

## 30,000 Pounds and Beyond... A Survey of Six of Wisconsin's Top Producing Dairy Herds

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As of Dec. 31, 1997, thirteen Wisconsin dairy herds enrolled in Ag Source DHI registered rolling herd averages exceeding 30,000 pounds of milk. In an attempt to determine what makes these herds successful, six herds were surveyed to outline their housing, feeding and management practices. The herds surveyed included:

- Jo-De-Bran Holsteins (Joe Brant), Cuba City (Grant County)
- Harmony-Ho (Ralph, Jr. & Sharon Bredl), Stratford (Marathon County)
- Bri-Tine Holsteins (Brian and Chris Costello), Malone (Fond du Lac County)
- DJ Holsteins (Jeff Kircher), Hammond (St. Croix County)
- Bethany Valley Holsteins (Ron Olson), Comstock (Barron County)
- R Green Acres, Inc. (Glen Raethke family), Pepin (Pepin County)

Following are the production averages for the surveyed farms.

### Average Production of Surveyed Farms

Milk: 31,179

Fat: 1108 (3.6%)

Protein: 993 (3.2%)

SCC: 216,000

Cows: 119

Herd size ranged from 52 to 300 Holstein cows with an average of 119. All six dairy producers utilized a total mixed ration. Four of the six herds milked three times daily. All but one of the farms housed their lactating cows in tie-stalls.

Individual data for each operation can be found in Table 1.

**TABLE 1: Production profile of surveyed herds as of December 31, 1997**  
Rolling Herd Average

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Name	Herd Size	Milk (lbs)	Fat (lbs)	%	Protein (lbs)	%	SCC
<b>Brant</b>	52	30,839	1169	3.8	956	3.1	75,000
<b>Bredl</b>	300	30,325	1026	3.4	966	3.2	130,000
<b>Costello</b>	75	30,498	1107	3.6	965	3.2	200,000
<b>Kircher</b>	100	32,685	1110	3.4	1031	3.2	264,000
<b>Olson</b>	95	31,252	1090	3.5	1015	3.3	275,000

<b>Raethke</b>	91	31,472	1143	3.6	1023	3.3	354,000
<b>Average</b>	119	31,179	1108	3.6	993	3.2	216,000

Four of the farms fed a one group TMR to the lactating cows. One farm utilized a two-year old and mature cow grouping strategy. The herd housed in freestalls had four groups of lactating cows, each being treated the same and containing cows of all ages.

All herds used bST as a management tool. The percent of milking cows on bST at any given time ranged from 40-95% with an average of 63%.

The average dry period for the six farms was 57 days with a range of 51 to 68. Reproductive efficiency is always a challenge in high producing herds. Average days to first AI was 84 days and ranged from 55 to 100. (Average days open was 141 days with a range from 120 to 154.) See Table 2.

**TABLE 2: Management Practices of Surveyed Herds**

Name	Times Milked	# of Lactating Cow Groups	bST	% of Herd on bST	Average Days Dry	Average Days to first AI	Average Days Open
<b>Brant</b>	2	1	Y	75	55	94	148
<b>Bredl</b>	3	4	Y	75	57	87	145
<b>Costello</b>	2	1	Y	50	68	72	127
<b>Kircher</b>	3	2	Y	40	51	95	153
<b>Olson</b>	3	1	Y	95	57	100	154
<b>Raethke</b>	3	1	Y	45	55	55	120
<b>Average</b>	-	-	Y	63	57	84	141

As indicated earlier, five of the six farms housed their lactating cows in tie stalls. Table 3 highlights housing specifics for dry, pre-fresh, post-fresh and lactating cows.

**TABLE 3: Dairy Housing**

	Dry	Pre-fresh	Post-fresh	Lactating
<b>Brant</b>	Freestalls	Freestalls	Tie-stalls	Tie-stalls
<b>Bredl</b>	Freestalls	Freestalls	Tie-stalls first 36 hours	Freestalls
<b>Costello</b>	Freestalls	Freestalls	Tie-stalls	Tie-stalls
<b>Kircher</b>	Bedded pack	Tie-stalls	Tie-stalls	Tie-stalls
<b>Olson</b>	Freestalls	Freestalls*	Tie-stalls	Tie-stalls
<b>Raethke</b>	Pasture-summer Bedded pack-winter	Tie-stalls	Tie-stalls	Tie-stalls

\*Moved to bedded pack for calving

Regardless of housing type, cow comfort is essential for healthy high producing cows. Research indicates that the blood flow through a cow's udder increases by 25 to 50 percent while she is lying down as compared to standing. This increased blood flow results in increased milk production. Cow mattresses were used by five of the six farms while the freestall herd used sand bedding. It should be noted that all of the farms that used mattresses, also bedded the stalls with an organic bedding material (i.e. chopped straw, sawdust or shavings). The addition of bedding over a mattress contributes to a clean dry environment while reducing the abrasiveness of the surface. Table 4 highlights the bedding sources used by the surveyed herds.

**TABLE 4: Bedding Sources Utilized on Survey Farms**

	Dry Cow	Steam Up	Post Fresh	Lactating
<b>Brant</b>	sand	sand	mattresses with sawdust	mattresses with sawdust
<b>Bredl</b>	sand	sand	sand	sand
<b>Costello</b>	not applicable	sand	not applicable	mattresses with chopped straw
<b>Kircher</b>	shavings	mattresses with shavings	mattresses with shavings	mattresses with shavings
<b>Olson</b>	chopped straw & sawdust	sawdust	mattresses with chopped straw & sawdust	mattresses with chopped straw & sawdust
<b>Raethke</b>	rye straw	mattresses with rye straw	not applicable	mattresses with rye straw

Herd health plays a significant role in the success of each dairy operation highlighted in this survey. Vaccinations and other routine injections for each herd are outlined in Table 5. The number of injections is listed in parentheses.

The intent of this paper is not to advocate specific herd health programs. However, producers should consult with their practicing veterinarian to set up a herd health program which meets their needs.

**TABLE 5: Herd Health Program and Frequency of Administration for Survey Farms<sup>1</sup>**

	9-way vaccine	Scourguard 3(K) C™	J5 Bacterin™	Clostridium	Endovac Bovi™	Muse™	K-99™
<b>Brant</b>	yes (2) <sup>2</sup>		yes (2)			no	yes
<b>Bredl</b>	yes (3)	yes (1)*	yes (3)			yes (2)	

<b>Costello</b>	yes		yes (2)	yes			
<b>Kircher</b>	yes (1)	yes (1)		yes (1)	yes (2)	yes (1)	yes (1)
<b>Olson</b>	yes	yes	yes (1)				
<b>Raethke</b>	yes (3)	yes (1)	yes (2)			yes (2)	

<sup>1</sup> Mention of specific products is for educational purposes only. No endorsement is implied or intended.

<sup>2</sup> Number in parenthesis indicates the number of injections per year.

\* Springing heifers receive two doses while second and greater lactation cows receive one dose.

Nutrition and feed management are critical to the success of any dairy operation. Attention to detail is often-times what leads to exceptional production and herd health.

Tables 6 through 9 describe the feeding and feed bunk management practices used by the surveyed farms. Each dairy operation provided all groups of cows a minimum of 24" of bunk space per cow. Feed was available at least 23 hours each day.

Feeding schedules for milking cows varied from one to three times daily. In many cases, the number of times feed is pushed up to cows is more critical than the number of feedings per day. Feed was pushed up to lactating cows an average of 4.7 times per day with a range of two to seven.

Feed for post fresh cows was pushed up an average of 5.5 times with a range of four to seven times per day.

Monitoring feed refusals is an essential part of a successful nutrition program. Feed refusals for lactating cows were monitored daily on all six of the farms. Please review the information in Tables 6-9 for additional information.

**TABLE 6: Feeding and Feed Bunk Management - Dry Cows**

Dry Cow	Bunk Space/Cow	Hours/Day Feed is Available	Times Fed/Day	Feed Push-ups/Day	Monitor Refusals	How Often?	Self-Lockers
<b>Brant</b>	24"	24	1	1	no	-	yes
<b>Bredl</b>	36"	24	every other day	4-5	no	-	yes
<b>Costello<sup>2</sup></b>							
<b>Kircher</b>	24"	23	1	0 <sup>1</sup>	no	-	no
<b>Olson</b>	40"	24	1	3	yes	daily	no

<b>Raethke</b>	48"	24	1	1	yes	daily	no
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<sup>1</sup> Feed is within reach on bunk

<sup>2</sup> No dry cow group utilized

**TABLE 7: Feeding and Feed Bunk Management - Pre Fresh Cows**

Pre-Fresh	Bunk Space/Cow	Hours/Day Feed is Available	Times Fed/Day	Feed Push-ups/Day	Monitor Refusals	How Often?	Self-Lockers
<b>Brant</b>	30"	24	1	1	yes	daily	yes
<b>Bredl</b>	24"	24	every other day	4	no	-	yes
<b>Costello</b>	36"	24	1	0 <sup>1</sup>	yes	daily	no
<b>Kircher</b>	48"	23	1	1	no	-	yes
<b>Olson</b>	40"	24	1	2	yes	daily	no
<b>Raethke</b>	52"	24	2	3	yes	daily	no

<sup>1</sup> Feed is within reach on bunk

**TABLE 8: Feeding and Feed Bunk Management - Post Fresh Cows**

Post-Fresh	Bunk Space/Cow	Hours/Day Feed is Available	Times Fed/Day	Feed Push-ups/ Day	Monitor Refusals	How Often?	Self-Lockers
<b>Brant</b> <sup>1</sup>							
<b>Bredl</b>	24"	24	2	5	yes	daily	yes
<b>Costello</b>	48"	24	2	7	yes	daily	no
<b>Kirsher</b>	48"	23	1	6	yes	daily	no
<b>Olson</b>	54"	24	4	4	yes	daily	no
<b>Raethke</b> <sup>1</sup>							

<sup>1</sup> Does not have a post-fresh group

**TABLE 9: Feeding and Feed Bunk Management - Lactating Cows**

Lactating	Bunk Space/Cow	Hours/Day Feed is Available	Times Fed/Day	Feed Push-ups/Day	Monitor Refusals	How Often?	Self-Lockers
<b>Brant</b>	48"	24	1	4	yes	daily	no
<b>Bredl</b>	22-24"	24	2	5	yes	daily	yes
<b>Costello</b>	48"	24	2	7	yes	daily	no
<b>Kircher</b>	48"	23	1	6	yes	daily	no
<b>Olson</b>	54-60"	24	3	4	yes	daily	no
<b>Raethke</b>	48"	24	3	2	yes	daily	no

## **Feeding Program**

The feeding program summary is presented in Tables 10-15 (available at the end of this paper). Forages used in these herds and their quality appears in Tables 10 (spring-98) and 13 (fall-98). Diet ingredient composition appears in Tables 11 (spring-98) and 15 (fall-98).

Diet nutrient composition was calculated for each herd using their individual forage test results and common tabular analyses for concentrates. Similar estimates of protein degradability for forages and concentrates were used across herds. Common tabular values for amino acid content of forages and concentrates were used across herds in the CPM Model evaluation.

A ration cost summary is presented in Tables 12 and 15. Common prices were used for forages and corn across the six herds: alfalfa silage (\$80 per ton DM), corn silage (\$70 per ton DM), and corn (\$2.50 per 56 lb. bu). Specific farm prices were used for other ration ingredients.

These herds tended to feed protein in excess of NRC recommendations. This was more evident in the spring-98 summary. Herd operators were given the opportunity to review the spring-98 summary in advance of the fall-98 survey. Also, Kircher-Hammond changed ration advisors between the two surveys. Results of the CPM Model evaluation suggested that methionine was more limiting than lysine in these herds. These herds fed phosphorus in excess of NRC recommendations.

Ration costs averaged \$3.85 and \$3.94 per cwt. of milk in the spring-98 and fall-98 summaries, respectively. Ration costs ranged from \$3.42-\$4.34 per cwt. milk and \$3.38-\$4.25 per cwt. milk in the spring-98 and fall-98 summaries, respectively.

## **Conclusion**

The herds surveyed in this paper have succeeded in establishing successful production programs. Housing, management and nutrition are key components in order to obtain high production levels and maintain optimal herd health. This commitment to teamwork is critical to meeting the nutritional challenges of tomorrow's cow, today and reaching production levels of 30,000 pounds and beyond.

## **Acknowledgments**

Special thanks is extended to Jo-De-Bran Holsteins, Harmony-Ho, Bri-Time Holsteins, DJ Holsteins, Bethany Valley Holsteins, and R Green Acres, Inc.

**TABLES 10-15:**

**TABLE 10: Spring 1998 Milking Cow Forage Quality on Selected Wisconsin High Producing Dairy Herds**

		%DM	%CP	%NDF	%ADF	RFV
Brant-Cuba City	Alfalfa silage	59.6	22.6	41.5	33.1	142
	Corn silage	33.5	7.9	36.8	22.4	NA
Bredl-Stratford	Pea/Triticale Silage	39.7	19.4	46.1	33.6	126
	Corn silage	34.8	9.0	38.0	22.4	NA
Costello-Malone	Alfalfa silage	43.0	23.8	43.4	34.8	133
	Corn silage	34.4	8.6	41.9	24.8	NA
Kircher-Hammond	Alfalfa silage 1	31.2	21.0	43.8	37.2	127
	Alfalfa silage 2	40.4	20.8	41.5	34.6	139
	Corn silage	33.9	8.7	30.6	20.8	NA
Olson-Comstock	Alfalfa silage 1	41.5	22.2	36.5	28.2	171
	Alfalfa silage 2	49.8	21.5	33.6	28.1	185
	Corn silage	35.4	8.1	41.0	24.0	NA
Raethke-Pepin	Alfalfa silage 1	45.0	21.0	38.7	30.5	157
	Alfalfa silage 2	45.0	20.5	38.3	30.4	158

**TABLE 11: Spring 1998 Rations Fed to Milking Cows on Selected Wisconsin High Producing Dairy Herds**

lbs. DM/Cow/Day	Brant-Cuba City	Bredl-Stratford	Costello-Malone	Kircher-Hammond Mtr Cows	Kircher-Hammond 1st Lac	Olson-Comstock	Raethke-Pepin
Alfalfa silage 1	24.2		19.3	7.2	6.5	10.7	10.8
Alfalfa silage 2				7.2	5.7	12.9	10.8

Corn silage	5.2	4.9	8.5	6.8	6.8	9.6	
Pea/Triticale silage		12.3					
Hi. moist. sh. corn	13.8	18.8	18.5				
Hi-oil Hi-mst sh. corn						14.9	
Dry sh. corn (fine)				14.1	11.0	0.7	
Dry barley						0.7	
Hi. moist. ear corn							22.4
Whole cottonseed	4.8	5.3	4.6	6.4	4.6	2.3	5.2
Animal fat	1.0		0.8	0.5	0.5		0.5
Distillers dried grains				3.4	3.1	0.9	
Wet brewers grains		3.0					
Cst prot/min/vit mix							7.5
Proc. grain byprod.		0.3					
Roasted soybeans						2.5	X
Soybean meal 48	1.6	2.0	1.3	3.5	3.1		
Soybean meal 44		5.1					X
Corn gluten meal 60			0.5	0.5	0.4		
Meat meal	1.9	2.2	1.9			1.7	X
Blood meal	0.5	0.5	0.4	0.5	0.4		X
Marine-animal protein						1.5	
Urea		0.21		0.15	0.12		
Bicarb	0.45	0.50		0.60	0.48		
S-carb						0.25	

Mag ox	0.10	0.07	0.08	0.15	0.12	0.10	
Yeast culture						X	
Zinc methionine		X				X	
Other min./vit. supps.	0.48	0.60	0.53	1.40	1.10	0.80	X
<b>Total DM Intake</b>	54.0	55.8	56.4	52.4	43.9	59.6	57.2

**TABLE 12: Calculated Nutrient Composition of Spring 1998 Diets Fed to Milking Cows on Selected Wisconsin High Producing Dairies**

DM basis	Brant-Cuba City	Bredl-Stratford	Costello-Malone	Kircher-Hammons Mtr Cows	Kircher-Hammond 1st Lac	Olson-Comstock	Reathke-Pepin	Average
DM, %	62	52	53	55	53	53	61	<b>55</b>
CP, %	18.5	21.5	18.7	19.5	19.5	18.7	19.2	<b>19.4</b>
UIP, % CP	35	35	36	36	36	37	36	<b>36</b>
UIP, % DM	6.5	7.5	6.7	7.0	7.0	6.9	6.9	<b>6.9</b>
<b><u>CPM Dairy Model Amino Acid Calculations</u></b>								
Lysine, % of req.	103	127	110	102	95	119	118	<b>111</b>
Lysine, % of EAA	14.7	14.6	14.3	13.5	13.6	14.6	14.5	<b>14.3</b>
Methionine, % req.	86	104	98	97	90	102	98	<b>96</b>
Methionine, % EAA	4.0	4.1	4.2	4.2	4.3	4.1	4.0	<b>4.1</b>
Lys:Met ratio	3.7	3.6	3.4	3.2	3.2	3.6	3.6	<b>3.5</b>
NEI, Mcal/lb.	0.79	0.80	0.80	0.79	0.79	0.78	0.80	<b>0.79</b>

NDF, %	28.8	25.8	28.1	27.9	28.0	26.5	27.4	<b>27.5</b>
ADF, %	21.0	17.5	19.6	19.2	19.2	18.6	19.0	<b>19.2</b>
NDF-forage, %	22.1	13.5	21.4	15.8	16.6	20.4	14.6	<b>17.8</b>
NDF- forage+WCS%	26.0	17.7	25.0	21.1	21.2	22.1	18.6	<b>21.7</b>
Forage, %	54	31	49	41	43	56	38	<b>45</b>
CS, % of forage	20	30	30	30	35	30	0	<b>25</b>
NFC, %	37	43	40	38	38	41	42	<b>40</b>
Fat, %	6.8	5.1	6.3	6.5	6.4	5.0	5.7	<b>6.0</b>
Calcium, %	1.10	1.03	1.06	1.09	1.10	1.19	0.93	<b>1.07</b>
Phosphorus, %	0.59	0.58	0.53	0.53	0.51	0.56	0.48	<b>0.54</b>
Magnesium, %	0.40	0.34	0.36	0.40	0.40	0.33	0.37	<b>0.37</b>
Vitamin A, IU/day	126880	222120	102230	105000	105000	234150	NA	<b>149230</b>
Vitamin D, IU/day	31680	43810	34300	35000	35000	58210	NA	<b>39667</b>
Vitamen E, IU/day	637	1129	586	900	900	900	NA	<b>842</b>
Cost, \$/cow/day	3.64	4.06	3.42	3.87	3.23	3.69	4.08	<b>3.71</b>
Cost, \$/cwt. Milk	3.79	4.28	3.42	3.62	3.72	3.81	4.34	<b>3.85</b>

**TABLE 13: Fall 1998 Milking Cow Forage Quality on Selected Wisconsin High Producing Dairy Herds**

		%DM	%CP	%NDF	%ADF	RFV

Brant-Cuba City	Alfalfa silage	60.3	20.3	41.9	30.1	145
	Corn silage	36.2	8.4	40.5	24.0	NA
Bredl-Stratford	Alfalfa silage 1	55.7	19.3	43.6	36.7	129
	Alfalfa silage 2	51.7	18.4	36.2	26.7	175
Costello-Malone	Alfalfa silage 1	41.9	25.7	38.8	30.9	155
	Alfalfa silage 2	49.7	22.4	42.0	33.6	139
	Corn silage	32.5	10.5	42.9	25.5	NA
Kircher-Hammond	Alfalfa silage	36.0	23.2	35.7	33.0	165
	Corn silage	40.0	7.0	41.0	27.8	NA
Olson-Comstock	Alfalfa silage 1	44.4	21.2	37.9	28.3	164
	Alfalfa silage 2	43.7	25.6	33.9	27.1	186
	Corn silage	40.9	7.5	38.1	22.4	NA
Raethke-Pepin	Alfalfa silage	39.0	19.3	39.9	30.9	151

**TABLE 14: Fall 1998 Rations Fed to Milking Cows on Selected Wisconsin High Producing Dairy Herds**

lbs. DM/cow/day	Brant-Cuba City	Bredl-Stratford	Costello-Malone	Kirkcher-Hammond Mtr Cows	Kircher-Hammond 1st Lac	Olson-Comstock	Raethke-Pepin
Alfalfa silage 1	21.7	15.0	4.5	14.2	11.7	10.6	21.6
Alfalfa silage 2		4.8	17.9			10.4	
Corn silage	5.8		6.5	11.2	11.2	11.9	
Baled hay						0.7	
Hi. moist. sh. corn	15.3	19.7				16.3	
Dry gr. Sh. corn			17.3	15.2	11.2		22.0

Whole cottonseed	4.9	4.4	4.5	4.5	2.7	2.9	5.3
Animal fat	1.1		0.8				0.5
Distillers dried grains		3.9				1.1	
Wet brewers grains		3.0					
Cst prot/min/vit mix				8.8	10.1		7.0
Linseed meal		0.5					
Roasted soybeans						2.6	X
Soybean meal 48	1.9	0.7	0.2				
Soybean meal 44		5.1		2.2	2.7		X
Corn gluten meal 60		0.7	0.5				
Meat meal	2.0	1.5	1.8			1.3	X
Blood meal	0.5		0.4			0.2	X
Marine-animal protein						1.7	
Bicarb	0.27	0.47		0.12	0.12		
S-carb						0.28	
Mag ox	0.11	0.06	0.08			0.10	
Yeast culture						X	
Zinc methionine		X				X	
Other min./vit. supps.	0.59	1.00	0.55			0.90	X
<b>Total DM intake</b>	<b>54.1</b>	<b>60.8</b>	<b>55.0</b>	<b>56.2</b>	<b>49.7</b>	<b>61.0</b>	<b>56.4</b>

**TABLE 15: Calculated Nutrient Composition of Fall 1998 Rations Fed to Milking Cows on Selected Wisconsin High Producing Dairies**

DM basis	Brant-Cuba City	Bredl-Stratford	Costello-Malone	Kircher-Hammond Mtr Cows	Kircher-Hammond 1st Lac	Olson-Comstock	Raethke-Pepin	Average
DM, %	64	63	58	55	55	55	58	<b>58</b>
CP, %	18.5	20.8	18.2	18.0	18.9	18.2	18.5	<b>18.7</b>
UIP, % CP	35	37	36	36	37	37	36	<b>36</b>
UIP, % DM	6.5	7.7	6.6	6.5	7.0	6.7	6.7	<b>6.8</b>
<b><u>CPM Dairy Model Amino Acid Calculations</u></b>								
Lysine, % of req.	107	114	103	117	109	118	116	<b>112</b>
Lysine, % of EAA	14.6	14.0	14.0	14.6	14.8	14.3	14.4	<b>14.4</b>
Methionine, % req.	90	108	93	99	90	104	98	<b>97</b>
Methionine, % EAA	4.0	4.1	4.1	4.1	4.1	4.1	4.0	<b>4.1</b>
Lys:Met ratio	3.7	3.4	3.4	3.6	3.6	3.5	3.6	<b>3.5</b>
NEI, Mcal/lb.	0.78	0.78	0.78	0.80	0.80	0.77	0.80	<b>0.79</b>
NDF, %	28.3	27.4	30.2	27.3	27.5	26.7	28.1	<b>27.9</b>
ADF, %	19.0	18.5	20.3	19.0	18.7	18.4	19.3	<b>19.0</b>
NDF-forage, %	21.2	13.6	21.9	17.3	17.8	20.3	15.5	<b>18.2</b>
NDF-forage+WCS%	25.2	17.0	25.5	20.8	20.2	22.3	19.7	<b>21.5</b>
Forage, %	51	32	52	45	46	55	39	<b>46</b>
CS, % of forage	20	0	25	45	50	35	0	<b>25</b>
NFC, %	37	38	38	41	40	40	42	<b>39</b>

