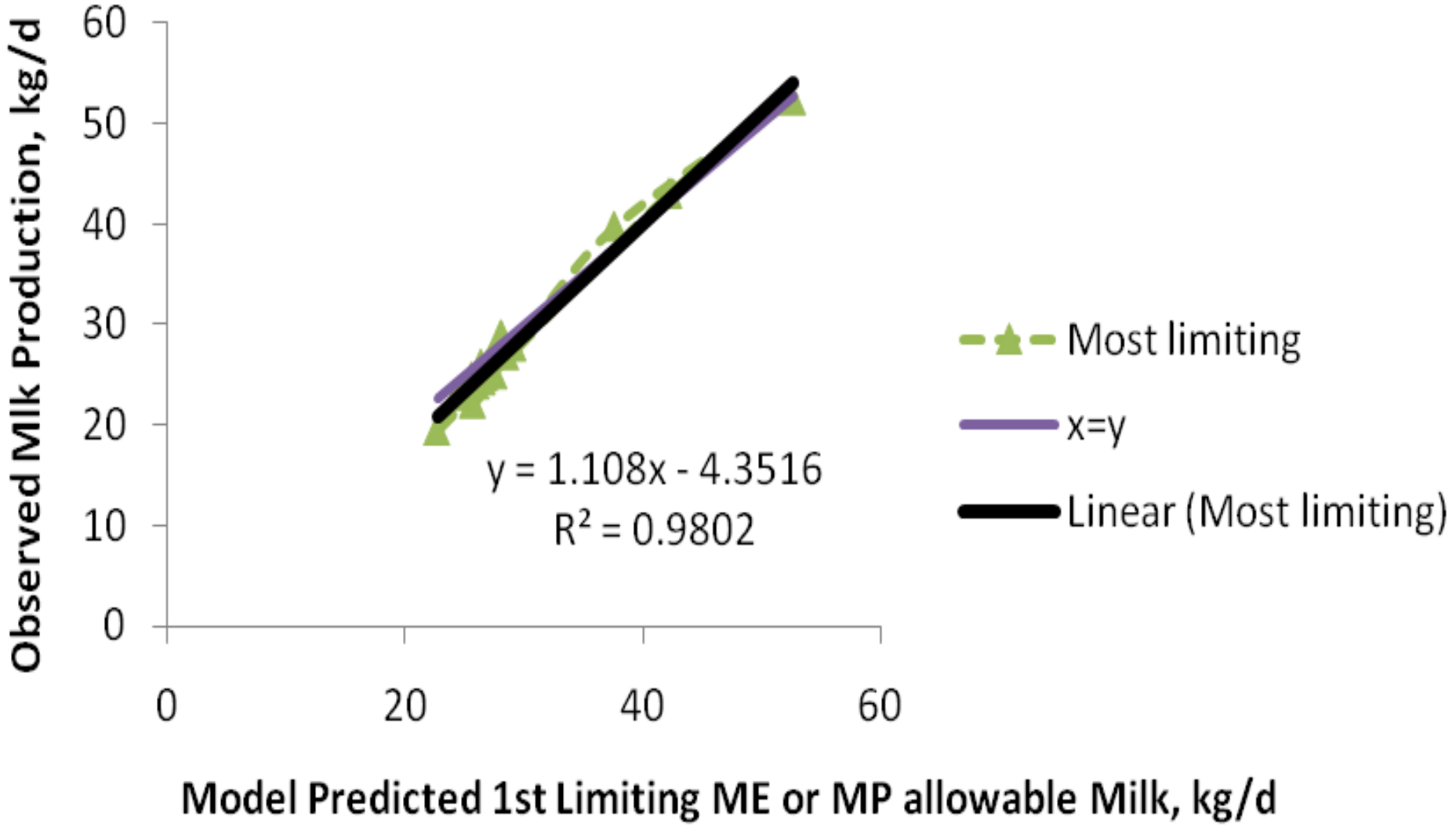
CNCPS v6.1 Most limiting ME or MP Allowable Milk Yield from 21 to 52 kg/d and CP from 12.7 to 17.4% among 24 data sets – research to herd level data



Herd Level Examples of the Application of CNCPS v6.1

Example Herd A – 54 lb DMI, 92 lb Milk

% DM basis	CNCPS v6.1
CP	14.4
RDP	8.6
Sol CP	4.9 (34)
Rumen NH3, % req	134
Rumen peptides, % req	143
NDF	31.6
Lys:Met	3.29
ME allowable, lb	99
MP allowable, lb	90

Example Herd Ingredients – 54 lb DMI, 92 lb Milk

Ingredient	DM amount, lb
Corn silage	17
Grass haylage	12
Dry hay	3
Ground corn	13.3
Soybean Meal	4.0
Roasted soybean	1.6
Cane molasses	0.46
Sugar	0.70
Provaal	0.44
Urea	0.097
Meta smart	0.012
Min. & Vitamins	1.59
Total	54.2

Example herd B - 53 lb DMI, 89 lb milk

% DM basis	CNCPS v6.1 output
CP	15.0
RDP	8.1
Sol CP	4.9 (30)
Rumen NH3, % req	104
Rumen peptides, % req	110
NDF	31.5
Lys:Met	2.8
ME allowable, lb	94
MP allowable, lb	98

Example herd B - 53 lb DMI, 89 lb milk

Ingredient	DM amount, lb
Corn silage	19.5
Alfalfa hay	9.8
Wheat straw	1.0
Flaked corn	6.2
Ground corn	6.2
Soybean Meal	1.9
Amino Plus	2.9
Wheat midds	2.0
Citrus pulp	2.0
Sugar	0.50
Provaal	0.23
Energy Booster	0.35
Urea	0.13
Smartamine and Alimet	0.03
Min. & Vitamins	1.3

Herd C – High group

Current stats

DMI	50 lb
CP	15.8%
NDF	30.2%
Actual milk	84 lb
ME allowable	83.5 lb
MP allowable	91 lb
True protein	3.1%
Fat	3.7%
Met	2.3% MP
Lys	6.77% MP

Herd C – High group

Ration Fed				
			DM	AF
Ingredient	$/hd	%DM	lbs/day	lbs/day
2009 2nd Haylage-CNCPS-04051	0.42	44.4	5.98	13.49
Canola Meal Solvent-CNCPS-02006	0.53	90.2	3.28	3.64
Corn Grain Ground Medium-CNCPS-01040	0.75	88.0	8.83	10.04
2008 Corn Silage-CNCPS-03019	1.32	31.1	21.94	70.66
Citrus Pulp Dry-CNCPS-01031	0.54	88.6	4.07	4.59
Soybean Rolled Roasted-CNCPS-02028	0.24	93.2	1.09	1.17
Old SHF Lact-CNCPS-C071546	0.00	91.8	4.81	5.24

Concentrate mix contains Smartamine and Alimet

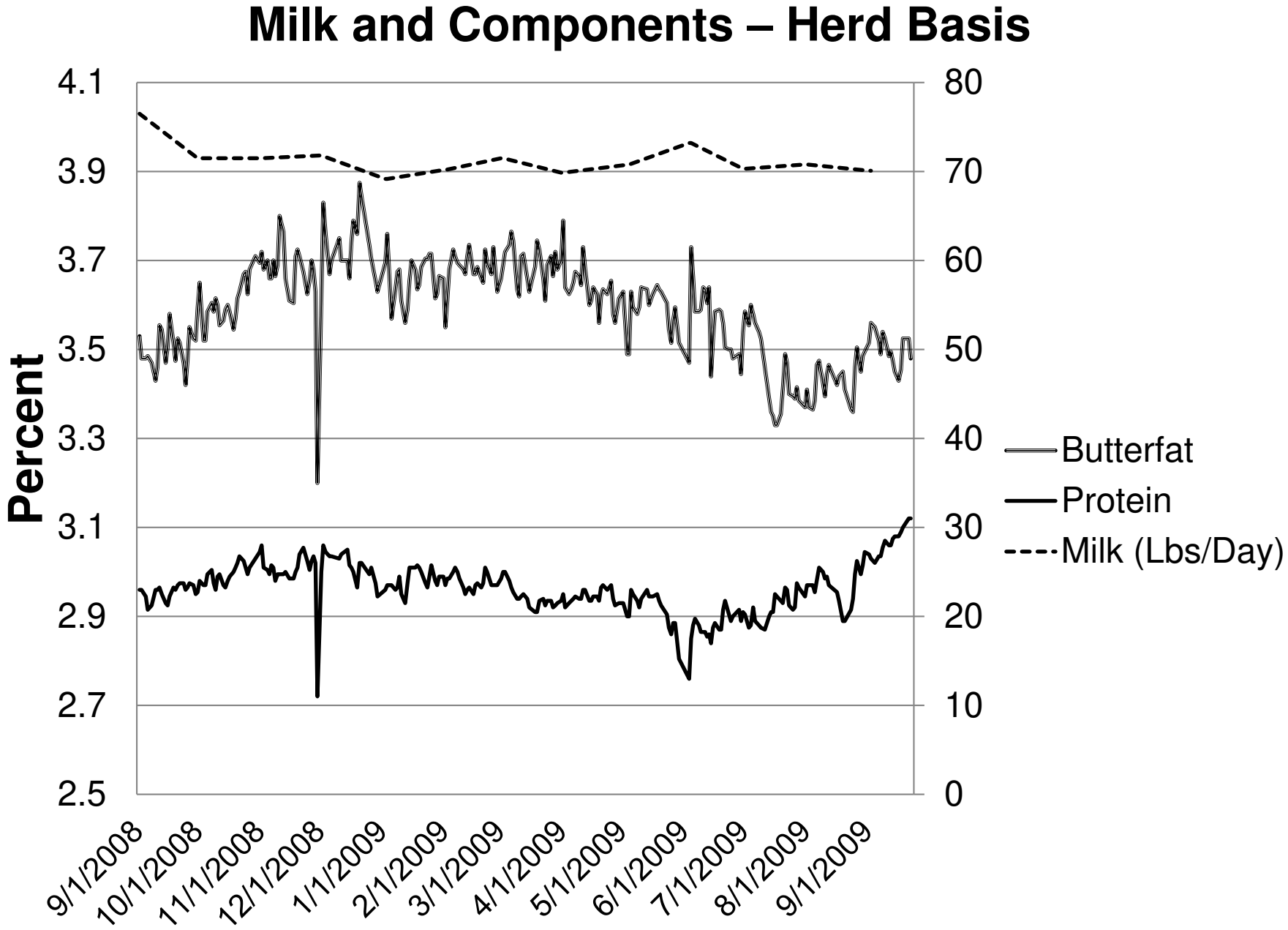
Herd C – High group

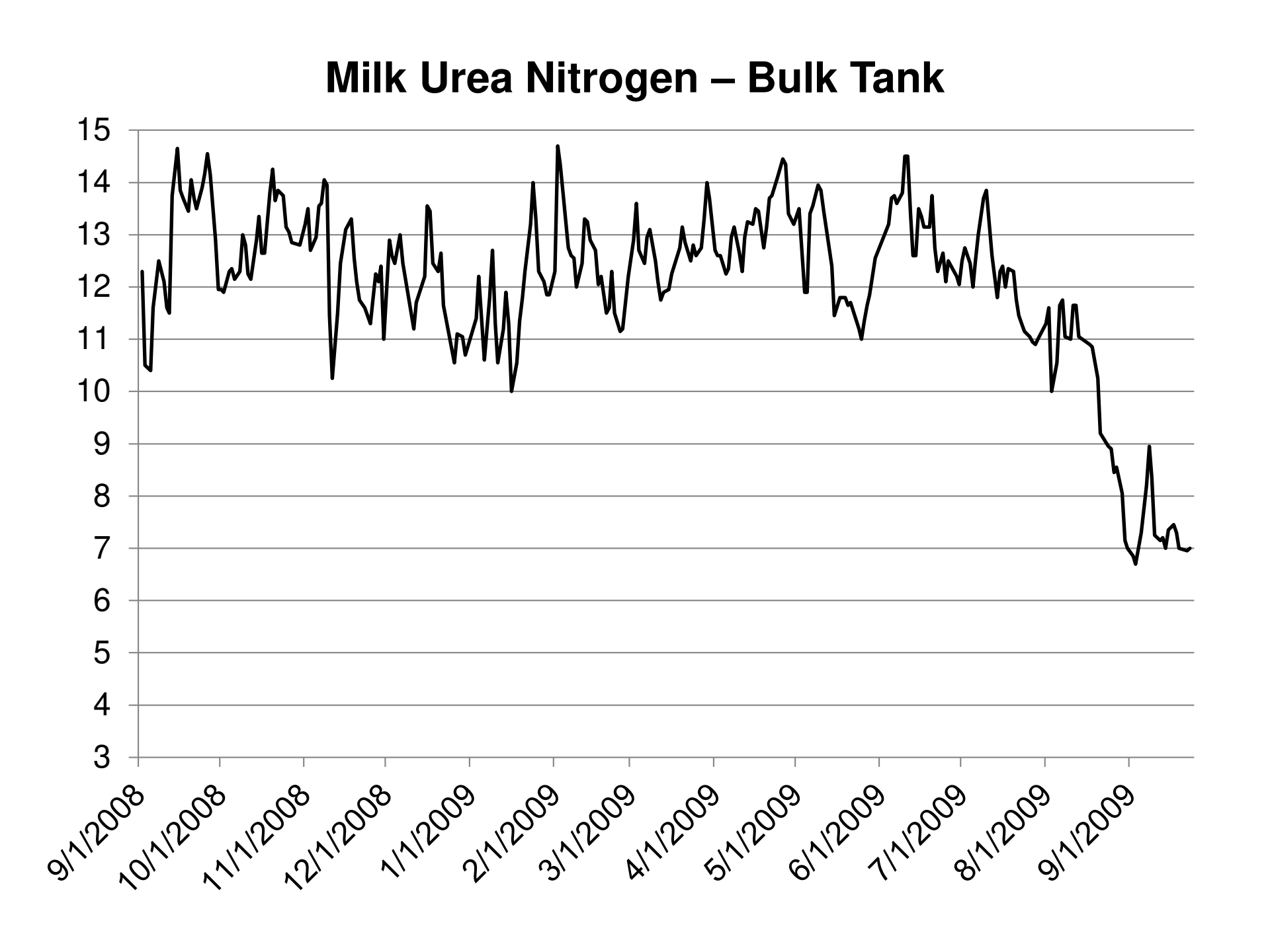
Nutrient Balances		
Nutrient	Balance	%Req
ME	-0.5 Mcal	99
MP	136 g	105
Rum. NH3-N	35 g	122
Rum. Pep-N	9 g	105
peNDF	-0.9 lbs	93
MP Lys	44.1 g	131.8
MP Met	20.3 g	148.5
Ca	46.64 g	169%
P	2.31 g	104%

Lys	6.77 %MP
Met	2.30 %MP
Lys:Met	2.94

Herd C – High group

Fecal N	217 g
Urine N	154 g
Total Manure N	371 g
Productive N/Total N	35%
Productive N/Urinary N	1.30:1
Manure N/Total N	65%


Milk and Components – Herd Basis
Percent
4.1
3.9
3.7
3.5
3.3
3.1
2.9
2.7
2.5
80
70
60
50
40
30
20
10
0
9/1/2008
10/1/2008
11/1/2008
12/1/2008
1/1/2009
2/1/2009
3/1/2009
4/1/2009
5/1/2009
6/1/2009
7/1/2009
8/1/2009
9/1/2009
Butterfat
Protein
Milk (Lbs/Day)


Milk Urea Nitrogen – Bulk Tank
15
14
13
12
11
10
9
8
7
6
5
4
3
9/1/2008
10/1/2008
11/1/2008
12/1/2008
1/1/2009
2/1/2009
3/1/2009
4/1/2009
5/1/2009
6/1/2009
7/1/2009
8/1/2009
9/1/2009

Herd Example - D
1050 cows – High group characterized

1,542 lb BW

~100 DIM

59.5 lb DMI

15.8% CP

60% Forage

120 lb milk/d

Milk:Feed (Feed efficiency): 1.99

Nutrient Balances		
Nutrient	Balance	%Req
ME	3.5 Mcal	105
MP	64 g	102
NH3-N	33 g	117
Peptide-N	-15 g	93
peNDF	0.2 kg	103
Lys	45.4 g	125.6
Met	35.9 g	167.1
Ca	-8.64 g	89%
P	-2.97 g	96%
Mg	1.27 g	114%
K	52.71 g	120%

Total ME Avail.	74.61 Mcal/day
ME Milk Prod	56.0 kg/day
MP Milk Prod	54.0 kg/day
MUN (mg/dl)	11.1
Urea Cost	0.07 Mcal
Rumen pH	6.43
Milk:Feed	1.99
IOFC ($/Head)	8.61
IOPurFC ($/Head)	10.91

Excretion	
Fecal	49 kg
Urine	20 kg
TotalManure	69 kg
Fecal N	245 g
Urine N	196 g
Total Manure N	441 g
Productive N/Total N	38%
Productive N/Urinary N	1.33:1
Manure N/Total N	62%
Fecal P	54.2 g
Urine P	1.4 g
Total Manure P	55.6 g
Productive P/Total P	43%
Manure P/Total P	57%
CH4 (Mcal)	6.67
CH4 (L)	728.22

Diet Concentrations	
NFC	41.5 %DM
CHO Ferm.	41.2 %DM
	57.7 %CHO
NDF Ferm.	9.4 %DM
	30.5 %NDF
Starch Ferm.	21.9 %DM
	76.2 %Starch
Sol. Fiber Ferm.	6.3 %DM
	84.8 %Sol Fiber
Sugar Ferm.	3.6 %DM
	67.3 %Sugar
Sugar (A4)	5.4 %DM
Starch (B1)	28.7 %DM
Sol Fiber (B2)	7.4 %DM
Ferm. Fiber (B3)	21.2 %DM
Lig * 2.4 (C)	6.7 %DM
NDF	30.90 %DM
Forage NDF	78.46 %NDF
Forage NDF	0.94 %FBW
EE	5.1 %DM
LCFA	4.1 %DM
CP	15.85 %DM
RDP	8.08 %DM
Lys	6.74 %MP
Met	2.71 %MP
Lys:Met	2.49 %MP
TDN	71.6 %DM
ME	2.75 Mcal/kg
NEl	1.77 Mcal/kg
Forage	60.1 %DM
DM	44.7 %DM
DCAD1	138 meq/kg
DCAD2	97 meq/kg
Monensin	0.00 mg/hd
Monensin	0.00 ppm

Herd Example - Herd D

NDF, %DM: 30.9

Starch, % DM: 28.7

Sugar, % DM: 5.4

Ether extract, % DM: 5.1

%Forage: 60.1

Forage NDF, %BW: 0.94

Diet Concentrations	
NFC	41.5 %DM
CHO Ferm.	41.2 %DM
	57.7 %CHO
NDF Ferm.	9.4 %DM
	30.5 %NDF
Starch Ferm.	21.9 %DM
	76.2 %Starch
Sol. Fiber Ferm.	6.3 %DM
	84.8 %Sol Fiber
Sugar Ferm.	3.6 %DM
	67.3 %Sugar
Sugar (A4)	5.4 %DM
Starch (B1)	28.7 %DM
Sol Fiber (B2)	7.4 %DM
Ferm. Fiber (B3)	21.2 %DM
Lig * 2.4 (C)	6.7 %DM
NDF	30.90 %DM
Forage NDF	78.46 %NDF
Forage NDF	0.94 %FBW
EE	5.1 %DM
LCFA	4.1 %DM
CP	15.85 %DM
RDP	8.08 %DM
Lys	6.74 %MP
Met	2.71 %MP
Lys:Met	2.49 %MP
TDN	71.6 %DM
ME	2.75 Mcal/kg
NEl	1.77 Mcal/kg
Forage	60.1 %DM

Herd Example - Herd D

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Productive P/Total P	43%
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CH4 (Mcal)	6.67
CH4 (L)	728.22

Productive N : N Intake – 38%!

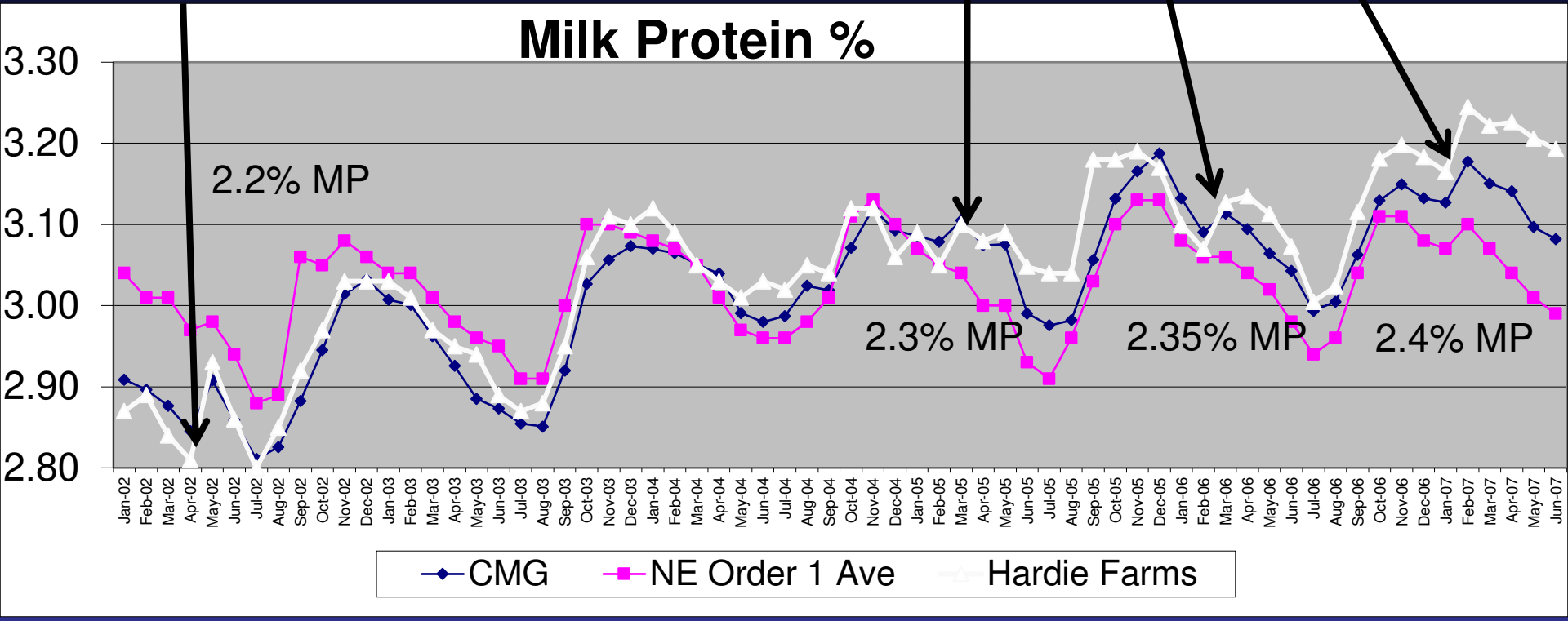
Remember – most farms are 25 to 30%

Productive N: Urinary N – 1.33:1

Most farms are 0.6 to 0.8:1

Increased in diet March ’05, March ’06 and February ‘07

First introduction of Smartamine ‘02



Conclusions:

With changes – model is much more sensitive to MP requirements and supply

We have the opportunity to lower protein intakes to reduce the environmental impact of dairy farms

The ability to formulate for amino acids is getting better especially for Met and Lys

We need to rework the models to reflect our new knowledge of protein and amino acid metabolism

We have data to move beyond Met and Lys and included an energy component