

# Monitoring Performance in Dairy Health Management

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## Summary

In Dairy Health Management (DHM), the emphasis is placed on the examination and monitoring of the herd on a regular basis. This includes the analysis of animal health and production records to compare actual performance of the herd with preset targets of performance, and to initiate actions or new control methods to decrease losses and increase productivity.

The physical collection of the data to monitor the herd is a major stumbling block in many DHM programs. There is a great diversity, both in the ability and willingness of dairymen and veterinarians to keep records, and in the record-keeping systems on most dairy farms. However, a great wealth of data can be obtained from records already arriving at the farm from many different sources. This paper discusses the collection of this data into a format for monitoring Dairy Health Management.

The data collection encompasses production, udder health, reproductive efficiency, disease conditions, culling rates, body condition scores, feeding management, feeding efficiency, housing and environment and calf management.

## Introduction

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Each herd investigation should flow in an orderly manner. Generally, the pleasantries are exchanged in the dairy or the farm kitchen and these are the two most common places for sundry record storage. Our collection of performance indices will therefore begin with analysis of records close at hand before actual entry to the barn and inspection of livestock.

## Reason for the Visit

A statement of known or perceived problems must be solicited from the dairyman. Subsequent completion of all portions of the data collection form will quantify the stated problem, may identify other areas of lost productivity, and indeed, may indicate reasons for production losses.

## Production

The information required will be available from actual counts of milking and dry cows, milk shipment weigh slips, and Ontario Dairy Herd Improvement Corporation (ODHIC) reports, and milk cheque stubs. When individual cow monthly milk weights are available, milk graphs can be drawn for interpretation. The milk produced per day would include milk shipped, plus discarded milk, milk fed to calves and cats, and milk for home consumption. Measuring milk production per cow per day is usually based on cows milking although using milking cows plus dry cows for the calculation would reflect the influence of reproductive efficiency on herd performance. Average days in milk and the percent first calf heifers milking can influence the average milk per milk cow per day.

## Udder Health

The number of new cases of mastitis today, in the last week and the last month will often be within the memory of the dairyman or in his records. Quality information on bulk tank somatic Cell Counts (SCC) and Plate Loop Count (PLC) is provided monthly to each producer from the Dairy Inspection Branch. Bulk tank Somatic Cell Counts report

only on the milk put into the tank. This Somatic Cell Count can be deceptive unless one considers milk withheld from shipment.

Many dairymen have individual cow Somatic Cell Counts available through participation in Ontario Dairy Herd Improvement Corporation laboratory test. Somatic Cell Count distribution can be investigated with regard to age, stage of lactation, milking order, and on a herd basis. It is prudent to query and record a few pertinent facts on milking management techniques.

### **Reproductive Efficiency**

Most parameters of reproductive efficiency are only available through tedious assembly and calculation from breeding cards, herd health books, etc. Although the task can take two hours to complete, the information provided is most helpful. The exercise itself is an educational tool which often stimulates the creation of better record keeping systems. The computerization of reproductive records has been a major on-farm use for the micro computer. The computer permits more frequent use of current calculated performance indices. Eastern Breeders and Western Ontario Breeders have begun electronic processing of breeding records, a printout of which can be obtained for monitoring and diagnostic purposes. Generally, a hand calculated retrospective study of breeding records for a set time period of one year will be necessary. One must look for trends reflecting the influence of season, personnel, semen used, and management decisions.

### **Disease Conditions**

Consideration is given to a period of time, the number of animals at risk and the number experiencing the condition of concern when calculating the rates of disease. Trends can be noted and investigated. Because the major diseases of concern occur postpartum, one would be advised to investigate dry cow feeding and management, and body condition scores.

### **Culling Rates**

Voluntary culling will occur for many reasons including milk quota considerations and lack of heifer export sales. Attention must be given to the rate of and reasons for involuntary culling, most of which are disease oriented.

Further investigation of the dairy must be done by actual work in the barn.

### **Body Condition Scores**

Scoring body condition on a scale of 1 to 5 is a method of evaluating cow condition in various stages of lactation. Dry cows with scores of 5 would warn one of fatty liver syndrome and the need for investigation of late lactation and dry cow management. Scores declining rapidly from 4 at calving to 2 at 2 to 3 weeks fresh could be indicative of errors in feeding management and would be reflected in milk graphs, rates of

ketosis, and reproductive performance.

### **Feeding Management**

Diligent questioning, the weighing of bales of hay, fork-skull of silage, scoops of grain, measures of mineral, the collection of feed tags, invoices, feed analysis and ration formulation reports, and hand calculations will permit completion of the herd history on feeding activities and schedule for dry and milking cows. The precise feeding history for far away and close up dry cows, method of bringing fresh cows on to feed, and up to peak production, and the grain feeding guide for cows at various production levels must be recorded. Computer analysis of the ration can be completed only if sufficient accurate data is collected at the farm. If indicated, now is the time to collect feed samples. Simple calculations, such as Dry Matter (DM) intake, can usually be made on the farm.

Diseases related to feed delivery occur commonly. One must compare actual ration preparation with recommended formulations, actual feeding levels with recommended levels, the accuracy of calibration for automatic feeding devices such as magnet and computer feeders, availability of bunk space and water supply, the method of grouping cows, and the sequence of offering feedstuffs to mention but a few items.

Calculation of forage to grain ration (Dry Matter basis) at various actual feeding levels may be enlightening when investigating off-feed problems and multiple cases of diffuse aseptic pododermatitis (Laminitis).

### **Feeding Efficiency**

Herd average forage to grain ratio (Dry Matter basis) and grain to milk ratio are of economic interest and reflect the efficiency of the feeding program. Using herd average figures, one can quickly calculate the income over feed costs per milk cow per day.

### **Housing and Environment**

Subjective appraisal of cow comfort can be supplemented with measurement of stall size, bedding amount and type, temperature and humidity, percentage of cows standing and resting in stalls, stray voltage readings and so on. An invited investigator to the farm would have to determine if the observed environmental and sanitation conditions are usual or contrived for his/her cameo appearance. The environmental factors must be interpreted in relation to herd productivity and disease occurrence as compared to cows housed in similar facilities with greater cow comfort.

### **Calf Management**

High mortality rates at birth would prompt further investigation of dry cow management and management of the parturient cow. Similar investigation of management practices would be instituted when high mortality is noted at older calf ages. Observation of major errors in feeding

colostrum, whole milk, and milk replacers leading to disease and death prompted the provision in the data collection form for the detailed recording of body weight and milk weight fed. Body sources of replacement heifers are one indication of performance, however, height and weight at specific ages would be preferred measures and can be recorded graphically.

**Referrals**

Errors or oversights in husbandry, management, and facilities will require referral to appropriate specialists for consultation. The veterinarian should act as liaison with these specialists and encourage his client to utilize the expertise offered by them.

**Targets**

Once herd performance has been quantified, the dairyman is encouraged to record his personal performance targets. These must be within reach to avoid disappointment and frustration when grandiose goals are not attained. The physical act of committing targets to paper frequently leads to achievement. Data from studies in Ontario by Dohoo, Meek, and Stone, from the Ontario Milk Marketing Board, Record of Performance, Ontario Dairy Herd Improvement Corporation, Holstein Canada, and the University of Guelph were used to provide numerical averages for comparison and setting of targets.

**Performance Indices**

The necessity for accurate on-farm data can not be over-emphasized, both for production-disease monitoring, and for problem resolution. In 1986, Ontario Dairy Herd Improvement Corporation will be providing more herd monitoring data with their rewritten computer programs. Monitoring Dairy Health Management will be simplified with this system and dairymen and their veterinarians are encouraged to avail themselves of the service. Until computer based dairy data retrieval is universally adopted, we must refine manual on-farm record keeping systems.

**Form for Monitoring Dairy Health Management**

Reason for visit: \_\_\_\_\_

Production:	Actual	Target	Average
1. Herd size	_____	_____	_____
2. No. cows milking	_____	_____	_____
3. No. cows dry	_____	_____	_____
4. No. 1st lactation heifers	_____	_____	_____
5. Current milk/day (litres)	_____	_____	_____
6. Current milk/milk cow/day(L)	_____	_____	20
7. Rolling herd B.C.A.	_____	_____	135
8. Highest producing cow/day(L)	_____	_____	40
9. Current B.F.% (milk cheque)	_____	_____	3.80
10. Protein %	_____	_____	3.14
11. Peaks prod'n (graphs) (% cow)	_____	_____	_____
12. Average days in milk	_____	_____	85%
13. Selling Price milk (S/HL)	_____	_____	_____

**Udder Health:**

1. No. cows mastitis today \_\_\_\_\_
2. No. cows mastitis last 7 days \_\_\_\_\_
3. No. cows mastitis last 30 days \_\_\_\_\_
4. No. cows culled with mastitis \_\_\_\_\_
5. Quality Information
 

	1	2	3	4	5	6	Avg.	
SCC	_____	_____	_____	_____	_____	_____	_____	200 350,000
PLC	_____	_____	_____	_____	_____	_____	_____	3 10,000
6. SCC Dist'n (% 200) \_\_\_\_\_ Herd SCC Dist'n \_\_\_\_\_ % Goal \_\_\_\_\_
 

	Age	Yrs.	Stage/Lact'n mos	
	2	3-5	6+ 0-3 4-6 7-10	
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
7. Milking equipment \_\_\_\_\_
8. Service date \_\_\_\_\_ Dealer \_\_\_\_\_
9. Dry cow therapy \_\_\_\_\_ 10. Teat dip \_\_\_\_\_
11. Towels \_\_\_\_\_ 12. Sanitizer \_\_\_\_\_ 13. Shut Off \_\_\_\_\_
14. Dry off technique \_\_\_\_\_
15. Initiating Technique \_\_\_\_\_

Period from \_\_\_\_\_ to \_\_\_\_\_

Reproductive Efficiency:	Actual	Target	Average
1. Calving to 1st heat (days)	_____	45	_____
2. Calving to 1st breeding (days)	_____	70	79
3. Days open (open interval)	_____	100	110
4. Calving interval (months)	_____	12.5	13.2
5. Services/conception (average)	_____	1.5	1.8
6. Overall conception rate %	_____	95	90
7. 1st service conceptions %	_____	60	55
8. 2nd service conceptions %	_____	_____	_____
9. 3rd service conceptions %	_____	_____	_____
10. 4th service conceptions %	_____	_____	_____
11. Missed Heats %	_____	15	_____
12. Abnormal Heats %	_____	5	_____
13. Culled %	_____	5	10
14. Heifers age 1st breeding (mo)	_____	15	20
15. Heifers We. 1st breeding (mo) kg	_____	350	348
16. Heifers Ht. 1st breeding (cm)	_____	130	121
17. Heifers age at calving (mo)	_____	24	27
18. Heifers weight at calving (kg)	_____	550	527
19. Heifers height at calving (cm)	_____	137	137
20. Abortions	_____	1.5	8.1
a) Age: Heifers _____ / _____ % Cows _____ / _____ %			
b) Stage: 1st _____ MID _____ LAST _____			

**Disease Conditions:**

	#	Cows Calved	
1. Milk Fever	# _____	% _____	8
2. Ketosis	# _____	% _____	5
3. Retained Placenta	# _____	% _____	9
4. Displaced Abomasum	# _____	% _____	1.5
5. Feet	# _____	% _____	6
6. Died or Destroyed	# _____	% _____	3
7. Hardware	# _____	% _____	_____
8.	# _____	% _____	_____
9. Vaccinations, deworming, comments	_____	_____	_____

**Culling Rate:**

	#	Cows Culled	
1. Involuntary	% _____	_____	6
2. Voluntary	% _____	_____	20
3. Total	% _____	_____	26

4. Reasons: reproduction\_\_\_ mastitis\_\_\_ low prod'n\_\_\_ died or destroyed\_\_\_ age\_\_\_ breeding stock\_\_\_\_\_

**Body Condition Score: (1 to 5)**

	Cows	Ages	Calving Date	Scores	Goals
Dry	_____	_____	_____	_____	3.5-4
Early	_____	_____	_____	_____	2.5-3
Mid	_____	_____	_____	_____	3
Late	_____	_____	_____	_____	3.5 -

Note body weight change \_\_\_\_\_

**Dry Cow Management:**

	Feedstuff	Wt.	% DM	WT DM	Wt. Refused	Wt. DM Refused
Far away	_____	_____	_____	_____	_____	_____
Close up	_____	_____	_____	_____	_____	_____

Comments: segregation, maternity pens, deworming, vaccinations \_\_\_\_\_

Prepartum grain feeding schedule \_\_\_\_\_

**Daily Feeding and Activity Schedule:**

Time	Feedstuff	Wt.	% DM	WT DM	Weight Refused	WT DM Refused	\$\$ Cost	\$\$ Feed
a.m.	_____	_____	_____	_____	_____	_____	_____	_____
noon	_____	_____	_____	_____	_____	_____	_____	_____
p.m.	_____	_____	_____	_____	_____	_____	_____	_____
Total	_____	_____	_____	_____	_____	_____	_____	_____

**Feed Delivery:**

- Cows/Group A \_\_\_ B \_\_\_ C \_\_\_ D \_\_\_ Maximum 100
- Bunk Space/Cow \_\_\_\_\_ L 1.5' D 12' 18"
- Parlor Feeding \_\_\_\_\_
- Magnet/Computer Cows/Station \_\_\_\_\_ Calib. Date \_\_\_\_\_
- T.M.R.: Feeds \_\_\_\_\_ Scales \_\_\_\_\_
- Zero Graze \_\_\_\_\_ 7. Pasture \_\_\_\_\_
- Bunk Fed Grain (amt/C/D) \_\_\_\_\_
- Yr. Round Storage \_\_\_\_\_ Inventory \_\_\_\_\_
- Feeding Guide (actual)

Milk	Grain	Grain	Supp.	Min.	Total	Ratio Grain/Milk
_____	_____	_____	_____	_____	_____	_____

- Grains (avg/MC/day) \_\_\_\_\_ as fed \_\_\_\_\_ dry matter
- Forage (avg/MC/day) \_\_\_\_\_ as fed \_\_\_\_\_ dry matter
- As Fed/MC/day \_\_\_\_\_ 14. DM/MC/day \_\_\_\_\_ 15. %BW \_\_\_\_\_

Feeding Efficiency:	Actual	Target	Average
1. \$ Income/Feed Costs/Cow/Day	_____	_____	4.50
2. \$ Income/Feed Costs/HL Milk	_____	_____	29.46
3. Grain:Milk Ratio	_____	_____	1:3
4. Forage:Grain Ratio	_____	_____	60:40

**Water:**

- Source \_\_\_\_\_
- Number \_\_\_\_\_
- Location \_\_\_\_\_
- Clean \_\_\_\_\_
- Samples \_\_\_\_\_

Manure: Colour, consistency \_\_\_\_\_

Cud Chewing: \_\_\_\_\_ length forage cut \_\_\_\_\_

Housing and Environment:	Milk Cows	Dry Cows
1. Stalls (4' x 7.5")	_____	_____
2. Bedding (amt. type)	_____	_____
3. Clean (Scote 1-5)	_____	_____
4. Standing (%)	_____	_____
5. Resting	_____	_____
6. Manure System	_____	_____
7. Temp & Humidity	_____	_____
8. Light	_____	_____
9. Ventilation	_____	_____
10. Stray Voltage (0.5)	_____	_____
11. Comments: cow comfort, sanitation	_____	_____

**Calf Management:**

	Body Score	Body Weight	Feeding Time	Milk Method	Milk Wt.	Milk % Body Wt.	Body Score Target
1. Feeding:	_____	_____	_____	_____	_____	_____	_____
Birth	_____	_____	_____	_____	_____	_____	_____
1 Week	_____	_____	_____	_____	_____	_____	_____
2 Weeks	_____	_____	_____	_____	_____	_____	_____
3 Weeks	_____	_____	_____	_____	_____	_____	_____
4 Weeks	_____	_____	_____	_____	_____	_____	_____
5 Weeks	_____	_____	_____	_____	_____	_____	_____

**2. Housing, Environment:**

type, temperature, sanitation, humidity \_\_\_\_\_

3. Diseases:	Total Calves	%	Actual	Target	Average
A. Scours	_____	_____	_____	_____	7.5
B. Pneumonia	_____	_____	_____	_____	_____
C. Navel Ill	_____	_____	_____	_____	_____
D. Anemia	_____	_____	_____	_____	_____
E. Parasites	_____	_____	_____	_____	_____

**Mortality: Total Calves Born**

1. Birth	_____	3	8
2. 1 to 7 Days	_____	1	_____
3. 8 to 30 days	_____	1	_____
4. 1 to 24 Months	_____	1	_____
5. Total	_____	3	10

Comments: \_\_\_\_\_

**6. Replacement Heifer Management:**

6 Wks to 6 Mos	_____	_____
6 Mos to 12 Mos	_____	_____
12 Mos to 18 Mos	_____	_____
18 Mos to 24 Mos	_____	_____

Comments: vaccinations, dewormings, etc. \_\_\_\_\_