Precision Feeding High Forage Economics

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Precision Feeding?

- How do we define it?
- For our purposes, we define it as hitting a set of nutritional & environmental benchmarks.
- A currently NYFVI grant project, *Using Precision Feed Management to Improve Profitability on Dairy Farms*, combines economics into the equation.

What is High Forage Feeding?

- How do we define it?
- Percent of forage dry matter in diet?
- Forage NDF as a percent of body weight?

What is High Forage Feeding?

- How about high Corn Silage diets? C.S. is about 50% grain +/-?
- How about high chop Corn Silage? Even more grain concentration…
- How about the addition of forage extenders like soy hulls, brewer's grain, citrus pulp, etc. How do we view them?
- High forage feeding is not always easy to define.

How about High Forage Economics?

- Feed (purchased and grown) is the largest expense on a dairy today.
- How we parlay those expenses to give us the best return possible should be our goal.
- It all starts with high quality forage (I know, you've heard this over and over again).

Dave Smithgall - 2005

- “Your nutritionist is only as good as your forage”
- Dairy producer
- Western New York
- 900 cows

Three key elements of forage quality

- Maturity (stage of harvest/grain fill)
  - Neutral detergent fiber (NDF) content
  - Lignin in conjunction with NDF
  - Starch content in corn silages
- Fermentation/preservation quality
- NDF digestibility
  - Related to climate/growing conditions, maturity at harvest, and genetics

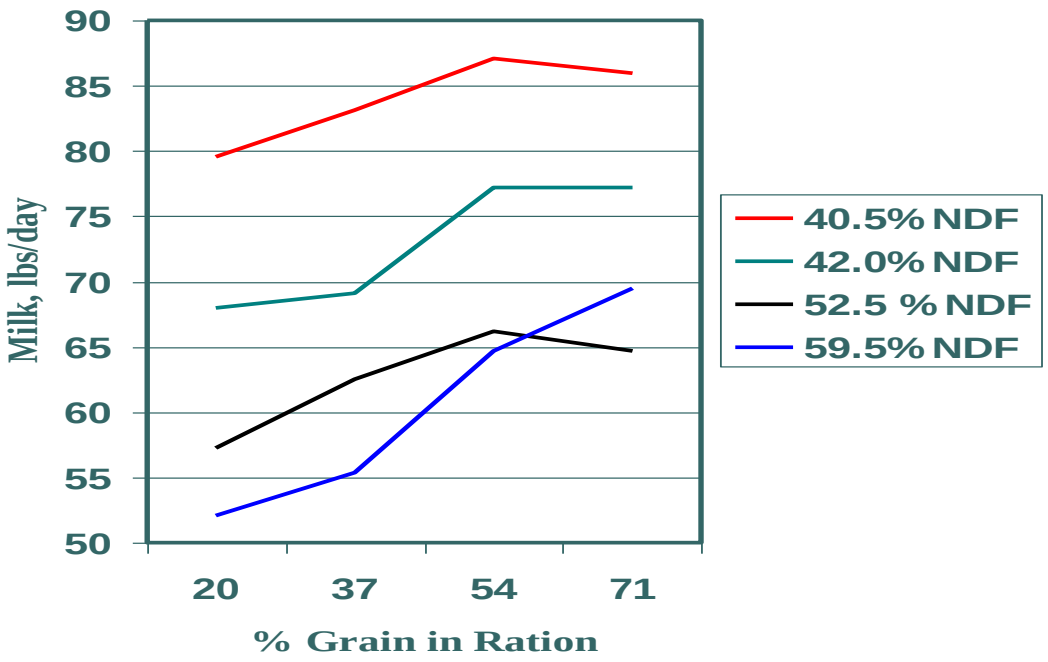
Slide courtesy Dr. Tom Overton

Examples of high quality grass and alfalfa

Item	Alfalfa	Grass
ADF, % DM	31.2	31.4
NDF, % DM	39.6	49.6
Lignin, % DM	7.0	3.9
Lignin, % NDF	17.7	7.9

Slide courtesy Dr. Larry Chase

Alfalfa maturity - 4% FCM, lbs.



Kawas et al., (1991)

Slide courtesy Dr. Larry Chase

Alfalfa maturity - conclusions

- Feeding increased grain could not overcome the effects of lower forage quality
- Milk decreased about 1 lb./day for each day increase in maturity after prebloom
- Milk decreased by 1 lb./day for each 1% increase in alfalfa NDF content

Kawas et al., (1991)

Slide courtesy Dr. Larry Chase

Adjusting forage feeding levels based upon maturity

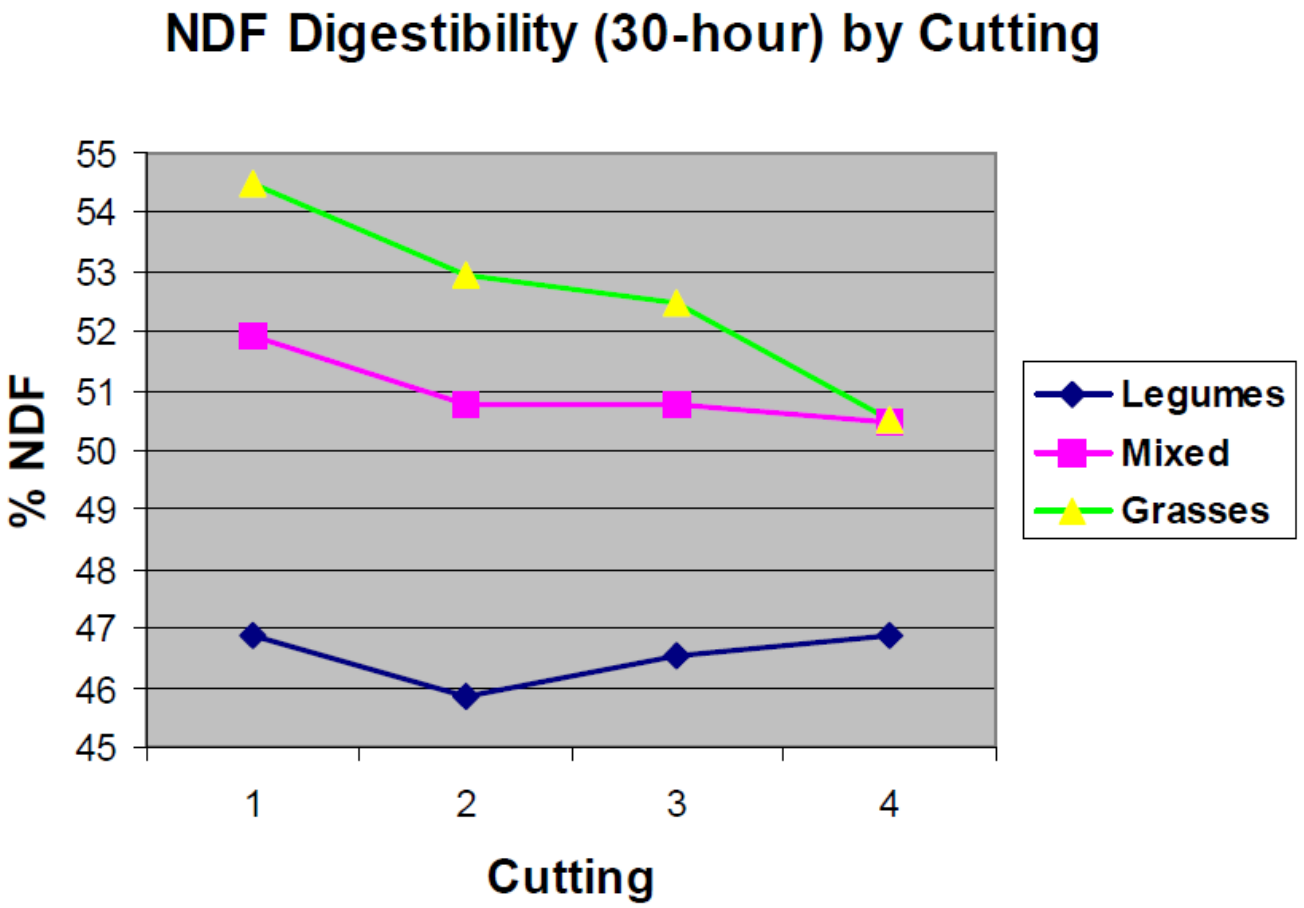
- Forage NDF as a % of intake
- Thumb rule – 0.9 to 1.0% of BW for lactating dairy cows
- Example
  - 1500 lb cow
    - 1500 lbs x 1.0% of BW = 15 lbs of forage NDF
  - If forages average 50% NDF
    - 15 lbs of forage NDF / 50% NDF = 30 lbs of forage DM in ration
- Helps to adjust forage feeding levels based upon harvest maturity, but does *nothing* to account for digestibility differences

Slide courtesy Dr. Tom Overton

NDF Digestibility

- Can be measured either *in vitro* (in the flask or porous bag) or *in situ* (in a bag hung in the rumen)
  - *In vitro* much more common
  - Timepoints usually include 12, 24, 30, or 48 hour incubations
  - Can also look at 120 and 240 h (undigested NDF)
- If have NDF and uNDF information at different timepoints, can calculate a rate of NDF fermentation (Kd) for use in ration models such as CNCPS

Slide courtesy Dr. Tom Overton



Ward and de Ondarza, 2007

Then and now……

Corn silage analysis, January 2013

Fibers		
Acid Detergent Fiber	22.7	% DM
Neutral Detergent Residue	38.6	% DM
Crude Fiber		
Lignin	3.52	% DM
Lignin / NDF Ratio	9.1	% NDF
Soluble fiber		
peNDF		
NDF Digestibility, Invitro		
12 hr digestibility		
24 hr digestibility		
30 hr digestibility	55.4	% NDF
48 hr digestibility		
Indigestible NDF, Invitro 120 HR		
NDF Dig. Rate (Kd)	3.84	
Non-Fibers, Structure, Utilization		
Digestible Dry Matter (fast)		
Sugar	1.3	% DM
Starch	33.1	% DM

Corn silage analysis, December 2016

FIBER	%NDFom	NDFom %DM	% NDF	% DM
ADF			57.6	20.3
aNDF		35.0		35.3
NDR (NDF w/o sulfite)				
peNDF				
Crude Fiber				
Lignin			6.89	2.43
NDF Digestibility (12 hr)			33.6	11.8
NDF Digestibility (24 hr)				
NDF Digestibility (30 hr)	60.4	21.1	59.8	21.1
NDF Digestibility (48 hr)				
NDF Digestibility (120 hr)	71.8	25.1	70.9	25.0
NDF Digestibility (240 hr)	75.5	26.4	74.7	26.3
uNDF (30 hr)	39.6	13.9	40.2	14.2
uNDF (120 hr)	28.2	9.9	29.1	10.2
uNDF (240 hr)	24.5	8.6	25.3	8.9

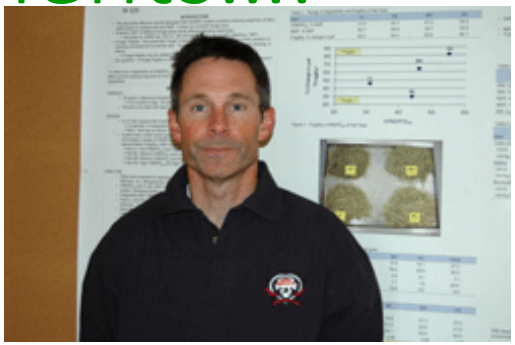
Slide courtesy Dr. Tom Overton

Three big changes over past several years…

- Standardization of NDF analysis
- Correction for ash (soil contamination)
- Analysis and potential to incorporate uNDF information into forage assessment and ration formulation

Slide courtesy Dr. Tom Overton

Some big acknowledgements….



Kurt Cotanch
Miner Institute

Dr. Mike Van Amburgh
Cornell University

Dr. Rick Grant
Miner Institute

Utilizing these new approaches in the 2016 New York State Corn Silage Trials

Madrid

Company/Brand	Hybrid	Relative Maturity	Yield, 35% DM	Dry Matter	Predicted ME Allowable Milk Yield, DMI Equivalent	uNDF240 Intake, DMI Equivalent	Adjusted TMR DMI, DMI Equivalent	Predicted ME Allowable Milk Yield, uNDF240
			tons/acre	%	lbs/day	lbs/day	lbs/day	lbs/day
					CNCPS value	*CNCPS value*	*CNCPS value*	*CNCPS value*
84-95 days RM								
Hubner Seed	H4094RC2P	84	26.6	34.2	104.5	6.3	56.4	97.4
Kings Agri-seed, Inc.	Masters Choice MCT 4054	90	24.6	34.6	103.6	6.5	54.4	92.1
Seedway	SW3654RR	91	28.0	37.9	103.6	6.3	56.0	95.4
Dyna-Gro	D32SS56	92	28.4	34.8	104.5	6.3	56.0	96.5
Seedway	SW3600 GENSS	92	26.7	32.4	102.8	6.6	53.3	88.9
Hubner Seed	H6157RCSS	94	28.5	32.4	102.3	6.7	54.0	90.3
Kings Agri-seed, Inc.	Masters Choice MCT 4572	95	31.0	37.2	103.5	6.5	54.2	91.5
Seedway	SW3768 GENSS	95	27.2	33.7	103.2	6.5	54.3	94.4
		RM Mean	**27.6**	**34.6**	**103.5**	**6.4**	**54.8**	**93.3**
96-100 days RM								
Kings Agri-seed, Inc.	Masters Choice MCT 4632	96	26.9	34.9	105.8	6.0	59.0	104.1
Mycogen	TMF2Q419	96	28.1	34.4	104.7	6.1	58.0	100.9
Hubner Seed	H6187RCSS	97	28.3	35.0	103.4	6.6	53.0	88.9
Dairyland Seed	HiDF3197RA	97	27.3	33.5	103.7	6.4	54.9	93.3
Channel	197-68STXRIB	97	26.7	33.0	104.7	6.4	54.8	94.0
Channel	198-98STXRIB	98	31.3	34.7	105.5	5.9	59.2	104.4
Hubner Seed	H6191RCSS	99	27.9	34.1	103.5	6.4	55.6	94.7
Doebler's Hybrids	3916GRQ	99	31.3	35.5	104.9	6.2	56.4	97.6
Mycogen	F2F499	99	26.3	32.2	108.3	5.1	68.7	128.0
Dyna-Gro	D39RR12	100	26.9	33.2	105.2	5.9	59.5	104.6
Dairyland Seed	HiDF3700RA	100	29.9	32.9	103.6	6.6	53.6	90.3
		RM Mean	**28.3**	**33.9**	**104.8**	**6.1**	**57.5**	**100.1**
101-107 day RM								
Hubner Seed	H5222RC3P	101	30.4	33.3	106.0	5.6	62.3	111.6
Doebler's Hybrids	RPM 4115AM	101	29.8	34.0	106.1	5.9	59.5	105.6
Kings Agri-seed, Inc.	Masters Choice MCT 5250	102	29.0	31.9	103.1	6.6	53.1	88.6
Channel	203-44STXRIB	103	25.1	30.8	103.0	6.5	54.3	91.4
Kings Agri-seed, Inc.	Masters Choice MCT 5371	103	28.5	31.9	104.3	6.3	56.0	96.3
Doebler's Hybrids	RPM 563HXR	105	30.6	31.2	105.9	5.8	60.9	108.5
Seedway	SW5554GT	106	30.8	32.4	104.0	6.2	56.9	97.9
Kings Agri-seed, Inc.	Masters Choice MCT 5661	106	30.1	31.7	103.9	6.5	54.2	91.9
Hubner Seed	H5333RC3P	107	29.4	32.2	105.9	6.0	58.9	104.0
Channel	207-27STXRIB	107	28.9	30.0	103.1	6.2	57.0	97.2
		RM Mean	**29.3**	**31.9**	**104.5**	**6.2**	**57.3**	**99.3**

Auror

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Hybrid	Relative Maturity	Yield, 35% DM	Dry Matter	Predicted ME Allowable Milk Yield, DMI Equivalent	uNDF240 Intake, DMI Equivalent	Adjusted TMR DMI, DMI Equivalent	Predicted ME Allowable Milk Yield, uNDF240
		tons/acre	%	lbs/day	lbs/day	lbs/day	lbs/day
				CNCPS value	*CNCPS value*	*CNCPS value*	*CNCPS value*
H4094RC2P	84	14.3	31.6	108.4	5.2	67.7	125.7
Masters Choice MCT 4054	90	14.0	32.2	107.6	5.2	67.2	123.9
SW3654RR	91	15.8	31.0	106.8	5.0	70.9	131.1
D32SS56	92	15.0	32.3	107.5	5.6	63.8	116.4
SW3600 GENSS	92	14.3	31.4	107.0	5.4	65.9	120.2
H6157RCSS	94	14.9	30.3	106.0	5.4	65.1	117.5
Masters Choice MCT 4572	95	17.1	31.3	106.4	5.5	64.2	116.0
SW3768 GENSS	95	16.7	31.1	107.6	5.4	66.4	122.3
	RM Mean	**15.3**	**31.4**	**107.2**	**5.3**	**66.4**	**121.6**
Masters Choice MCT 4632	96	17.5	33.0	107.4	5.2	67.7	124.7
TMF2Q419	96	17.8	32.4	107.7	5.2	68.2	126.0
H6187RCSS	97	17.5	33.6	107.4	5.4	65.6	120.2
HiDF3197RA	97	17.7	32.3	108.2	5.3	66.8	123.6
197-68STXRIB	97	17.4	32.0	108.1	5.0	70.0	130.4
198-98STXRIB	98	18.0	32.4	107.7	5.3	66.2	121.6
H6191RCSS	99	16.9	32.0	107.0	5.6	62.8	113.6
3916GRQ	99	18.2	32.3	107.1	5.4	65.4	119.4
F2F499	99	15.2	30.8	109.0	4.8	73.5	139.3
D39RR12	100	17.2	33.3	107.8	5.2	67.0	123.7
HiDF3700RA	100	19.1	32.7	107.7	5.2	67.1	123.7
	RM Mean	**17.5**	**32.4**	**107.7**	**5.2**	**67.3**	**124.2**
H5222RC3P	101	19.9	35.3	108.0	5.5	63.9	117.1
RPM 4115AM	101	20.5	37.2	108.0	5.4	64.6	118.6
Masters Choice MCT 5250	102	21.2	34.8	108.3	5.5	63.5	116.7
203-44STXRIB	103	19.3	34.9	107.3	5.8	60.4	108.8
Masters Choice MCT 5371	103	19.4	33.5	105.6	5.9	59.8	105.8
RPM 563HXR	105	20.1	33.0	107.5	5.3	65.7	120.6
SW5554GT	106	19.9	34.2	107.7	5.4	65.6	120.4
Masters Choice MCT 5661	106	20.3	33.2	106.9	5.7	61.4	110.6
H5333RC3P	107	18.8	34.1	108.4	5.3	66.7	123.6
207-27STXRIB	107	18.7	34.7	108.4	5.4	65.2	120.5
	RM Mean	**19.8**	**34.5**	**107.6**	**5.5**	**63.7**	**116.3**

NY farm viability INSTITUTE

NYFVI Project Corn Silage Quality Results

CSname	uNDF Intake	uNDFRumen	uNDF30Intake	35DM_MEMilk	35DM_MPMilk	ExpectedDMI	uNDFMEMilk	uNDFMPmilk	UNDF240%NDF	Starch	UNDF240%DM	ProssScore	C.Protein	Lbs. Components
A	5.03	8.24	4.70	107.9	102.8	69.7	129.7	123.1	19.7	34.7	7.6	65.9	6.3	6.1
B	5.77	9.54	5.75	104.6	101.1	60.8	106.7	103.2	28.0	36.0	10.4	74.2	7.9	6.1
C	6.43	10.42	6.33	100.8	94.0	54.5	89.4	84.1	31.5	28.7	12.8	54.4	7.8	5.9
D	5.71	9.45	5.24	105.1	98.2	61.4	108.7	101.4	27.5	35.9	10.1	67.1	8.1	5.8
E	5.82	9.65	5.54	105.5	100.2	60.2	106.5	101.2	28.9	37.4	10.3	58.6	7.8	6.0
F	5.95	9.98	6.00	103.0	88.6	58.9	101.2	87.1	31.9	39.2	10.7	63.9	8.1	
G	6.16	9.87	6.28	101.8	98.6	56.9	95.6	93.0	27.8	26.4	11.8	60.9	7.5	3.6
H	6.00	9.96	6.47	102.0	90.3	58.4	99.0	87.9	30.8	38.8	11.3	73.1	6.8	5.8
I	5.82	9.75	6.23	103.9	93.2	60.2	104.9	94.1	30.3	41.0	10.6	73.8	7.2	5.8
J	7.06	11.19	7.40	97.4	94.1	49.7	76.0	75.1	34.2	21.8	15.3	48.3	8.7	4.7
K	6.64	10.85	6.97	100.9	91.6	52.8	85.8	78.9	34.8	35.8	13.2	60.6	7.9	5.1
L	6.38	10.47	6.46	102.1	94.3	55.0	91.7	85.3	33.0	33.5	12.7	52.3	8.3	5.3
M	6.09	9.83	5.93	103.7	98.2	57.6	98.9	93.9	28.0	32.1	11.2	63.9	6.7	6.3
N	6.40	10.46	6.75	101.1	93.6	54.8	90.3	84.4	32.5	33.4	12.8	55.0	7.9	5.2
O	6.56	10.66	6.69	99.9	92.0	53.5	86.4	80.4	33.3	32.9	13.0	74.5	8.4	5.0
P	5.81	9.64	6.58	103.2	94.6	60.3	104.5	95.7	28.9	38.2	10.6	49.5	6.4	3.7
Q	6.80	10.94	6.13	102.1	97.9	51.5	84.0	81.9	33.9	31.7	14.5	62.6	7.5	6.3
R	6.54	10.75	6.73	102.7	93.4	53.6	89.2	82.0	34.7	36.6	13.3	67.1	7.2	5.3
S	6.27	10.18	6.52	101.4	96.6	55.9	93.2	89.3	30.5	31.8	11.9	60.6	7.9	5.7
T	6.22	10.15	7.01	99.1	86.5	56.4	91.9	80.7	30.6	35.7	11.8	31.7	7.7	4.6
U	5.87	9.77	6.04	103.9	90.5	59.8	103.9	90.5	29.9	40.5	10.5	71.7	6.8	6.5
Average	6.16	10.08	6.27	102.5	94.8	57.2	97.0	90.1	30.5	34.4	11.7	61.4	7.6	

Recent Herds

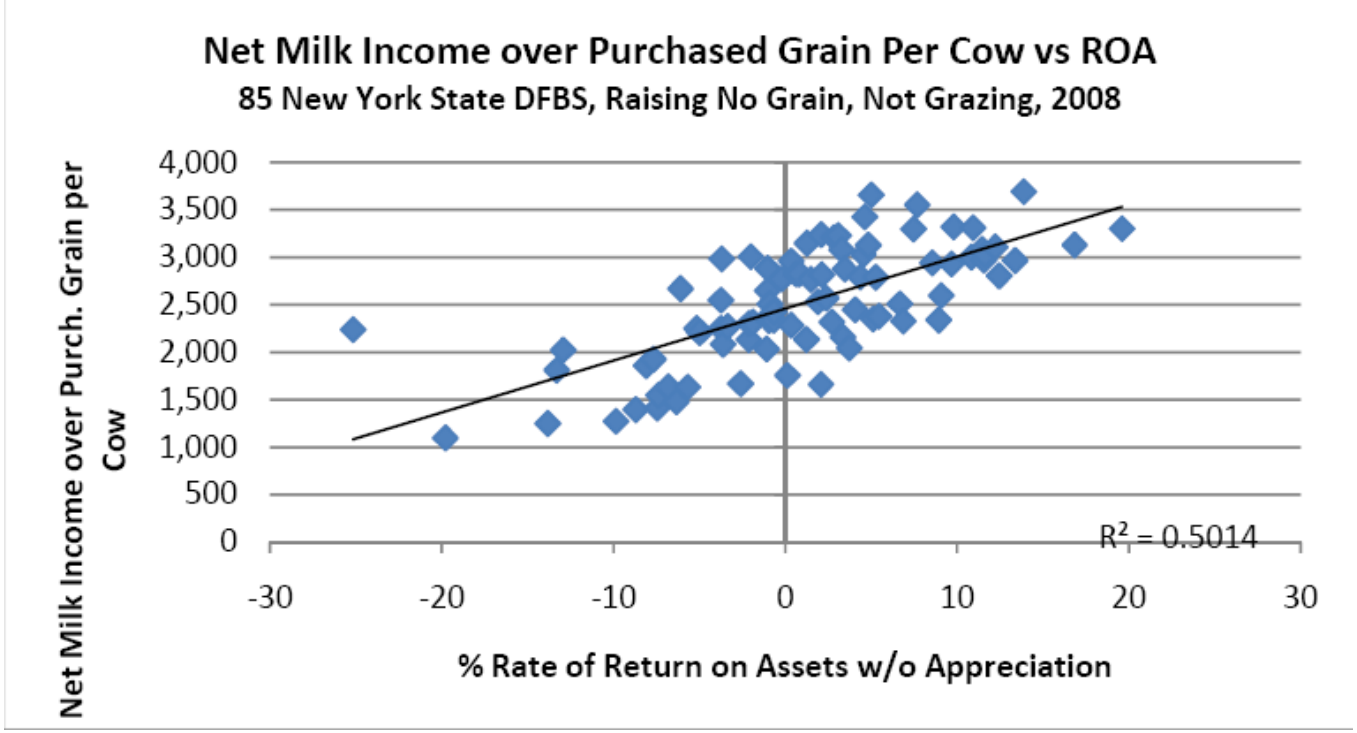
Herd	A	B	C	D	E	F
Milk, lbs	105+	85	110+	80-85	81	80
% Forage	62	65	64	74	78	65
F-NDF, %DM	26	28	26.4	31.3	33	30
F-NDF, %BW	0.92	1	1.06	1.15	1	1.06
Fat, %	3.8	3.9	3.4	4	4.2	4
TP, %	3.1	3	3.1	3.15	3.18	3.1

Slide courtesy Dr. Larry Chase

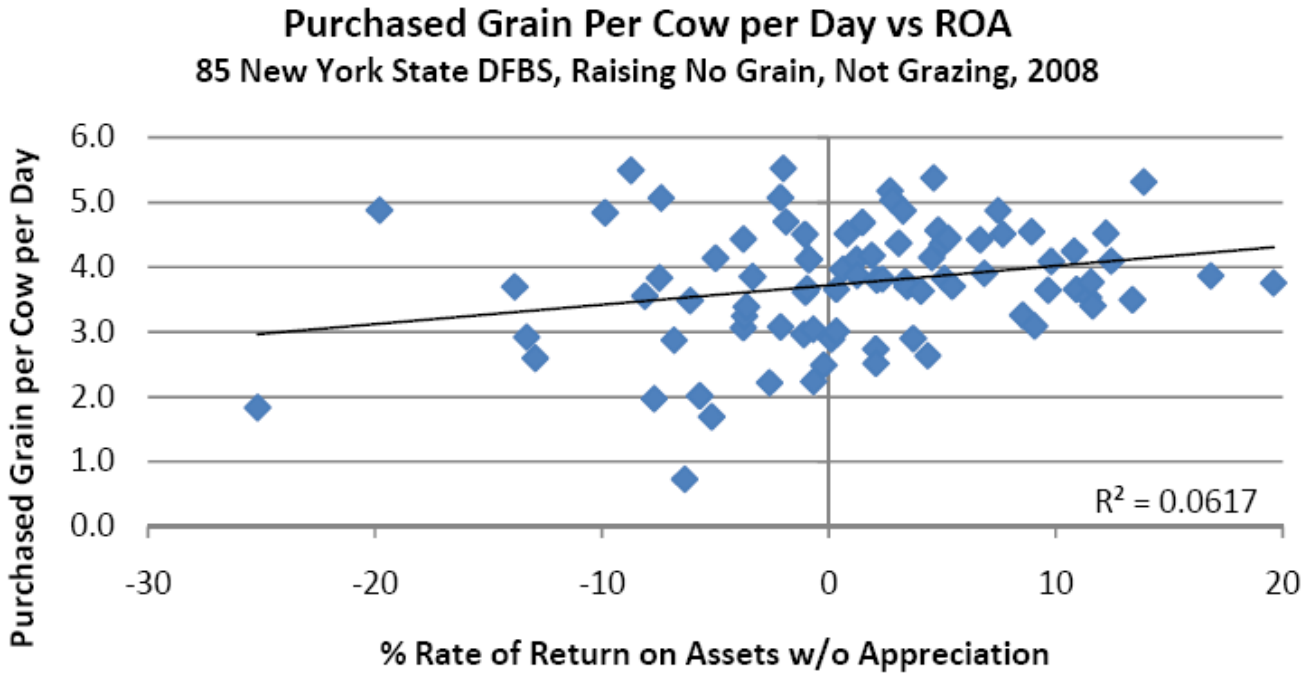
Forage (as % of Total Forage)

Herd	A	B	C	D	E	F
BMR-CS	56	-	27	-	-	-
Conv. CS	-	72	52	60	60	50
Haylage	41	28	21	40	40	50
Hay	3	-	-	-	-	-

Slide courtesy Dr. Larry Chase



Karszes, 2009



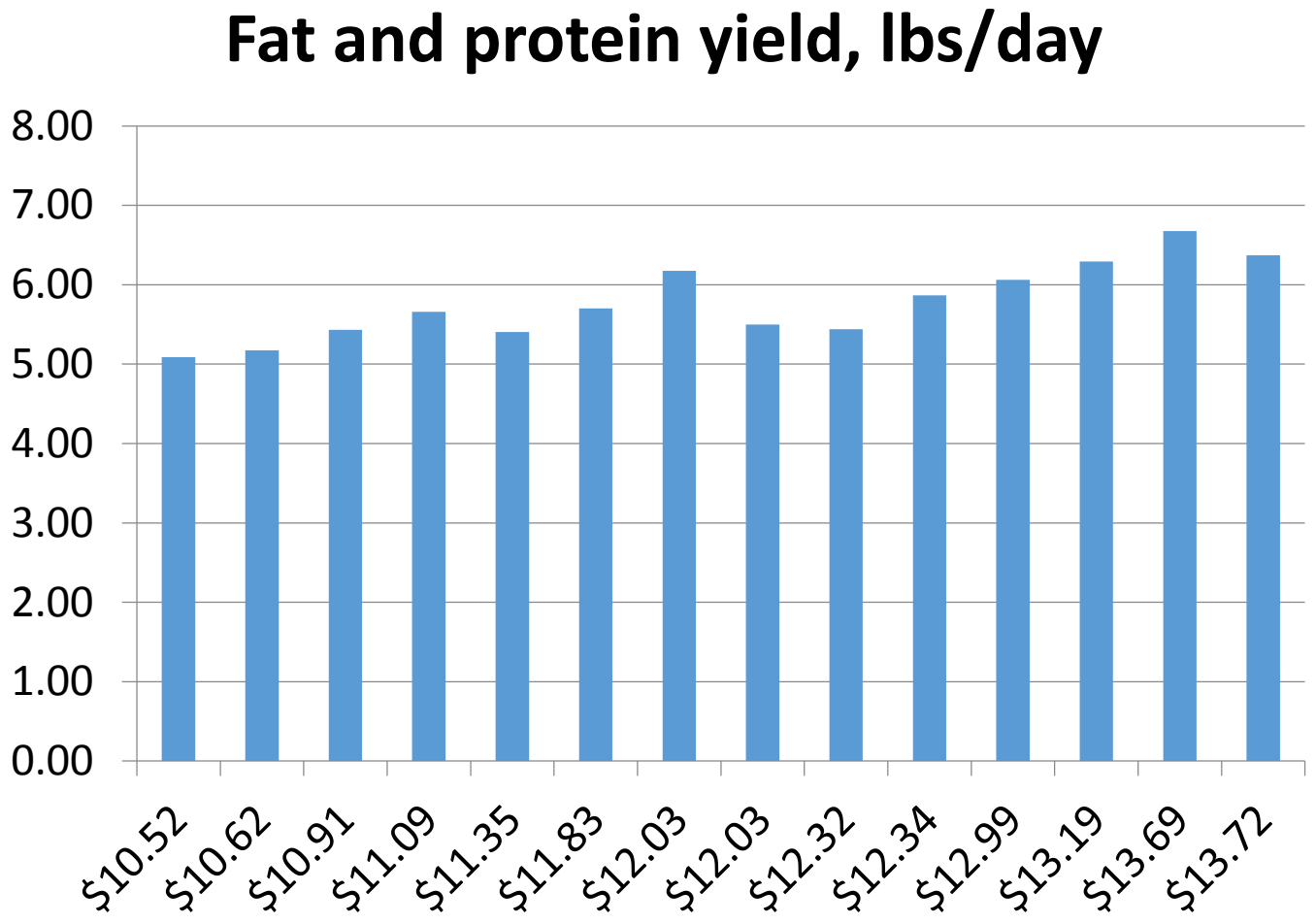
Karszes, 2009

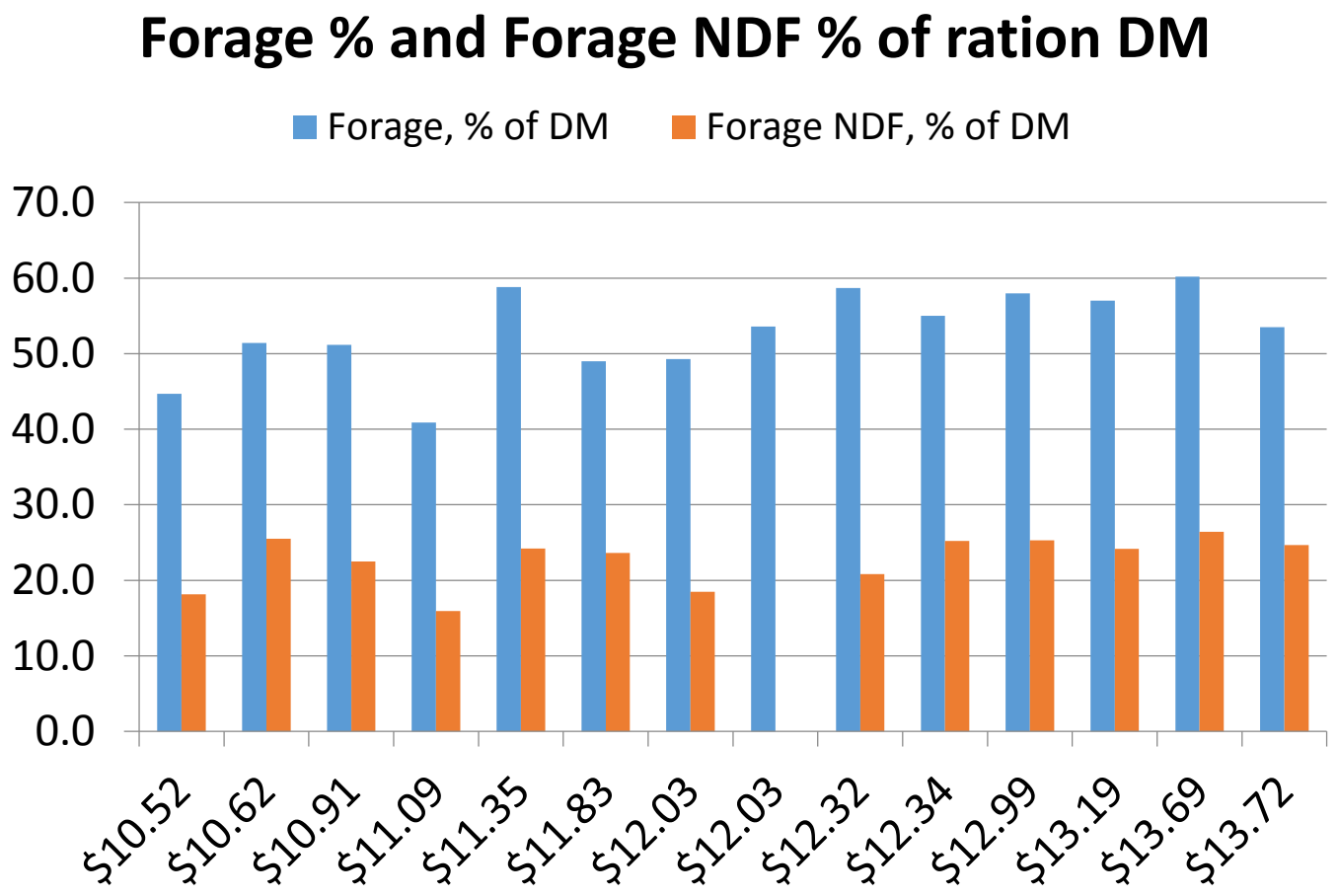
Income over feed cost (IOFC) comparison study

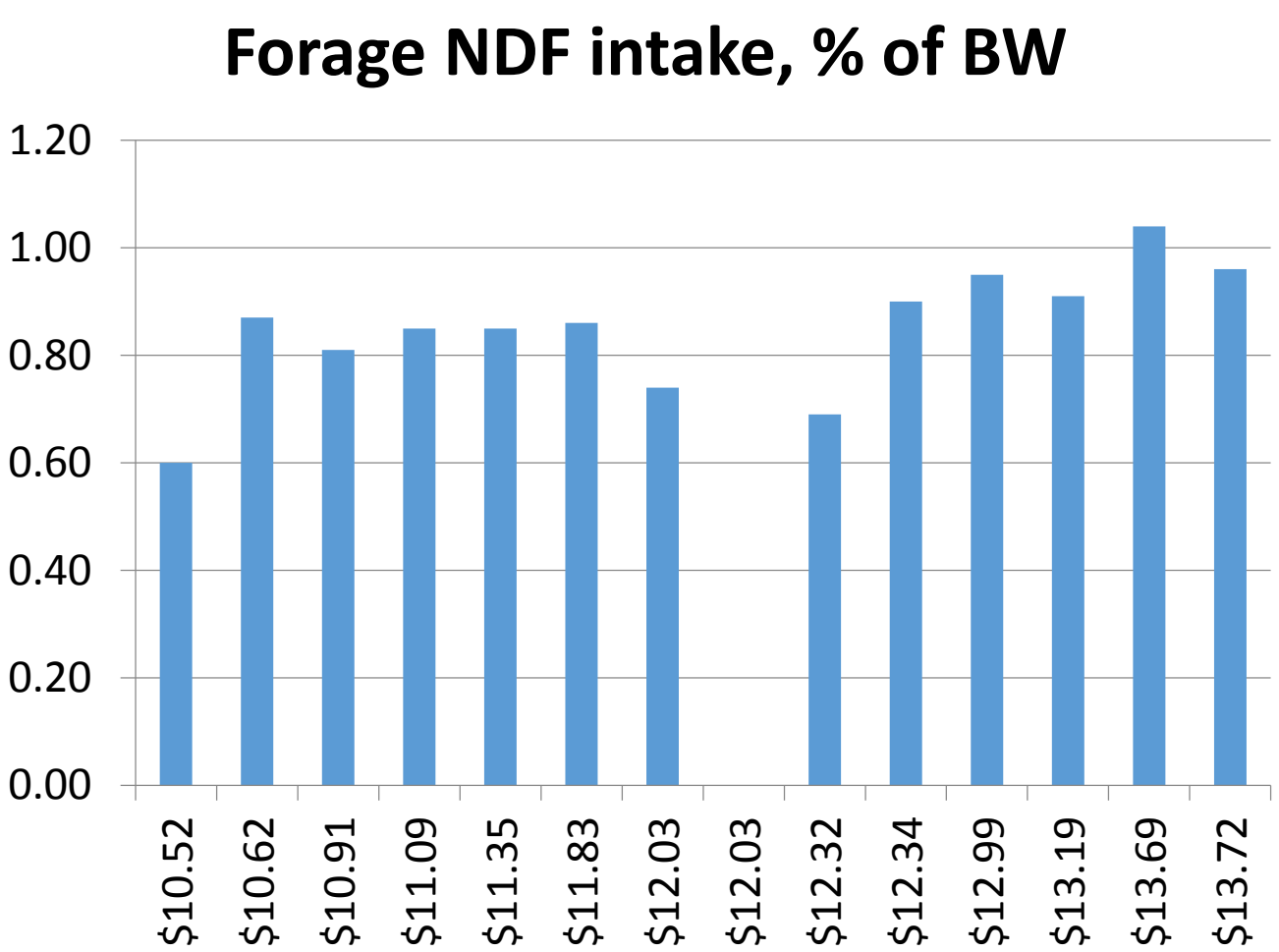
PRO-DAIRY Business Focused Discussion Group

Approach

- Information collected for August 2014
  - Group production and DMI information (# cows, milk, components, DIM, % heifers, stocking density) for all lactating groups in herd
  - Rations, forage analyses, costs of purchased ingredients
  - Forages and homegrown feeds given standardized costs
    - $1.25/pt DM haylage; $1.1/pt DM corn silage (+ 10% for BMR); $150/ton HMSC; $120/ton HMEC, $175/ton grass hay; $185/ton straw


Fat and protein yield, lbs/day
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
$10.52
$10.62
$10.91
$11.09
$11.35
$11.83
$12.03
$12.03
$12.32
$12.34
$12.99
$13.19
$13.69
$13.72


Forage % and Forage NDF % of ration DM
Forage, % of DM
Forage NDF, % of DM
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
$10.52
$10.62
$10.91
$11.09
$11.35
$11.83
$12.03
$12.03
$12.32
$12.34
$12.99
$13.19
$13.69
$13.72


Forage NDF intake, % of BW
1.20
1.00
0.80
0.60
0.40
0.20
0.00
$10.52
$10.62
$10.91
$11.09
$11.35
$11.83
$12.03
$12.03
$12.32
$12.34
$12.99
$13.19
$13.69
$13.72

4 herds with IOFC > $12.99 per cow per day				
	1	2	3	4	**Average**
High ECM	95.5	95.3	99.5	91.6	**95.48**
High Fat and Protein per cow per day	6.29	6.37	6.68	6.06	**6.35**
Higher Feed Efficiency (ECM/DMI)	1.75	1.69	1.75	1.68	**1.72**
Higher cost/cow per day	7.81	7.24	8.2	7.16	**7.60**
Lower stocking density, % of stalls	101	108	79	105	**98**
Higher Forage NDF intake, % of BW	0.91	0.96	1.04	0.95	**0.97**
Similar milk fat %	3.59	3.96	3.94	3.7	**3.80**
Similar milk protein %	2.91	3.05	3.09	2.99	**3.01**
Slightly higher cost per lb DM	0.143	0.128	0.144	0.131	**0.137**

3 herds with IOFC < $11.00 per cow per day				
	1	2	3	**Average**
Lower ECM	77.8	80.5	76	**78.10**
Lower Fat and Protein per cow per day	5.18	5.43	5.09	**5.23**
Lower Feed Efficiency (ECM/DMI)	1.57	1.6	1.6	**1.59**
Lower cost/cow per day	6.49	6.8	6.2	**6.50**
Higher stocking density, % of stalls	132	115	94	**114**
Lower Forage NDF intake, % of BW	0.87	0.81	0.6	**0.76**
Similar milk fat %	4.08	3.84	3.76	**3.89**
Similar milk protein %	2.94	3.14	3.11	**3.06**
Slightly lower cost per lb DM	0.131	0.135	0.13	**0.132**

- September 2012 similar analysis conducted for another discussion group
  - IOFC per cow per day
    - Average -- $7.78
    - Range -- $6.68 to $9.66

- August 2014
  - IOFC per cow per day
    - Average -- $12.00
    - Range -- $10.52 to $13.72

NY farm viability INSTITUTE

NYFVI Farm Comparisons – 5th Quarter

	Milk	Fat	Protein	Lbs. Cor	MUN	Diet CP	Net Add. Dec	Net Milk Pri	Milk Income	Forage $	Conc. $	Purch. $	T. Feed $	Milk-Conc	Milk-Purc	Milk-Total			Milk -Conc Rank (Excludes Organic)
A	83	3.94	3.15	5.9	10.5	16.9	0.7694	16.87	14.03	1.57	4.05	4.05	5.62	9.98	9.98	8.42		3X	6th
B	75	3.9	3.17	5.3	11	16.9	-0.9428	17.19	12.89	1.53	4	4	5.53	8.89	8.89	7.36			
C	71	4.07	3.28	5.2	12.9	17.3	-1.1233	17.32	12.3	1.42	3.77	3.77	5.19	8.53	8.53	7.11			
D	93	3.9	3.14	6.5	10.5	17.3	0.43	16.42	15.27	1.58	4.57	4.57	6.14	10.7	10.7	9.13		3X	1st
E																		3X	
F																			
G																			
H	87	3.46	3.16	5.8	11.7	16.3	0.405	15.53	13.55	1.62	4.3	3.85	5.92	9.26	9.7	7.63		3X	
I	78	4.18	3.14	5.7	11.5	17.1	0.9516	17.5	13.65	2.17	3.55	3.55	5.72	10.1	10.1	7.93			4th
J	94	3.46	3.06	6.1	11.2	17	-1.2134	15.78	14.83	2.17	4.28	2.46	6.44	10.55	12.37	8.39		3X	2nd
K	66	3.79	3.4	4.7	5.7	16.3	0.57	33.83	22.34	3.48	7.56	6.34	11.04	14.78	16	11.3		O	
L	73	4.07	3.19	5.3	9.7	17.3	-0.52	15.92	11.62	1.95	2.79	2.79	4.74	8.83	8.83	6.88			
M																		3X	
N	33	4.53	3.52	2.7	10	17.2	30.6435	45.46	15	3.8	0.22	0.22	4.02	14.79	14.79	10.98		OG	
O	85	4.05	3.06	6	11.9	15.4	0.72	16.06	13.65	1.62	3.63	2.66	5.25	10.03	10.99	8.4			5th
P	90	3.87	3.12	6.3	9.5	16.5	0.35	16.22	14.67	1.34	4.48	4.48	5.81	10.19	10.19	8.86		3X	3rd
Q	51	4.1	3	3.6	14.8	15.5	1.53	34.55	17.59	3.97	3.78	4.78	7.75	13.81	12.81	9.84		O	
R	72	3.72	3.18	5	10.4	18.2	-0.46	16.91	12.16	2.03	3.22	5.25	5.25	8.94	6.9	6.9			
S	68	4.1	3.42	5.1	11	17.9	-0.068	16.96	11.53	1.51	2.91	2.13	4.42	8.62	9.4	7.11			
T	68	3.7	3	4.6	12	16	-0.333	14.93	10.15	2.24	2.69	2.69	4.93	7.46	7.46	5.22			14th
U	51	4.04	3.13	3.7	10	16.3	-0.0669	16.17	8.24	1.73	2.67	2.67	4.4	5.58	5.58	3.84			15th
V	81	3.94	3.24	5.8	10	15.9	-0.5938	15.7	12.71	1.7	4.19	3.28	5.89	8.53	9.44	6.82			
W																			
X																			
Y																			
Z																			

Central NY Dairy & Field Crops Team Spring Forage Quality Monitoring Report

Summary of Alfalfa Height and Prediction of % NDF - May 17, 2016

County	Town	Road Name	Elevation	Alfalfa Height Inches	Predicted Grass % NDF	Predicted 50/50 Mix % NDF	Predicted Alfalfa % NDF	Predicted Date to Cut Grass	Predicted Date to Cut Mix	Predicted Date to Cut Alfalfa
Chenango	Bainbridge	Robinson Road	1660	12	47.4	34.5	26.9	5/19/16	5/28/16	6/8/16
Chenango	Oxford	County Road 32	950	16	50.8	38.0	29.7	5/16/16	5/24/16	6/2/16
Chenango	Sherburne	Cush Hill Rd	1242	13	48.2	35.4	27.6	5/18/16	5/27/16	6/6/16
Chenango	Sherburne	Schmidt Rd	1550	13	48.2	35.4	27.6	5/18/16	5/27/16	6/6/16
Chenango	Sherburne	State Route 12	1050	16	50.8	38.0	29.7	5/16/16	5/24/16	6/2/16
Chenango	Smyrna	County Road 14	1080	14	49.1	36.3	28.3	5/17/16	5/26/16	6/5/16
Fulton	Ephratah	County Road 140	633	17	51.7	38.8	30.4	5/15/16	5/23/16	6/1/16
Fulton	Johnstown	State Route 67	765	19	53.4	40.6	31.8	5/13/16	5/21/16	5/29/16
Herkimer	Columbia	Jordanville Road	1586	13	48.2	35.4	27.6	5/18/16	5/27/16	6/6/16
Herkimer	Danube	Tibbits Road	580	15	50.0	37.1	29.0	5/17/16	5/25/16	6/4/16
Herkimer	German Flatts	Robinson Road	1372	13	48.2	35.4	27.6	5/18/16	5/27/16	6/6/16
Herkimer	Norway	State Route 170A	1207	13	48.2	35.4	27.6	5/18/16	5/27/16	6/6/16
Herkimer	Schulyer	Carder Lane	466	17	51.7	38.8	30.4	5/15/16	5/23/16	6/1/16
Herkimer	Winfield	North Winfield Road	1243	13	48.2	35.4	27.6	5/18/16	5/27/16	6/6/16
Montgomery	Canajoharie	Maring Road	890	18	52.6	39.7	31.1	5/14/16	5/22/16	5/30/16
Montgomery	Florida	Cemetery Road	580	18	52.6	39.7	31.1	5/14/16	5/22/16	5/30/16
Montgomery	Florida	Mohr Road	860	21	55.1	42.3	33.2	5/11/16	5/19/16	5/26/16
Montgomery	Minden	Airport Road	653	18	52.6	39.7	31.1	5/14/16	5/22/16	5/30/16
Montgomery	Minden	River Road	417	20	54.3	41.4	32.5	5/12/16	5/20/16	5/28/16
Montgomery	Minden	Schuyler Road	610	17	51.7	38.8	30.4	5/15/16	5/23/16	6/1/16
Montgomery	Mohawk	Hickory Hill Road	470	19	53.4	40.6	31.8	5/13/16	5/21/16	5/29/16
Montgomery	Mohawk	Old Trail Road	570	21	55.1	42.3	33.2	5/11/16	5/19/16	5/26/16
Montgomery	Palatine	Dygert Road	584	17	51.7	38.8	30.4	5/15/16	5/23/16	6/1/16

First Cutting Project is being conducted by Cornell Cooperative Extension of Chenango, Fulton, Herkimer, Montgomery, Otsego, Saratoga and Schoharie Counties and the Central New York Dairy and Field Crops Team

Keys to Moving to a High Forage Ration

- Consistent supply of high digestibility forage
- A consultant who understands and believes in high forage rations
- Be patient- it takes time to make the change
- You have to monitor forage DM
- Is your mixer big enough?

Slide courtesy Dr. Larry Chase

What Are the Risks or Challenges of Feeding Higher Forage Rations?

- 1. **Mindset**

- Both the dairy producer and nutritionist need to believe in the concept.
- If they don't, it has a high risk of failure.

- 2. **Consistent quality forages**

- As you feed more forage, less grain is fed to balance forage composition.
- Forage quality variation will be more evident.

Slide courtesy Dr. Larry Chase

Risks and Challenges - 2

- 3. **Forage inventory -**

- You will need more forage to feed the same number of cows
- This may be 15-30% more forage
- Make sure you have enough forage in storage before feeding higher forage rations
- Do frequent forage inventories
- It may take time to revise the forage program to produce enough forage

Slide courtesy Dr. Larry Chase

Risks and Challenges - 3

- 4. **Forage allocation and storage -**

- Can forages be stored by quality?

- Can specific forages be allocated to specific animal groups?

- **5. Forage analyses -**

- More frequent to keep feeding program on target

- Include NDF digestibility

- More frequent determination of forage DM and ration adjustment

Slide courtesy Dr. Larry Chase

Risks and Challenges - 4

- 6. **Ration formulation -**

- Rations need to be checked more frequently to keep the program on target

- 7. **Feeding management -**

- Goal = A consistent supply of a fresh, palatable and high quality ration in front of the cow throughout the day

- May require feeding management changes

Slide courtesy Dr. Larry Chase

How Do We Implement the Program?

- Assume that we have an adequate supply of high quality forage
- Forage testing – include NDFD
- Set ration forage content using F-NDF as a % of BW (0.9 to 1%)
- Monitor & adjust for changes in forage DM
- Track intake and refusals (sorting, etc.)
- Watch milk & milk components

Slide courtesy Dr. Larry Chase

Summary

- Feeding higher forage rations is an opportunity that should be evaluated in dairy herds
- This takes advantage of the biology of the cow
- The key to success is having adequate quantities of consistent, high quality forages available on the farm

Slide courtesy Dr. Larry Chase

Summary - 2

- Potential benefits include:
- Higher levels of milk components
- Improved cow health
- Improved profitability
- It does require a higher level of management in both forage production and herd management

Slide courtesy Dr. Larry Chase

Where have we been? Where are we headed?

- C.S. processing & shredlage
- BMR Corn Silage
- Ration balancing technology (CNCPS), & uNDF240 research
- Corn Silage specific varieties
- Low lignin alfalfa
- Higher digestibility grasses like (meadow?) fescue
- Spring cover crops as forage (rocket fuel)
- ??????????

Questions?