Benchmarking High Producing Herds

Robert M. Kaiser[1] and Randy D. Shaver[2]

[1]Department of Dairy Science, College of Agricultural and Life Sciences, University of Wisconsin, 1675 Observatory Drive, Madison, WI 53706 Email: robert.kaiser @ces,uwex.edu
[2]Email: rdshaver@facstaff.wisc.edu

Take Home Messages

Feeding and management practices of six Wisconsin high-producing, freestall-parlor herds were surveyed during the winter of 2004.

- Number of milking cows ranged from 276 to 566 and rolling herd average (RHA) for milk ranged from 29,055 to 31,195 pounds.
- Milking frequency was 3x for four herds, 4x for one herd, and 4x and 3x for one herd.
- Four of the six herds used self-locking head gates and sand for bedding.
- Bunk space and stall stocking density for high-production groups ranged from 1.2 to 2.1 ft per cow and 100 to 117% across the herds.
- All herds maintained two dry cow groups; three herds fed one dry cow diet.
- All herds fed total mixed rations (TMR).
- Forage in diets for high-production groups ranged from 45 to 53% (DM basis) and was comprised of 41 to 68% corn silage (DM basis).
- Herd managers reported their respective farm management teams placed special emphasis on harvesting and conserving excellent quality forages.
- Dietary crude protein (CP) and phosphorous (P) formulations of high-production groups ranged from 17.0 to 18.5% and 0.37 to 0.41% (DM basis), respectively, across the herds.
- Analysis of high group TMR samples for CP and P ranged from 16.7 to 18.4% and 0.35 to 0.44% (DM basis), respectively, across the herds.
- Without exception, high-group rations formulated by nutritionists were nearly identical to rations delivered to cows by farm laborers.

WCDS Advances in Dairy Technology (2006) Volume 18:179-190

- Estimated average feed efficiency (bulk-tank milk/feed, lb/lb) and feed cost per hundredweight of bulk-tank milk ranged from 1.57 to 1.70 and $4.01 to $4.50, respectively, across the herds.

Introduction and General Information

At year-end 2003, AgSource DHI (AgSource Cooperative Service, Verona, WI) reported 37 Wisconsin dairy herds with RHA milk ranging from 30,000 to about 34,000 pounds per cow. The purpose of this paper is to report on a survey of feeding and management practices that was conducted in a subset of these high-producing dairy herds. Herds included in this survey (Hensen Brothers Dairy, Inc., Waunakee = 1; Koepke Farms, Inc., Oconomowoc = 2; Rosy Lane Holsteins, LLC, Watertown = 3; Crave Brothers Farm, Waterloo = 4; SoFine Bovines, LLC, Westfield = 5; and Oechsner Farms, Brownsville = 6) were selected based on authors' familiarity with the dairy herd manager and (or) the herd's nutrition consultant along with the farm's proximity to Madison, WI. Readers are reminded that this survey represents a snapshot in time, with herd visits and data collection occurring in January and February of 2004.

Herd managers and their respective nutritionists were interviewed during our herd visits utilizing a common survey form designed to collect information on feeding and management practices. All six herds were enrolled in DHI milk testing programs and "Herd Summary" sheets were a major data source. Bunk space and water parameters were calculated after making physical measurements and counting cows within pens. Samples of corn silage, alfalfa silage, corn grain and high group TMR were obtained during our visits and submitted to commercial feed testing labs for analyses. Herd nutritionists provided diet ingredient and nutrient specifications along with corresponding forage test results.

General herd information is presented in Table 1. The number of milking cows ranged from 276 to 566 and RHA milk ranged from 29,055 to 31,195 across the herds. Milking frequency was 3x for four herds, 4x for one herd, and 4x and 3x for one herd. Bulk tank milk parameters (average pounds per cow, percent fat and protein, and SCC) were similar across herds. Within herd use of BST ranged from 63% to 83%, which represents pre-allocation usage. Milking heifers ranged from 28 to 40% of the cow population and heifer calving age ranged from 22 to 25 months across herds.

General feeding and management information was collected for each dry and lactating cow group, which included a total of forty-two distinct groups over the six herds. Table 2 includes selected data for the group that managers identified as high milk production cows. Free-stall configuration for cows in high-production groups was equally split between 2-row and 3-row and stall stocking-densities ranged from 100 to 117% across herds. Four of the six

herds used self-locking head gates and sand for bedding. All herds fed TMR diets once a day and bunk space for high-production groups ranged from 1.2 to 2.1 feet per cow. TMR of four herds was delivered to flat feeding surfaces (Drive Thru) and pushed up from 2x to 12x daily and TMR of two herds was fed in manger style feed bunks (Enclosed Drive-By). Four of six herds fed to a zero percent feed refusal target and two herds fed for a 3 – 5% feed refusal target.

Table 1. General information on six selected Wisconsin high-producing freestall-parlor dairy herds.

Survey Herd	1	2	3	4	5	6
DHI No.Cows Milking	291	276	482	566	398	364
DHI RHA Milk, lb	30,780	31,195	31,192	29,055	30,405	30,284
DHI MLM, lb/cow	101	100	100	90	103	94
DHI Cow Peak, lb/cow	130	134	142	123	134	119
DHI Heifer Peak, lb/cow	95	96	106	94	96	88
Times Milked	3x	3x,4x	3x	4x	3x	3x
Bulk Tank: Milk, lb/cow	90	92	90	90	92	94
Milk Fat, %	3.8	3.7	3.8	3.7	3.8	3.7
Milk True Protein, %	3.0	3.0	3.0	3.0	3.0	3.0
SCC, cells/ml (x 1,000)	140	119	160	225	181	218
DIM	179	174	184	195	198	173
BST, % of Herd	75	70	83	68	63	75
% DHI Annual Turnover	18	44	34	38	34	34
DHI Average Age, mo	41	41	40	41	41	48
% Milking Heifers	34	38	38	40	34	28
Heifer Calving Age, mo	23	23	22	23	25	22
Target Days Dry	55	55	50	60	45	55
DHI Days Dry	64	66	69	75	61	53
(% > 70 Days Dry)	19	20	21	26	14	9
No. of Dry Cow Groups	2	2	2	2	2	2
No. of Dry Cow Diets	2	1	1	1	2	2
Days in Pre-Fresh Target	21	21	14	21	21	14-21
Post-Fresh Group	Yes	Yes	Yes	Yes	Yes	Yes
Days in Post-Fresh Target	14	5-15	25-30	3-6	0-60	14-21
Times Post-Fresh Milked	3x	3x	3x	4x	3x	3x
No of Milking Cow Groups (Ex. Post-Fresh Group)	3	4	5	5	2	4
No. of Milking Cow Diets	3	4	1	1	2	2
Total Mixed Ration	Yes	Yes	Yes	Yes	Yes	Yes
TMR Inventory Program	No	Yes	Yes	No	No	No

DHI = Dairy Herd Improvement, RHA = rolling herd average, DIM = days in milk, MLM = management level milk (adjusted for days in milk and parity), SCC = somatic cell count, BST = bovine somatotropin, and TMR = total mixed ration.

Table 2. Management information of high milk production groups on six selected Wisconsin freeststall-parlor dairy herds.

Survey Herd	1	2	3	4	5	6
Freestall Configuration	2-row	3-row	3-row	2-row	3-row	2-row
Stall Stocking Density (%)	106	100	115	100	104	117
Self-locking Head Gates	No	No	Yes	Yes	Yes	Yes
Stall Base	Mattress	Sand	Sand	Dirt, Tires	Sand	Clay
Stall Bedding	Sawdust	Sand	Sand	Oat hulls	Sand	Sand
Stall width (inches)	48	48	45	48	48	46
Bunk Space (linear feet)	2.1	1.7	1.2	2.0	1.4	1.9
Bunk Type	Enclosed Drive-By	Enclosed Drive-By	Drive-Thru	Drive-Thru	Drive-Thru	Drive-Thru
Times Fed	1x	1x	1x	1x	1x	1x
Times Feed Pushed-Up	0	0	2x	4x	7x	12x
No. Waterers in pen	2	2	2	3	3	2
Farthest In-pen Distance To Water (feet)	88	50	53	60	48	90
Summer Ventilation	Tunnel	Fans/ Mister	Fans	Fans	Fans	Fans

■ Forage Programs

Corn silage and alfalfa silage were utilized in the diets of all cows. Dry hay was included in 3 of 6 herds' milking and dry cow diets, while wheat straw was included in 2 of 6 herds' milking cow diets and 3 of 6 herds' dry cow diets. Samples of corn silage, alfalfa silage, corn and high group TMR were obtained during our farm visits. Fermentation profile analysis of corn silage, alfalfa silage and high moisture corn samples were performed using high pressure liquid chromatography (HPLC) by Dairyland Laboratories (DLL) Arcadia, WI. Particle sizes of dry and high-moisture corn samples and corn silage processing score (CSPS) on corn silage samples were also determined at DLL. At the University of Wisconsin Soil and Forage Analysis Lab(UWFTL), Marshfield, WI, analyses of corn silage and alfalfa silage samples were performed via UW Recommended testing packages [1, 2] and particle size was

[1] UW Recommended testing package for corn silage includes, standard Schwab/Shaver NIR with wet chemistry NDFD, NDF and ash for summative energy predictions (NRC 2001)

[2] UW Recommended testing package for alfalfa silage includes, standard NIR with wet chemistry NDFD, NDF and ash for summative energy predictions (NRC 2001)

determined using the Penn State-Nasco shaker box. The RUP (rumen undegradable protein) of alfalfa silage was determined at UWFTL using NIR calibration from ruminal in situ dacron bag data. Also, at the UWFTL wet chemistry "TMR Quality Control" analyses [3] and particle size analyses using the Penn State-Nasco shaker box were performed on high-production group TMR's.

Corn silage data are reported in Table 3. Corn silage hybrids varied across herds as follows: dual purpose (4 herds), brown mid-rib (1 herd), and dual purpose and leafy (1 herd). Across farms corn silage was stored primarily in horizontal silos (bags, bunkers or piles). Corn silage on all farms was kernel processed at harvest and lactobacillus (LAB) inoculants were used on 4 of the 6 farms while a liquid urea/molasses additive was used on one farm. Nutrient analyses, particle size distribution and CSPS appear by farm, and a composite average of all samples can be found in the far-right column. The CSPS, developed by the US Dairy Forage Research Center, assesses the degree of damage done to kernels in corn silage with the kernel processor and is the percentage of the starch in corn silage that passes thru a coarse (4.75 mm) screen. A CSPS greater than 70% is considered optimum; a CSPS from 50 to 70%, average; and a CSPS less than 50%, poorly processed. Composite corn silage particle size values averaged 18% coarse (range 8 – 32), 68% medium (range 59 – 74) and 14% fine (range 9 – 18); and mean particle length (MPL) averaged 0.42 inches (range 0.34 – 0.51).

Alfalfa silage data are reported in Table 4. Alfalfa silage harvest routines were similar across herds with five of six herds on 4x cutting schedules. Across farms alfalfa silage was stored in bags (4 of 9), bunkers (3 of 9) and upright silos (2 of 9) for the nine samples obtained from open silos during our visits. All farms utilized LAB inoculants on alfalfa silage. Nutrient analyses, particle size distribution and fermentation profiles for each of the nine alfalfa samples by farm appear in Table 4, along with a composite average in the far-right column. Composite alfalfa silage particle size values averaged 20% coarse (range 5 – 34), 61% medium (range 53 – 71) and 19% fine (range 10 – 35); and MPL averaged 0.38 inches (range 0.22 – 0.53). In general, corn and alfalfa silage quality parameters were representative of the 2003 growing season and supported high levels of milk production across survey herds.

[3] Wet chemistry analyses for DM, CP, fat, NDFD, NDF, Ca, P, Mg, K and ash with summative energy predictions (NRC 2001)

Table 3. Corn silage data for six selected Wisconsin high-producing freestall-parlor dairy herds.

Survey Herd	1	2	3	4	5	6	Ave.
Hybrid Type	Dual Purpose & Leafy	Dual Purpose	Dual Purpose	Brown Mid Rib (bm3)	Dual Purpose	Dual Purpose	
Silage Storage	Bunkers	Bags & Uprights	Piles	Bunkers	Bunkers	Bunkers & Bags	
Kernel Processed	Yes	Yes	Yes	Yes	Yes	Yes	
Additive	LAB	LAB	LAB	LAB	No	Urea-Mol.	
DM%	29	36	30	36	36	31	33
CP,%DMB	8.7	8.0	7.9	8.1	8.4	10.8	8.7
NDF,%DMB	49.0	42.8	45.5	45.6	39.3	40.8	43.8
NDFD (%of NDF)	61	62	62	67	63	61	63
NFC %DMB	30.9	42.8	37.8	37.7	43.9	41.4	39.1
Ash, %DMB	9.5	4.8	7.0	6.7	6.5	5.2	6.6
TDN 1x %DMB	65.8	73.4	70.2	72.5	73.0	73.2	71.4
Particle Size (PS/Nasco)							
Coarse Screen	16	19	15	21	8	32	18
Medium Screen	70	63	72	68	74	59	68
Fine Screen	14	18	13	11	18	9	14
MPL (inches)	0.42	0.38	0.41	0.45	0.34	0.51	0.42
CSPS	68	77	63	47	56	41	59
Fermentation Profiles							
pH	3.7	3.8	3.8	3.7	3.7	3.9	3.8
Lactate % DMB	3.6	6.8	6.2	4.5	4.1	3.3	4.7
Acetate % DMB	0.38	1.0	3.3	2.6	2.4	3.1	2.0
Lactate, % of Total	91	88	65	64	57	52	70
Ammonia, % of CP	3.3	12.0	13.0	14.0	18.7	36.1	16
Starch % DMB	24.9	31.2	25.2	27.5	32.1	27.0	28

DM=dry matter, CP=crude protein, DMB=dry matter basis, NDF=neutral detergent fiber, NDFD=NDF digestibility, NFC=nonfiber carbohydrate, TDN 1x=total digestible nutrients at 1x maintenance, PS/Nasco= Penn State-Nasco shaker box, MPL=mean particle length, CSPS=CS processing score

Table 4. Alfalfa silage data for six selected Wisconsin high-producing freestall-parlor dairy herds.

Survey Herd	1	2 A	2 B	3	4	5 A	5 B	6 A	6 B	Ave.
Cutting Schedule	4X	4X	4X	3, 4X	4X	4X	4X	4X	4X	
Storage	Bunkers	Bags & Uprights	Bags & Uprights	Bags	Bags	Bunkers	Bunkers	Bags	Bags	
Additive	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	LAB	
DM %	49	52	31	32	40	28	44	39	39	39
CP, %DMB	23.2	18.6	21.9	20.1	23.8	25.5	20.7	18.6	20.2	21
RUP (% of CP)	20	20	20	20	16	18	17	21	20	19
NDF, %DMB	36.1	35.3	39.2	41.7	36.4	36.9	35.4	40.8	40.8	38
NDFD (% of NDF)	45	40	50	46	58	39	42	42	43	45
NFC % DMB	26.7	35.3	26.3	24.8	25.7	23.8	31.0	28.4	27.6	28
Ash, % DMB	14.3	10.3	11.1	12.1	13.4	13.3	11.0	11.2	10.7	12
TDN 1x, %DMB	60.3	62.9	62.8	59.1	64.7	58.2	61.8	59.3	60.2	61
Particle Size (PS/Nasco)										
Coarse Screen	14	5	5	25	14	34	14	32	32	20
Medium Screen	65	60	70	55	66	56	71	55	53	61
Fine Screen	21	35	25	20	20	10	15	13	15	19
MPL (inches)	0.32	0.22	0.29	0.39	0.33	0.53	0.38	0.47	0.46	0.38
Fermentation Profiles										
pH	4.4	4.4	4.9	4.5	4.5	5.3	4.3	4.3	4.2	4.5
Lactate %DMB	2.9	2.7	3.1	5.2	5.0	0.6	4.2	4.3	5.2	3.7
Acetate %DMB	2.6	2.6	4.4	2.7	1.3	5.5	0.4	1.5	0.8	2.4
Butyrate %DMB	--	--	--	--	--	1.0	--	--	--	0.1
Lactate, % of Total	52	51	39	66	79	8	91	74	87	61
Ammonia, % of CP	10.8	12.6	21.6	19.3	12.3	44.0	14.5	17.0	13.6	18

DM=dry matter, CP=crude protein, DMB=dry matter basis, RUP=ruminal undegraded protein, NDF=neutral detergent fiber, NDFD=NDF digestibility, NFC=nonfiber carbohydrate, TDN 1x=total digestible nutrients at 1x maintenance, PS/Nasco= Penn State-Nasco shaker box, MPL=mean particle length

Feed Ingredient Usage

Feed ingredient usage is detailed in Table 5. The data provided in the table includes the number of herds that were feeding each ingredient listed to either milking-cow or dry-cow groups along with ingredient inclusion rate ranges across groups and herds expressed as percentages of diet dry matter. Readers interested in how this would translate to amounts fed for comparative purposes could multiply the percentage inclusion rates for a specific ingredient times 50 pounds of DM intake for milking cows and 30 pounds of DM intake for dry cows to obtain some rough approximations.

For high-production groups across the six herds forage comprised 45 to 53% of diet DM and corn silage comprised 41 to 68% of forage DM, and for dry-cow groups “bulky” forages were included in the diets (wheat straw, 3 of 6 herds; hay, 3 of 6 herds; corn stalklage, 1 of 6 herds; oatlage, 2 of 6 herds). For milking cow diets, high-moisture shelled corn (74 to 76% DM) was fed solely in three herds, dry shelled corn solely in two herds, and a mixture was fed in one herd. Whole cottonseed was fed to milking cows in all herds, and inclusion rates ranged from 3 to 10% of diet DM across groups and herds. Soybean meal, roasted soybeans, and blood meal were the most frequently used protein supplements. Urea (1 to 3 ounces per cow per day) was included in milking cow diets in 3 of the 6 herds. Supplemental fat sources included whole cottonseed (all six herds), roasted soybeans (4 of 6 herds), distiller’s dried grain (2 of 6 herds), tallow (3 of 6 herds), and rumen-inert fat (3 of 6 herds). Diets for dry-cow groups contained high-fiber byproducts in all six herds.

Herds with multiple milking-cow diets tended to target feed additive usage to early lactation and high-producing cows. The number of milking-cow diets fed within herds ranged from 1 to 4. All six herds maintained a post-fresh group with days in milk averaging 20 (range 5 to 60 DIM) across herds, but only two herds fed a special diet to their post-fresh group. Feed additive usage in diets fed to either one dry group or a far-off dry group (all six herds) or a close-up dry group (3 of 6 herds; 14 to 21 days targeted pre-fresh) is summarized in other referenced papers and on the Dairy Science website. Of the three herds with a special diet for their close-up dry group, all fed anionic salt and yeast products.

Table 5. Feed ingredients used in diets fed on six selected Wisconsin high-producing freestall-parlor dairy herds.

	Milking Cow Diets		Dry Cow Diets	
Ingredient	No. of Herds Feeding	Range % of DM	No. of Herds Feeding	Range % of DM
Wheat Straw	2	1 – 2	3	3 – 10
Corn Stalklage	--	--	1	32
Oatlage	--	--	2	14 – 38
Hay	3	3 – 18	3	3 – 16
Haylage	6	9 – 31	6	2 – 57
Corn Silage	6	15 – 34	6	6 – 36
Dry Corn	3	8 – 26	1	9
High-Moisture Corn	4	10 – 30	3	2 – 11
Corn Starch	1	1	--	--
Corn Gluten Feed	3	1 – 13	--	--
DDGS	2	1 – 4	--	--
Whole Cottonseed	6	3 – 10	1	4
Oat Hulls	--	--	1	6
Soy Hulls	1	7	2	5 – 30
Beet Pulp	1	6 – 9	2	8 – 10
Liquid Feed Supplement	2	2 – 3	1	3
Liquid Whey	1	5	--	--
Soybean Meal, solvent	5	5 – 7	2	4 – 5
Soybean Meal, expeller	1	4 – 5	1	4
Roasted Soybeans	4	2 – 11	--	--
Linseed Meal	1	3 – 5	--	--
Corn Gluten Meal	2	0.5 – 1	--	--
Blood Meal	4	0.2 – 1	--	--
Fish Meal	1	0.6 – 1	--	--
Feather Meal	1	0.3 – 1	--	--
Formula Feed	1	17 – 21	1	3 – 9
Urea	3	0.1 – 0.3	1	0.1 – 0.2
Tallow	3	0.2 – 0.6	--	--
Rumen-Inert Fat	3	0.4 – 1	1	1

■ High-Group Diet Evaluations

Nutrient concentrations of high-group diets as formulated by the nutritionists are presented in Table 6. Compared with our summaries of high-producing herd diets over the past 10 to 15 years, these diets were formulated with more modest concentrations of crude protein (17.0 – 18.5% versus 18.0 – 19.5%) and fat (4.6 – 6.4% of DM versus 7.0 – 7.5% of DM) and lower concentrations of phosphorus (0.37 – 0.41% of DM versus 0.50 – 0.60% of DM). The lowering of formulation concentrations for crude protein and phosphorus in these high-producing herds underscores the emphasis being placed by the dairy industry on reducing nitrogen and phosphorus excretion.

Results of the quality control analysis of the TMR upon delivery to the feed bunk are also included in Table 6 and were nearly identical to formulated diets for nutrient concentrations. This indicates herd managers and their respective nutrition consultants were doing a good job with forage sampling/testing, feed mixing, and feed delivery. Neutral detergent fiber (NDF) digestibility measured on the TMR samples averaged 60% of NDF across the six herds and reflects the in-vitro digestibility of all NDF in the diet inclusive of both forage and high-fiber byproduct NDF. Because the non-fiber carbohydrate (NFC) concentrations were calculated using the equation that corrects for crude protein contained in the NDF, the values presented here may be 2 to 3% units higher than what would be considered normal for some readers that are comparing to NFC concentrations calculated without this correction. Using the Penn State-Nasco shaker box and averaging across the six herds, coarse, medium and fine particle size percentages of herd TMR's were 10%, 40% and 50%, respectively.

Dry matter intake ranges for the milking cow groups within herds are presented in Table 7. The values that appear in parentheses represent the overall average dry matter intake for the milking cows within each herd, and average 56 pounds per cow per day with a range of 54 to 58 pounds per cow per day across the six herds.

Feed efficiency and feed cost data were calculated on bulk tank milk, rather than DHI milk yield. Average herd DM intake was used to calculate feed efficiency (lb milk produced per lb DM consumed) which averaged 1.63 across the six herds. Feed costs were calculated using common corn silage, alfalfa silage, alfalfa hay, and corn grain prices ($70 per ton DM, $70 per ton DM, $120 per ton as fed, and $2.50 per bushel, respectively) across herds, and prices for all other dietary ingredients were as provided by nutritionists and (or) herd managers and reflect January-February, 2004 Midwest feed ingredient prices. Feed costs for the milking herd averaged $4.25 per hundredweight of milk produced across the six herds.

Using the NRC (2001) model, our evaluation of high-group diet composition and dry matter intake showed reasonable agreement between model predicted net-energy and metabolizable protein allowable milk yield and the observed milk yield when averaged across the six herds. Results of the model suggested that 5 of the 6 herds may have benefited in milk protein percentage and yield from improving the methionine status of their diets.

Table 6. Nutritionist formulations and results of quality control analysis of high–group TMR (TMR-QC) fed on six selected Wisconsin freestall-parlor dairy herds.

Nutrient (DM basis)	Formulations	Average of TMR QC	Range of TMR-QC
Dry Matter, %		48.8	40 – 57
Crude Protein, %	17.0 – 18.5	17.7	16.7 – 18.4
RUP, % of CP	35 – 38		
Neutral Detergent Fiber, %	26.2 – 32.3	29.5	27.3 – 31.0
NDF-forage, %	18.0 – 22.5		
NDF Digestibility, % of NDF		60	51 – 67
Non-fiber Carbohydrate, %	38.1 – 43.5	40.8	38.2 – 42.8
Fat, %	4.6 – 6.4	5.5	5 – 6
TDN_{1x}, %	75 – 77		
Calcium, %	0.84 – 1.03	0.95	0.71 – 1.07
Phosphorus, %	0.37 – 0.41	0.39	0.35 – 0.44
Magnesium, %	0.33 – 0.39	0.35	0.29 – 0.38
Potassium, %	1.16 – 1.60	1.51	1.35 – 1.63
Salt, % added	0.22 – 0.50		
Suppl. Vitamin A, IU/lb.	2227 – 4224		
Suppl. Vitamin D, IU/lb.	557 – 1086		
Suppl. Vitamin E, IU/lb.	10 – 33		
Particle Size			
% Coarse		10	7 – 15
% Medium		40	32 – 54
% Fine		50	38 – 58

Table 7. Dry matter intake of milking cow groups on six selected Wisconsin high-producing freestall-parlor dairy herds.

Survey Herd	1	2	3	4	5	6
lb DM/day	45 – 60 (54)[1]	52 – 62 (58)	(55)	51 – 62 (56)	44 – 68 (58)	45 – 58 (56)

[1]The values in parentheses represent the overall average dry matter intake for the milking cows within each herd.

Reference:

Results of this survey were reported at the 2004 Tri-State Dairy Nutrition Conference, the 2004 Midwest Dairy Herd Health Conference and in a four-part Hoard's Dairyman series (October 25, November and December 10, 2004; January 10, 2005). Over all herds, a total of 2,757 independent observations were collected or calculated, and recorded. Readers interested in perusing complete survey details are directed to the UW-Madison Dairy Science Departments' Website at www.wisc.edu/dysci/.