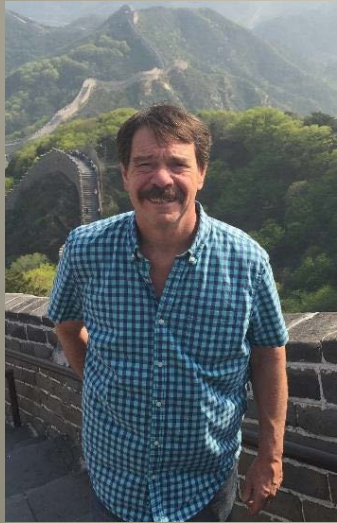




DEPARTMENT OF
DAIRY SCIENCE
University of Wisconsin-Madison



Forage quality for high producing dairy herds: Key performance indicators



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Mention of companies, labs, trade names, products or assays solely for the purpose of providing specific information or examples and does not imply recommendation, endorsement or exclusion.

Wisconsin Holstein sets 72,170 milk production record
2010: Tom & Gin Kestell & Sons, Woldo, WI



Ever-Green-View My 1326-ET
(EX-92 EX-MS)
4-05 365d 3x 72,168 3.9 2787 3.2 2286

Jan. 20, 2016 -- BREAKING NEWS from Holstein USA! Congratulations to the Behnke family and Bur-Wall Registered Holsteins in Brooklyn, Wisconsin! Bur-Wall Buckeye Gigi set the National Milk Production record, calving at nine years and three months, and set a 365-day record of 74,650 pounds of milk.



WI AgSource DHIA Top 100

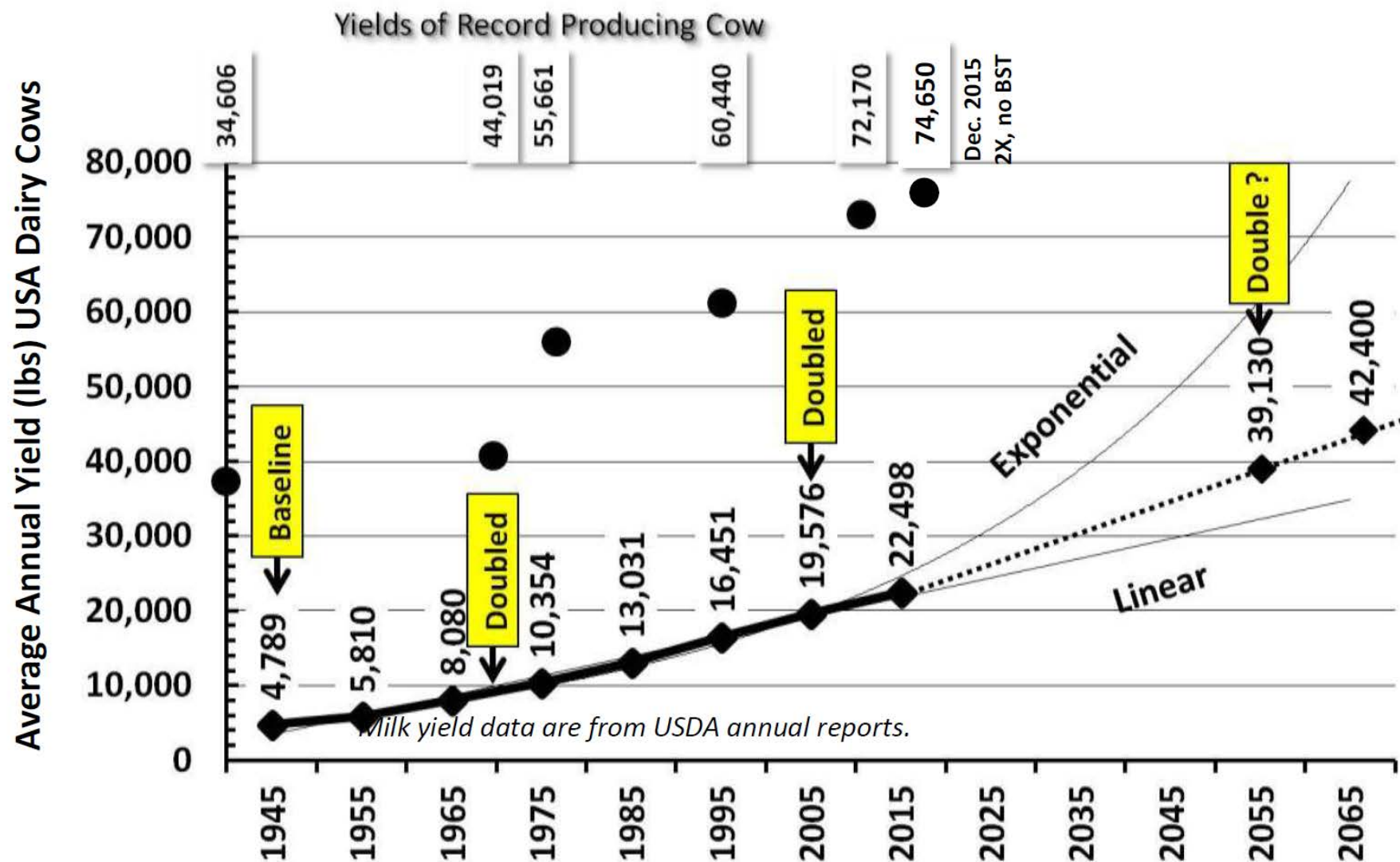
Stat	Cow #	RHA (lb)			
		Milk	Fat	Protein	Cheese
Average	486	31,297	1,154	961	3,150
Std. Deviation	500	1,622	90	57	203
Min	20	30,141	981	857	2,733
Max	3490	41,364	1,677	1,288	4,395

Sept. 2015

111 Herds >30,000 lb RHA which represents 2.5% of herds on test there

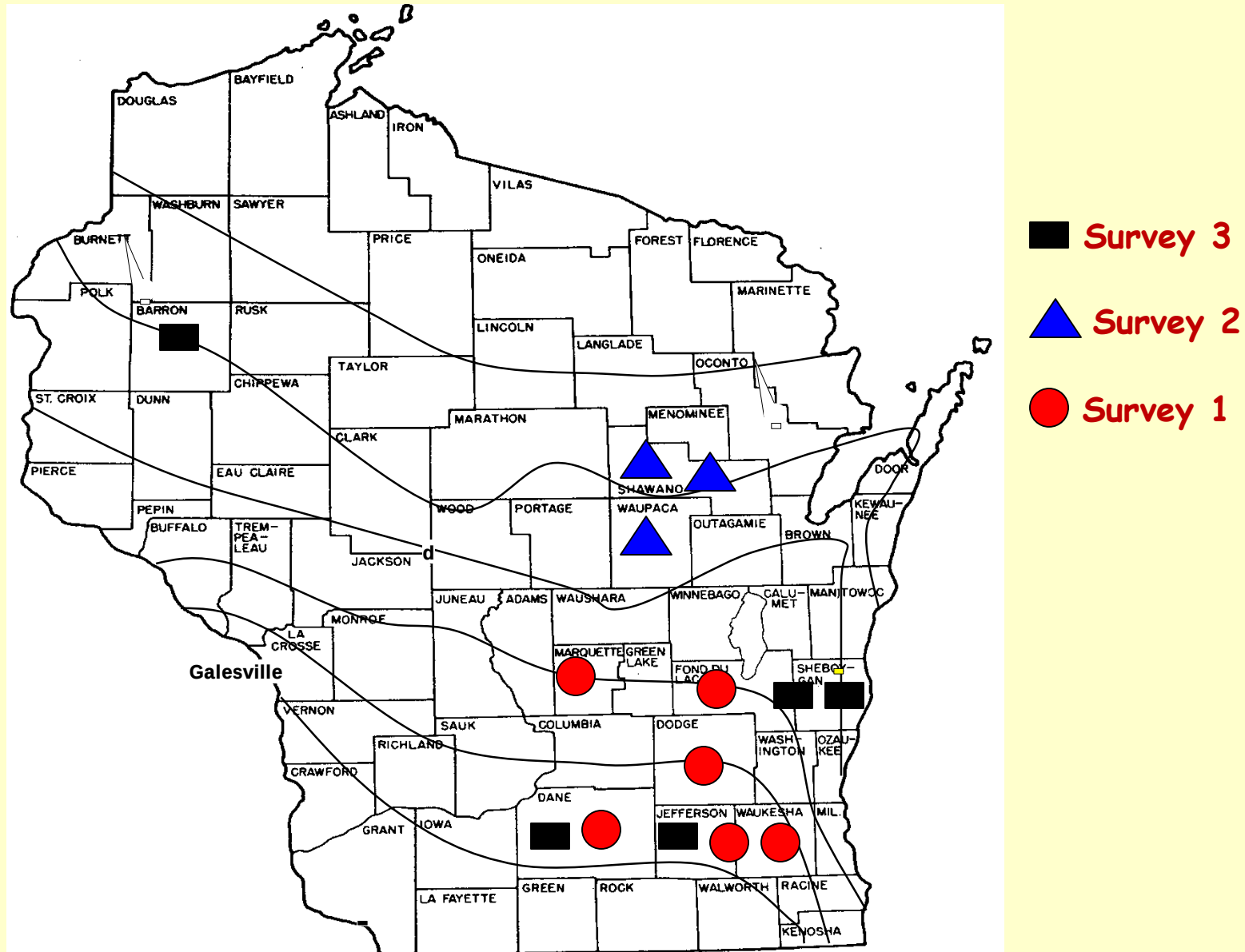
+30 WI Herds >30,000 lb RHA at NorthStar DHI

Past milk yield and Britt projections (USA)*

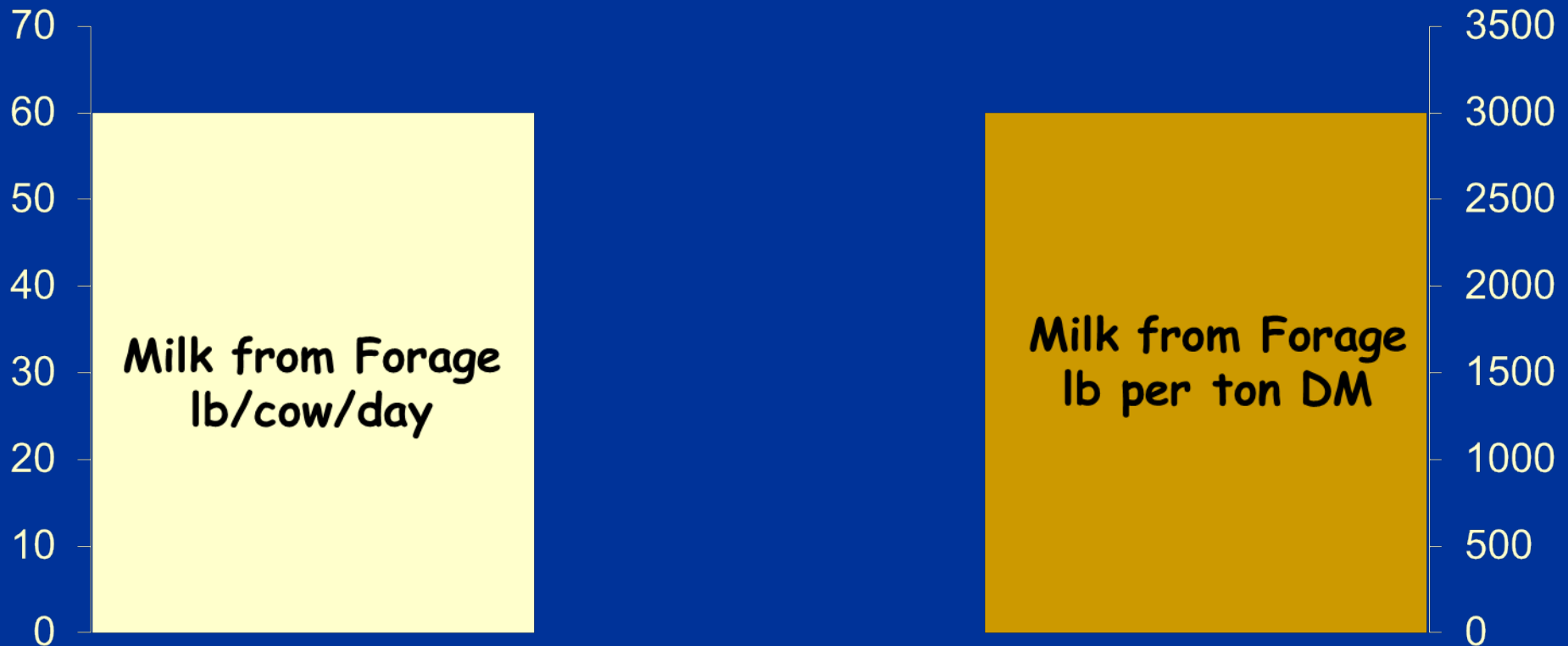


*Average annual yield data include cows of all breed types and are based on USDA annual data. Record yields are registered Holstein data. Projections are linear or exponential curves in Excel using average data. Dotted line is Britt's estimate of where we will be.

Top-Producing Survey Herd Locations



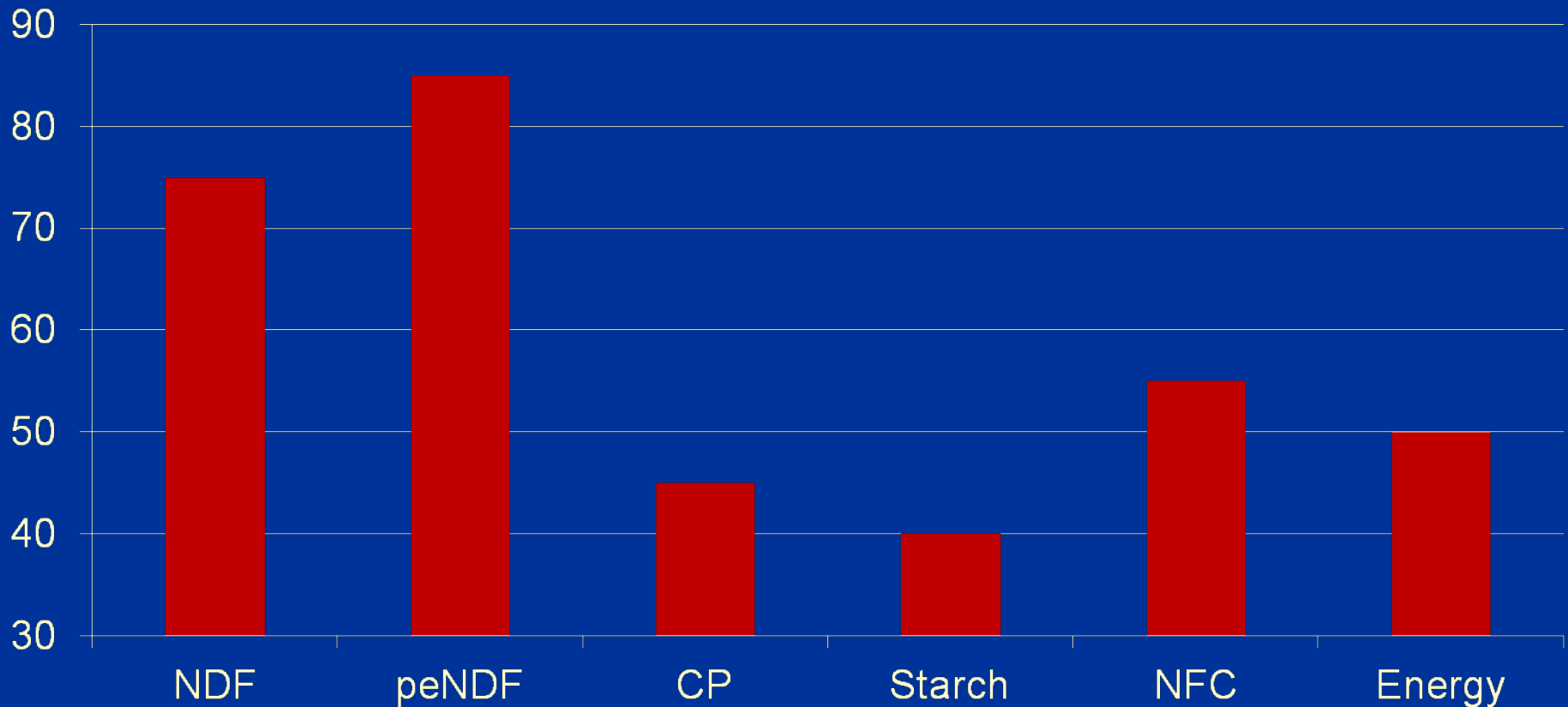
Calculated from Survey Summaries



Maintenance & BWG energy requirements apportioned to forage or concentrate according to diet F:C ratio

Calculated from Survey Summaries

% of Dietary Nutrient Provided By Forage





Corn Silage Quality Indicators for High-Producing Dairy Herds

Parameter	Indicates Better Quality	Primary Reason
NDF	↓	↓ Rumen Fill Limitation of DMI Potential for production response or feeding of higher-forage diets
Lignin	↓	
uNDF ₂₄₀	↓	
NDFD ₃₀	↑	
TTNDFD	↑	
Starch	↑	↑ Energy Density Potential for production response or feeding less corn grain
Milk per ton	↑	Quality Index for Ranking

Corn Silage Quality Indicators for High-Producing Dairy Herds

Parameter	Indicates Better Quality	n	Average ± 1 STDEV
NDF (% DM)	↓	384,715	41 - 36
Lignin (% DM)	↓	344,134	3.3 - 2.6
uNDF ₂₄₀ (% NDF)	↓	81,418	27 - 24
NDFD ₃₀ (% NDF)	↑	170,634	54 - 60
TTNDFD (% NDF)	↑	27,954	41 - 46
Starch (% DM)	↑	347,759	32 - 39
Milk per ton	↑	136,056	3320 - 3683

Summary of combined multi-year, multi-lab (CVAS, DairyOne, RRL, DLL) data, except TTNDFD only from RRL

Haycrop Silage Quality Indicators for High-Producing Dairy Herds

Parameter	Indicates Better Quality	Primary Reason
NDF	↓	↓ Rumen Fill Limitation of DMI Potential for production response or feeding of higher-forage diets
Lignin	↓	
uNDF ₂₄₀	↓	
NDFD ₃₀	↑	
TTNDFD	↑	
NFC (includes soluble fiber)	↑	↑ Energy Density Potential for production response or feeding less corn grain
CP	↑	↓ Supplemental Protein
Ash	Minimal Soil Contamination	↑ Energy Density
RFV; RFQ	↑	Quality Index for Ranking

Legume Silage Quality Indicators for High-Producing Dairy Herds

Parameter	Indicates Better Quality	n	Average ± 1 STDEV
NDF (% DM)	↓	111,310	42 - 37
Lignin (% DM)	↓	100,029	7 - 5
uNDF ₂₄₀ (% NDF)	↓	25,541	45 - 36
NDFD ₃₀ (% NDF)	↑	61,568	46 - 57
TTNDFD (% NDF)	↑	24,498	44 - 51
NFC (% DM)	↑	94,337	26 - 30
CP (% DM)	↑	112,423	21 - 24
Ash (% DM)	Minimal Soil	100,888	<13
RFV	↑	100,831	141 - 167
RFQ	↑	51,453	155 - 179

Summary of combined multi-year, multi-lab (CVAS, DairyOne, RRL, DLL) data, except for TTNDFD from RRL

Grass/MMG Silage Quality Indicators for High-Producing Dairy Herds

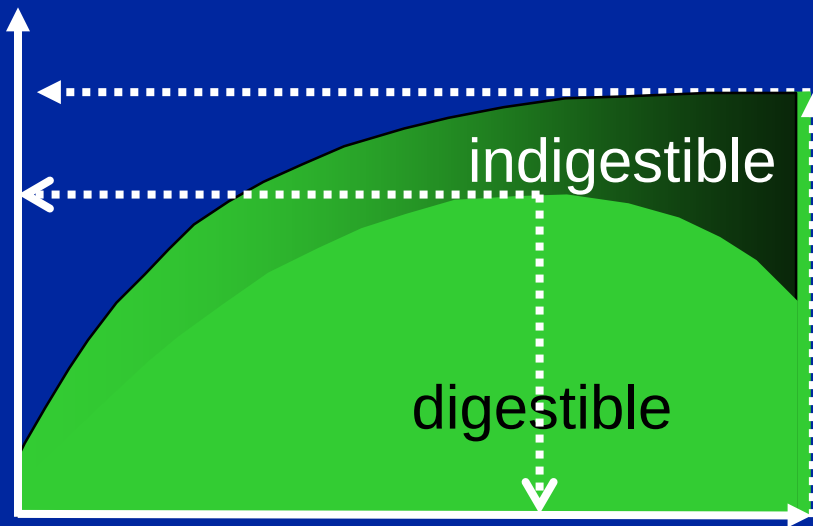
Parameter	Indicates Better Quality	n	Average ± 1 STDEV
NDF (% DM)	↓	85,213	55 - 48
Lignin (% DM)	↓	76,222	6 - 4
uNDF ₂₄₀ (% NDF)	↓	15,972	33 - 24
NDFD ₃₀ (% NDF)	↑	34,833	54 - 62
TTNDFD (% NDF)	↑	9,000	47 - 56
NFC (% DM)	↑	80,008	20 - 25
CP (% DM)	↑	85,889	15 - 18
Ash (% DM)	Minimal Soil	76,530	<10
RFV	↑	79,702	112 - 136
RFQ	↑	24,541	135 - 167

Summary of combined multi-year, multi-lab (CVAS, DairyOne, RRL, DLL) data, except for TTNDFD from RRL



Forage yield - quality vs. quantity

Dry matter yield
(tons/acre)



Maximum yield of DM

Maximum yield of
digestible DM

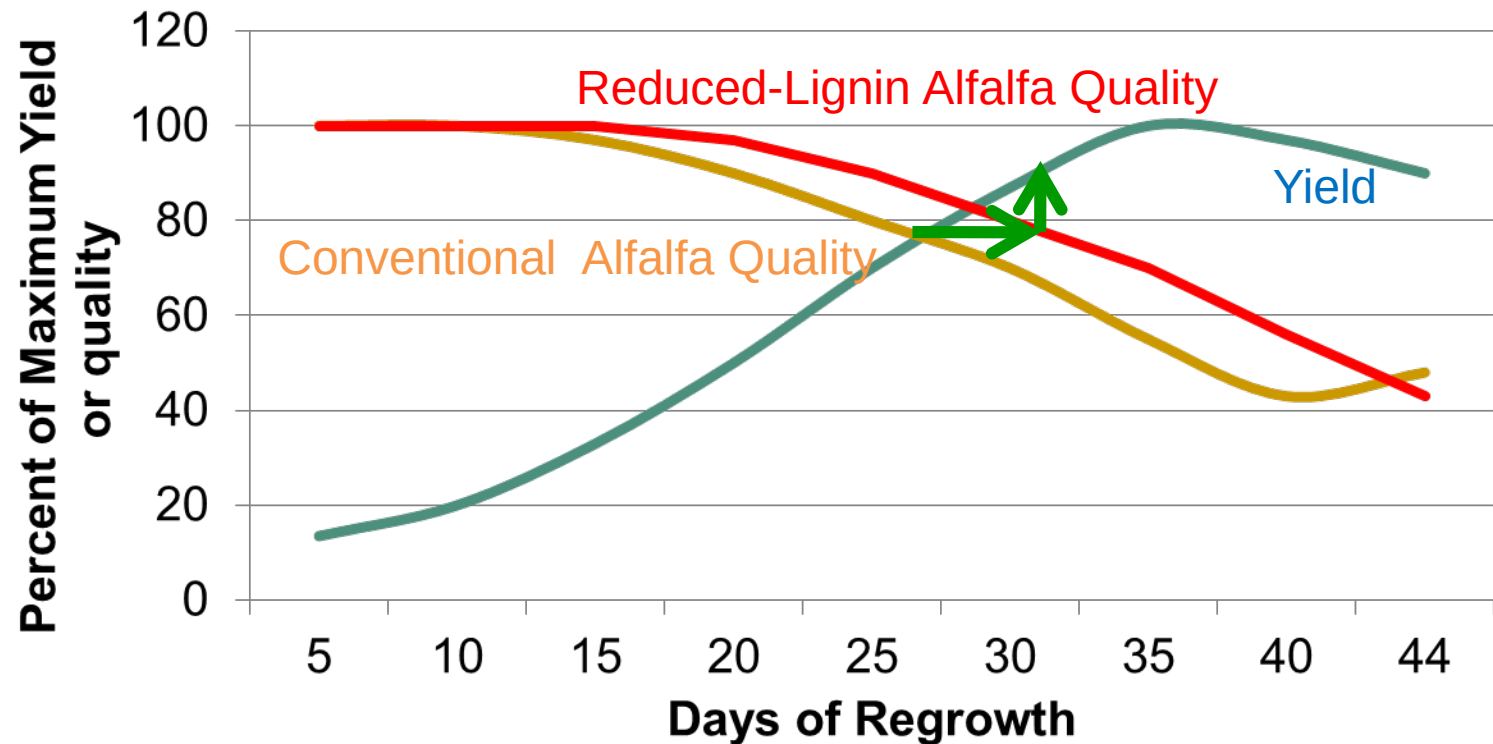
Vegetative
growth

Optimal
stage

Flower or
Head or
Black Layer

Stage of maturity

Yield and Quality Curve of Alfalfa





Practical forage-NDF range in high-group TMR

24% forage-NDF



- High Quality Forages
- Large Forage Supply
- Forages Favorably Priced

i.e. 60% Forage @ 40% NDF

- Limited Forage Supply
- Use of High-Fiber Byproducts
- Forages Expensive
- Moderate/Low Quality Forages

16% forage-NDF

i.e. 35% Forage @ 46% NDF

Nutritional Constraints

24% forage-NDF

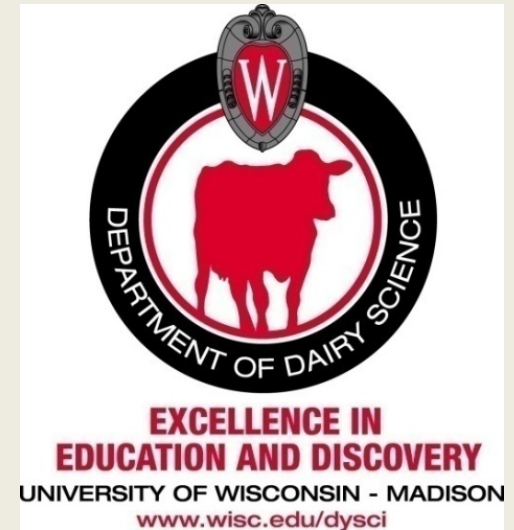


16% forage-NDF

- NDF, ivNDFD
- Fill Limitation of DMI
- Reduced Milk Yield

- peNDF
- Milk Fat Depression
- Cow Health

Questions?



Visit UW Extension Dairy Cattle Nutrition Website

<http://www.shaverlab.dysci.wisc.edu/>

