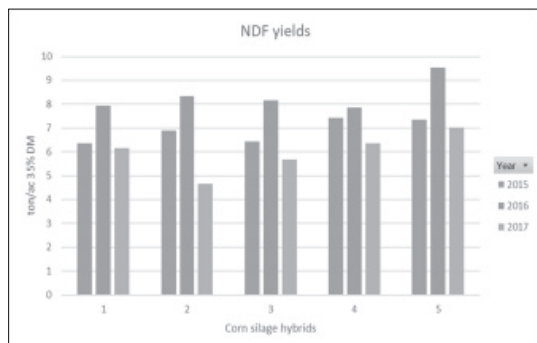


### NNY corn hybrid study pdNDF yields (forage “fuel” on the dairy)



Grant, 2018

### NNY corn hybrid study NDF yields

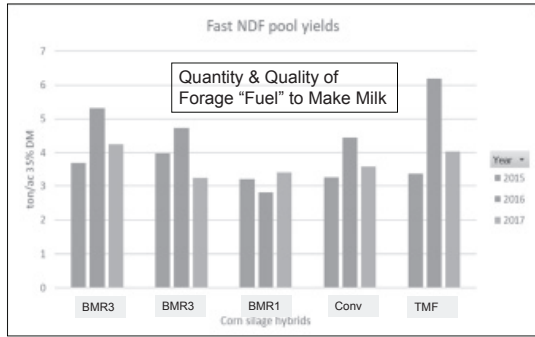


Grant, 2018

Table 1. Comparison of BMR and Non-BMR corn silages hybrids.

Trait	BM3	BM1	Non-BMR
Yield, ton/ac (35% DM)	20.5	20.9	21.0
NDF, % of DM	35.6	33.5	35.2
NDFd 30-h, %	62.3	58.7	54.0
uNDF240, % of DM	7.8	8.9	11.9
pdNDF, % of DM	27.9	24.6	23.4
NDF yield, ton/ac	7.3	7.0	7.4
pdNDF yield, ton/ac	5.7	5.1	4.9

## NNY corn hybrid study Fast NDF yields

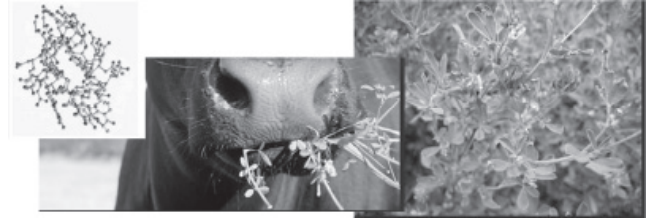


Grant, 2018

## Reduced Lignin Alfalfa

HiGest™ Alforex

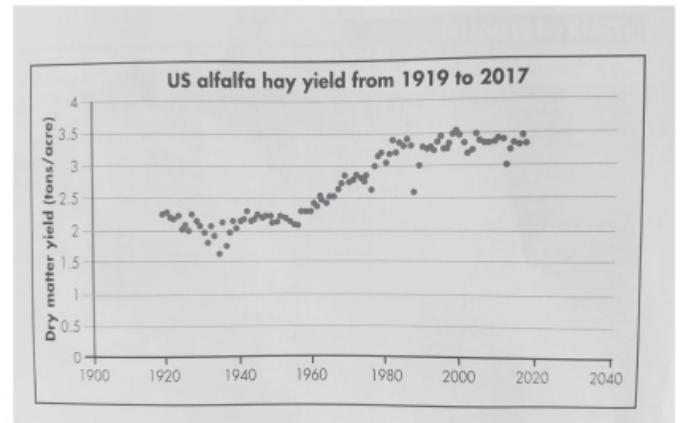
HarvXtra™ Forage Genetics International



Combs, 2018

## BMR Corn Silage

- Corn silage typically larger portion of ration than alfalfa
- pdNDF, starch, and sugar drive milk production – not just fiber
- Starch can vary considerably impacting the “% forage” in the ration (2017 harvest: 26 – 43% starch)
- Focus on DM Yield of RFOM/acre versus wet tons/acre
- Maximum forage should not be the goal of feeding low lignin forages
- ↑Rumen turnover rate and driving production of lbs of solids and efficient production of ECM through higher feed intake is the key to ROI with lower lignin forages



## BMR Corn Silage

Plant Health is key to NDFd and starch content

- Late emergence
- Nitrogen supply during ear fill
- Healthy stalks and leaves (fungal infection, frost)

Mahanna, Powel-Smith, 2018



## Lower Lignin Alfalfa Varieties

- Focus on the financial implications and strategies of managing lower lignin forages over just the improved NDFd (soy hulls have high NDF that is very digestible)
- Target the RFQ and forage quality metrics which are key for a given dairy and put systems in place to achieve (not easy!)



## Lower Lignin Alfalfa Varieties

- Wider harvest window option with similar quality
  - weather risk management
- Growing Days Expanded
  - greater tonnage per cutting, lower cost per ton of pdNDF?
- Reduced Cuttings – less field traffic & compaction, \$/ton
- Improved forage quality on similar cutting intervals
- Conversion years create a challenge with cutting interval and quality differences
- Land management/conservation is part of forage mngt.
- Need to consider alfalfa –grass fields and the possible +/- of cutting intervals with mixed stands of grass + lower lignin alfalfa

## Too Much High Quality Forage?



Function of –

1. Factors limiting cow performance (ex. Cow comfort, genetics, feeding)
2. Allocation and segregation of forage quality across livestock types (heifers, dry cows, late lactation, early lactation) is part of cost management and ROI of lower lignin forages.
3. Feeding management and consistency of feeding is key!
4. Balancing peNDF and fiber/CHO pools are both key
5. peNDF – the optimal forage length & % on PSPS boxes is evolving as forages and rations evolve (Cornell, UW-Madison, Penn St)
6. Nutrients and pools are not one of the same balancing rations
7. Corn silage starch ruminal availability & characterization is challenging

Frequent forage testing may be one of the best ROI and drivers of IOFC

