Managing Today's Feed Environment

Forage Expo Dairy Seminar

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"Now's The Time For More Forage In The Ration To Combat Rising Grain Prices"

Today's Program

- Feeding economic in 2008
- Role of forages
- Assessing forage quality
- Role of forage particle size

Feeding Economics in 2008

Using the 55-15-30 Rule

- **55%** of the ration is forage dry matter
  - 28 lb of dry matter
- **15%** of the ration is yours call
  - 7.5 lb “swing” dry matter room
  - Forage quality
  - Economics of by-products
  - Cheaper nutrient sources
- **30%** of the ration is concentrate
  - 15 lb of dry matter (energy, protein, VM pack)

Feeding Competitively in IL

	lb DM	$/ lb DM	$ / day
Forages	28	.10	2.80
Grain energy	10	.10	1.00
By-product	6	.15	0.90
Protein supp	5	.15	0.75
Min/vit/additive	1	.35	0.35
Consulting			0.10
Total	50		5.90

Feeding Economics

• Feed costs per cow per day	$5.90
• Feed cost per lb DM	$0.118
• Feed cost per cwt (80 lb)	$7.38 (80 lb)
	$8.42 (70 lb)
• Income over feed costs ($18)	$10.62
• Feed efficiency (lb milk/lb DM)	1.60 (80 lb)
	1.40 (70 lb)

Feed Economics

- **Dry matter intake vs. milk price**
  - 2 pounds of milk per pound of DMI
  - 36 to 40 cents income vs. 11 cents expense
- **Comparison of forages vs. grain vs. fat**
  - Corn silage ($45/t) = 9.6 cents per Mcal
  - Corn grain ($5/bu) = 11.9 cents per Mcal
  - Oil/fat (40 cents/lb) = 17.7 cents per Mcal

Managing Expensive Corn

Rumen Fermentable Carbohydrates—The Key

- Starch (corn or barley)
- Sugar (molasses or whey)
- Digestible/fermentable fiber (NDFD forage, beet pulp, citrus pulp, etc)

Lower Starch Levels

- Recommended levels: 18% to 26%
- Rumen fermentable carbohydrates
  - Feeding high quality forage
  - By-product by-product feeds
  - Starch availability in the rumen
- Addition of Rumensin (1 to 2 lb corn equivalent at 300 mg/day)
- Reduce fecal starch losses

Quality corn silage

RESULTS:			
	Moisture	65.53%	
	Dry Matter	34.47%	
	pH	3.96	
		DRY BASIS:	
	Crude Protein	7.51%	
	A D F	22.62%	
	aN D F	35.86%	(w/ Na2SO3)
	Lignin (Sulfuric Acid)	3.05%	
	Lignin % of NDF	8.51%	
	NDFD 48 (1mm)	60.15%	
	IVTDMD 48	85.71%	
	AD-ICP % of CP	5.86%	
	AD-ICP % of DM	0.44%	
	ND-ICP % of CP	6.00%	(w/o Na2SO3)
	ND-ICP % of DM	0.45%	(w/o Na2SO3)
	Protein Sol. % of CP	44.34%	
	Starch	37.95%	
	Fat	3.22%	
	Ash	3.62%	
	Calcium	0.22%	1.00 g/lb
	Phosphorus	0.21%	0.95 g/lb

MILK 2006 SPECIAL REPORT

CALCS:					
	T.D.N.1X - MLK06 NonProc	73.89%		25.47%	
	N.E.L.3X - MLK06 Proc	0.75	Mcal/lb	0.26	Mcal/lb
	N.E.L.3X - MLK06 NonProc	0.73	Mcal/lb	0.25	Mcal/lb
	N.E.- G. - MLK06	0.49	Mcal/lb	0.17	Mcal/lb
	N.E.- M. - MLK06	0.77	Mcal/lb	0.27	Mcal/lb
	Milk per ton - MLK06	3508 lbs/ton CS DM			

Processing Corn Silage

- Kernel processing will be important
  - Increase starch exposure
  - Reduce kernel pieces
  - Dry corn silage grain is “at risk”
- Dry matter of the corn silage (30 to 34%)
- Length of storage of corn silage
  - Increase availability with three months
  - Target three month carry over

Poor job of processing

Ro-Tap lab method to assess kernel damage

Starch <u>not</u> as available in kernels on above the 4.75mm screen (traps ¼ kernel pieces and greater)

4.75mm screen

Starch passing this screen is <u>more</u> available and reported as "damaged" or "% passing

Sieve (mm)	Fiber and starch separations
19	coarse
13	coarse
9.5	coarse
6.7	coarse
4.75	coarse / starch sieve
3.35	medium
2.36	medium
1.18	Medium/peNDF sieve
0.6	fine
pan	fine

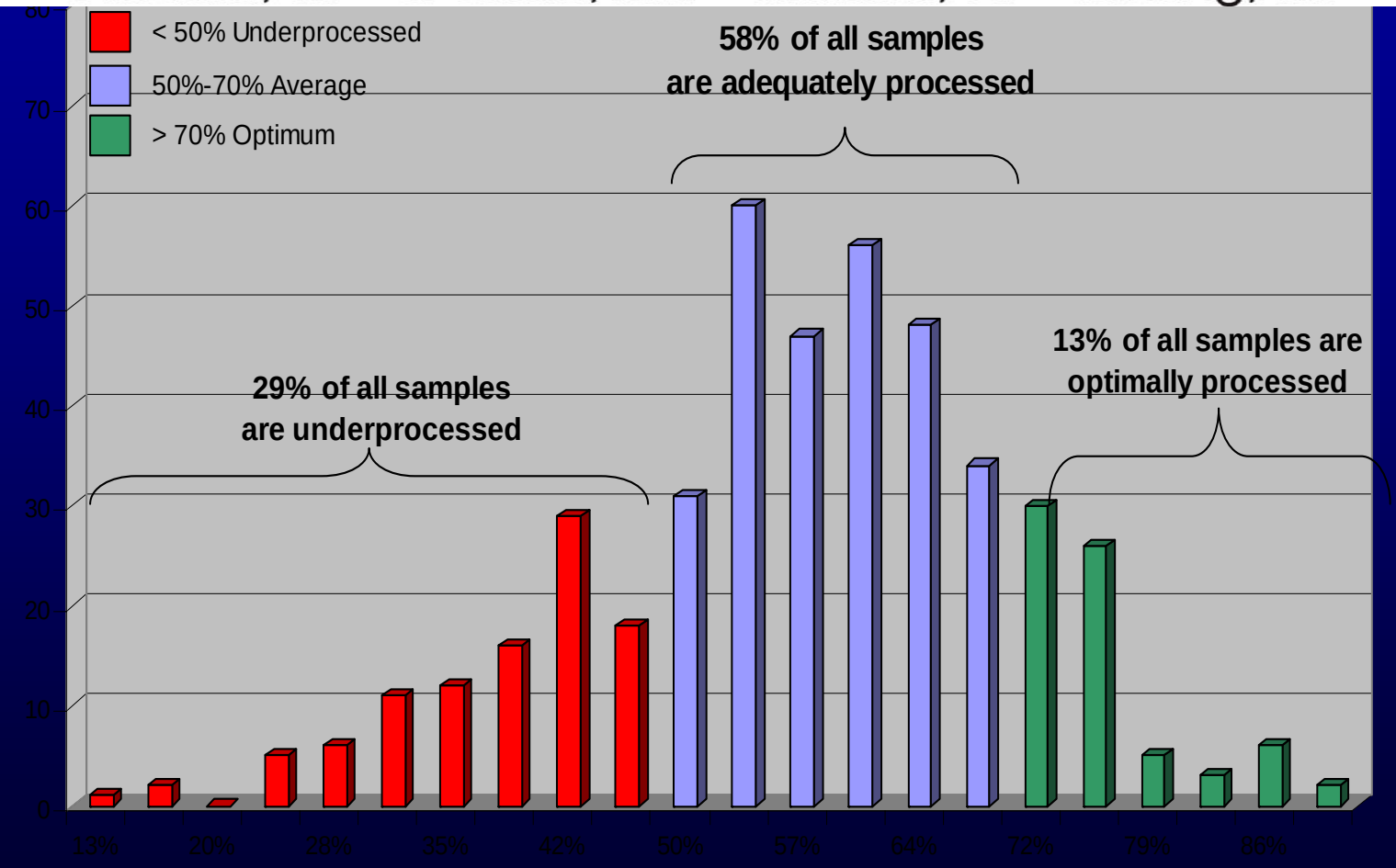
Using a field test assure kernel damage

Possible field test is a 32oz cup….if you see more than 2 half or whole kernels in this volume of silage, it needs better processing

Field Results

Dairyland Laboratories, Inc.

Arcadia, WI • St Cloud, MN • Stratford, WI • Lansing, MI



Source: Dave Taysom, Dairyland Labs

Forage Needs

Defining Forage Requirements

- **0.9% of the cow's body weight as forage NDF**
- **1.2% of the cow's body weight as total ration NDF (forages and concentrates)**
- **21 percent forage NDF (total DM)**
- **Minimum of 50 percent forage dry matter (50: 50 forage to concentrate ratio)**
- **2% of a cow's body weight at forage dry matter (1300 lb cow x 0.02 = 26 lb of forage dry matter)**

In the future, we expect rations to approach 65 to 75 percent forage

Forage NDFD

Forage NDFD

Represents the digestibility of the cell wall of your forage (NDF or neutral detergent fiber)

- Incubating feed sample with rumen microbes with buffer
- Specific length of time (24 to 48 hr)
- Forage has been dried and ground

Forage NDFD

Measures the percent degraded during a defined time period

24 hours (corn silage)

30 hours (normal rumen time)

48 hours (maximum digestion)

NDFD: An Index of Dry Matter Intake

- One unit change in NDFD equals 0.26 lb of dry matter intake
- One unit change in NDFD equals 0.47 lb of fat corrected milk

Oba and Allen, 2005

Using NDFD

- Valuable in rations containing higher forage NDF
- High NDFD partitions energy to milk
- Useful tool to rank intake potential
- Compare within similar forage families
- Can be used to troubleshoot ration problems
- Select hybrids for higher NDFD
- Increase forage levels when it contains higher NDFD values
- “True” feeding value of forages (intake and TDN)

48 Hour Forage NDFD (Wisconsin data)

	Target	Range
	------- % on DM basis -----	
Corn silage	> 55 *(50*)*	44 – 72
Legume/ grass forage	> 50 *(45*)*	38 – 75

** (30 hour values)*

A Look at Feed Particle Size

Physically effective fiber

- Providing 5 pounds of feed particles over 0.75 inch to 2 inches
- 550 to 600 minutes of cud-chewing activity per cow per day.
- 50 to 75% of cows at rest should be cud-chewing
- > 50 chews per bolus of feed.
- Rumen pH should be over 5.8
- > 2.2 parts acetate : one part propionate

Penn State Separator

	Top	2nd	3rd	Bottom
	----------% (as fed)----------			
TMR	10-15	> 40	< 30	< 20
Haylage	> 40	> 40	<20	< 5
Corn silage	5-15	> 5	< 30	< 5

(3/4 TLC-Process)

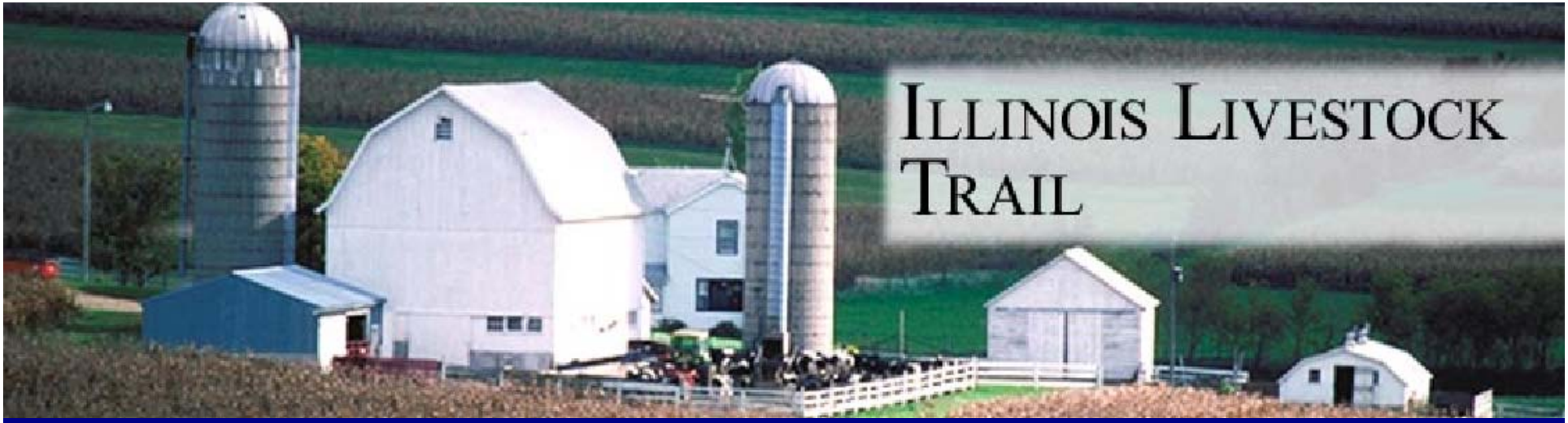
Applying the Results
Penn State Box

Effective NDF = % in top two boxes

Bagged haylage	60%
Unprocessed corn silage	35%
Processed corn silage	75%
Tub ground hay	50%

Guidelines for peNDF

- Hay 90 to 95%
- Processed hay (tub) 40 to 65%
- Haylage 40 to 80%
- Corn silage 30 to 70%
- By-product feeds
  - Fuzzy cottonseed 75%
  - Beet pulp, brewers 35%
  - Soy hulls, distillers 5%
- Grain
  - Ground corn 5%
  - Cracked corn 30%
  - Pelleted grain 5%



http://www.livestocktrail.uiuc.edu

http://www.livestocktrail.uiuc.edu/dairynet/


Questions
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