

Dairy Health Management Records

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Introduction

The dairy industry has been utilizing computer technology for over 30 years. Dairy Herd Improvement Associations have made tremendous strides improving dairy records through the use of computers. The basis for these types of dairy records has been the large, centrally located, mainframe computer. However, in the last few years there has been a technological explosion in the development of small, reliable, relatively inexpensive microcomputers. This now provides dairymen and veterinarians with the opportunity of obtaining locally controlled computerized records. Although computer technology is presently available for computerized dairy record-keeping, the programs required to run the computers and make them a functional record-keeping system have lagged behind in development. Only recently have programs become available.

Why should a dairyman even consider having computerized records? The most important reason is to generate management reports and summaries that otherwise would be unavailable, because of the time and/or difficulty involved in this preparation. Computers can remember large amounts of detailed information and then sort it in an infinite number of ways. This is ideal for a dairy health record system. Many events happen to a cow during her lifetime. Having a computer remember these events and present them to the dairyman and veterinarian sometime in the future and in a variety of forms, can be a tremendous asset. Computers cannot provide more information than can a handwritten record, but reports that might take weeks to prepare by hand can be generated by the touch of a button using a computer. It must be emphasized that a computer is just a tool that can be used to improve upon the state of the art, in this case, record-keeping.

In this paper we describe a dairy health management record-keeping system (DHMR) designed for use with a commercially available microcomputer. The overall goal of DHMR is to provide veterinarians and dairymen with a comprehensive health management record-keeping system that can be utilized to help increase the productivity and profitability of commercial dairies. For sake of this discussion, DHMR is broken down into six general areas. I. Data Collection: The most important step in any record-

keeping system is getting the dairyman to record the daily events, i.e. cows that have freshened, sick cows, breeding dates, heat dates, etc. A computerized record-keeping system is no better than the information collected. The data collection system must be simple, practical, designed to minimize mistakes, and have a permanent paper backup.

DHMR utilizes a fixed format, non-coding data collection system. There are two basic forms: 1) Daily Activity Form, and 2) Monthly Activity Form. All forms come with NCR type carbon copy so as to provide permanent backup records. The forms come in sizes to fit the pocket or a notebook.

The Daily Activity Form (Figure 1) contains space to collect information for transactions concerning health and mastitis, fresh dates, breeding and heats, location changes, dry-offs, and culling and dead information. A new form would be used each day of the year.

There are three types of monthly forms: 1) Reproductive Check (Figure 2), 2) Production Data (Figure 3), 3) New Cows Entering Herd (Figure 4). The Reproductive Check Form would be used for collecting information on routine postpartum checks, pregnancy checks, and problem cows (repeat breeders, no heat cows, etc.). The Production Data Form is for recording monthly milk production. The New Cow Form is used to start a dairy on the system, or in an established system when cows are brought into the herd from the outside. All heifers born on the farm are automatically entered into the system when their dam's fresh date is reported.

It is important to note that with this data collection system, coding is not required. Information is entered in a form similar to that a dairy farmer might use for a handwritten record. This provides the dairyman with maximum flexibility. Information is entered directly on the appropriate form utilizing the space provided as a guide to the type, and length of the entry that can be made. For example, cow I.D. can be entered as either a name or number using up to nine spaces. There is no limit to the number of different health diagnoses. The comment section provides 16 characters of space for any conceivable comment. In essence, the only limitation is the amount of space provided for data entry. II. *Data Input*: Once the data is collected, it must be entered into the computer. This is the one step that is

Figure 1

DAILY ACTIVITY

FARM ID _____ DATE _____

COW ID	DIAGNOSIS	2-HEALTH and MASTITIS			COMMENTS
		DRUG	DOSE	ROUTE	

COW ID	1-FRESH COWS		SIRE ASSIGN.	3-BREEDING and HEATS		4-RELOCATION	
	COW ID	CALF ID		COW ID	SIRE ID	COW ID	GRP

9-DRY-OFFS	5-CULLED or DEAD		COMMENTS
COW ID	COW ID	REASON	

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Figure 2

REPRODUCTION

FARM ID _____ DATE _____

COW ID	PREG	CERV	FINDINGS				COMMENTS	TREATMENTS			RPT. CHK.
			LHRN	RHRN	LOVY	ROVY		DRUG	DOSE	ROUTE	
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Figure 4

NEW COWS

FARM ID _____ DATE _____

COW ID 1	COW ID 2	REG. #	SIRE	DAM	LACT. #	FRESH DATE
-----	-----	-----	-----	-----	-----	-----
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unique to computerized record-keeping systems, and it can be a very frustrating step. Data input must be designed to maximize speed of data entry while minimizing the opportunity for errors.

DHMR uses a system very similar to its data collection system; in fact, it duplicates the data collection format. For example, when information on health and mastitis is to be entered, a duplicate of the daily activity form appears on the screen. The information is entered exactly as it appears on the daily activity sheet. In DHMR all data is entered using this simple technique.

When data is entered in this fashion, the person who is operating the computer need not be familiar with the information being entered. All the operator must do is transcribe the information exactly as it appears on the forms. This allows for increased flexibility while providing fast and accurate data input. III. Data Corrections: Mistakes are inevitable, either at the time data is collected, i.e. mesreading a cow I.D. or at the time the data is entered into the computer, i.e. typographical errors. Provisions have to be made for correcting both types of errors. Using DHMR, mistakes made when data are being entered into the computer are corrected simply by locating the incorrect entry and making the appropriate change. This form of correction can be made at any time before the data are stored in the permanent files. Once it is stored in permanent files a different method of correction is used. This type of correction can be made at any time after the error is discovered. A special correction screen is used, and the incorrect information is easily changed. IV. Data Processing: The first three areas discussed involved interaction between the computer and the user. Data processing involves only the computer. It is the step that takes the information that has been collected and entered and stores it into permanent files so that it can be retrieved at a future date. The operation of the program which instructs the computer to perform these tasks is of little interest to this discussion. However, there are two aspects of the data processing that are of interest to the veterinarian and farmer. First is the number of cows allowed on the system. Second is how long the records of these cows remain in the system.

With DHMR there is room for 300 adult cows, 300 young stock (newborn calves through first freshening), and 300 dead animals. Lifetime information can be kept for a 300 cow herd, including all replacement stock. In addition, selected information is stored for 2 years after an animal leaves the herd. Presently, the information being stored is health and mastitis diagnoses, and reproductive information. This enables seasonal and long-term health problems to be examined (see Section V, Data Output, Figure 7). Future plans involve storing milk production data to enable genetic analysis.

The DHMR program assumes that herd size remains relatively constant. That is, new animals enter the herd at basically the same rate as animals leaving the herd.

DHMR utilizes 3 different sizes of computers. The smaller

computer can accommodate up to 300 cows, as discussed in the previous paragraph. The larger computers can accommodate up to 900 and 5,000 cows, respectively. V. Data Output: Listed below are brief descriptions of the reports available with DHMR and an example of each one.

1) *The Individual Cow Report* (Figure 5) presents complete, lifetime history of any cow or calf currently on the farm. Reproductive, and milk production information are summarized after each lactation. Postpartum findings are kept only for the current lactation.

Figure 5

```

INDIVIDUAL COW REPORT
*****
FARM ID SAMSON DATE 6-1-80
*****
COW ID 302
REGIST # SIRE 11H900 DAM 931 LACT # 4 LOCATION M FRESH DATE DIM 12-15-79 165
*****
HEALTH DATE DIM DIAGNOSIS TREATMENT COMMENTS
*****
3-18-77 15 KETOSIS GLUC 500C IV 2X
AZIU 20CC IM
5-23-78 2 MILK FEVER CA 500C IV 1X, OK
CA 500C SQ
12-15-79 0 DYSTOCIA TET 5 0M IU FETOTHY
*****
MAST. DATE DIM DIAGNOSIS TREATMENT COMMENTS
*****
8-12-78 108 MAST LR CEPH 1 1M 3X
9-1-78 123 MAST LR KAN 1GM IMA 3X
5-25-79 50 MAST RF, COLI GENT 5CC IMA
CA 500C IV
TET 6GM IV
*****
CURRENT PRODUCTION REPRODUCTION
*****
SAMPLE# DATE PROD HEAT DATES 1-10-80 1-30-80
1 1-10-80 65 INTERVAL 20
2 2-5-80 70 BRED DATES 2-20-80 3-20-80 4-11-80
3 3-6-80 75 INTERVAL 30 21
4 4-5-80 60 SIRE ID 7H137 7H137 7H137
5 5-4-80 50
*****
LACTATION 1 2 3 4
SERV/CONC 2 2 1 3
DAYS OPEN 85 92 51 115
MAST.CASES 0 1 1 2
CALF ID 941
DIM 310 320 305 248
PRODUCTION 16800 17900 18550
*****
POST-PARTUM
*****
DATE DIM POST-PARTUM FINDINGS TREATMENT
PREG CERV LHRN RHRN LOVY ROVY COMMENTS DRUG DOS ROUTE
1-15-80 30 45 40 45 HSS CR METRITIS TET 1GM IU
1-30-80 45 40 35 35 HSS FR OK
5-25-80 145 PREG
*****
CURRENT LACTATION
*****
FRESH DATE 12-15-79
TAB 3
DAYS TO 1ST SERVICE 35
DAYS OPEN 115
PROJ DD, ACTUAL DD 7-11-81

```

2) *The Individual Disease Report* (Figure 6) can be generated for any disease or combination of diseases. The upper half of the report summarizes all the reported cases of the disease(s) for the previous 12 months. Included are the cow I.D., her lactation number (age for heifers) date of diagnosis, days in milk at the time of diagnosis, treatment and comments. The number of cases by month for the previous 36 months, is shown graphically at the bottom of the report.

3) *The Calf and Heifer Report* (Figure 7) is an inventory of all animals from birth to the first freshening. Expected fresh dates for animals confirmed pregnant or the last breeding date for those not yet checked for pregnancy appear in the column labelled "present status".

4) *The Heifers to Breed* (Figure 8) report lists all heifers 15 months and older (variable)* that have not net been

INDIVIDUAL DISEASE REPORT "LDA" **Figure 6**

FARM ID SAMSON		DATE 6-1-80			
COW ID	LACT.#	DATE	DIM	TREATMENT DRUG DOSE ROUTE	COMMENTS
37	4	5-1-80	70	SURGERY	
58	6	3-2-80	30	SURGERY	
103	3	2-5-80	130	CULL	
152	4	9-2-79	52	SURGERY	
207	4	8-1-79	45	SURGERY	
319	2	1-18-80	100	SURGERY	
372	3	2-19-80	65	SURGERY	

^ A SEARCH CAN BE DONE FOR ANY DISEASE OR COMBINATION OF DISEASES

CALF AND HEIFER REPORT **Figure 7**

FARM ID SAMSON		DATE 6-1-80			
CALF ID	DATE OF BIRTH	AGE	SIRE	DAH	PRESENT STATUS
648	6-15-78	24	7H148	241	P-9-1-80
684	8-21-78	22	7H148	225	P-12-8-80
652	8-25-78	22	7H249	239	P-12-13-80
625	10-25-78	19	7H249	295	P-2-21-81
691	11-12-78	18	11H105	216	P-1-7-81
627	11-15-78	18	11H105	279	P-12-30-80
615	2-3-79	15	11H105	214	B-5-10-80
719	2-15-79	15	7H148	261	B-5-21-80
619	2-19-79	15	7H249	315	B-4-23-80
705	3-1-79	14	7H249	293	B-5-28-80
672	4-22-79	13	11H105	252	
651	7-18-79	9	7H148	301	
791	7-18-79	9	7H148	324	
750	9-5-79	7	7H249	357	
739	9-19-79	7	11H105	375	
714	10-15-79	6	11H105	343	
752	11-19-79	5	7H249	259	
741	11-5-79	5	7H148	297	
781	11-19-79	5	7H249	351	
793	4-15-80	2	7H249	310	
725	5-1-80	1	11H105	313	

^ P - PREGNANCY DATE (DATE OF CONCEPTION)
B - BRED (LAST BREEDING DATE)

diagnosed pregnant. When pregnancy is confirmed, they are removed from this list and added to the *Cows to Freshen* list. 5) *The Cows to Breed* (Figure 9) report includes all cows that are 45 days fresh (variable)* and checked "OK to breed". The postpartum findings for the current lactation, previous breeding and heat data, and sire assignment are also listed.

* When the term variable appears following age or period of time it means that the figure can be changed to meet individual preferences.

HEIFERS TO BREED **Figure 8**

FARM ID SAMSON		DATE 6-1-80			
HEIFER ID	AGE	SIRE	DAH	LBD	DAYS FROM LAST BREEDING
621	19	11H142	371	5-4-80	27
437	18	11H371	215	5-28-80	3
216	16	7H437	142	4-1-80	60
712	16	20H135	251	5-15-80	15
619	16	HH148	152	5-21-80	10
691	15	7H437	241	1	
916	15	20H291	512	1	
1420	15	70H298	173		
612	15	11H417	421		
734	15	11H371	152		
531	15	11H142	214		
827	15	7H437	142		
728	15	20H135	98		
287	15	20H135	89		

^ LAST BREEDING DATE
^ TOTAL NUMBER OF BREEDINGS

COWS TO BREED **Figure 9**

FARM ID SAMSON		DATE 6-1-80					
COW ID	DIM	LOC.	LRH	SIRE	ASSIGN	LBD	POST-PARTUM FINDINGS
							PREG CERV LHRM RHRN LOVY ROVY
							COMMENTS
90	55	F	5-1-80 5-22-80	7H4237			30 35 30 CL FR OK
113	62	F	5-20-80 6-11-80	11H107			35 42 35 FL NSS OK
127	45	F		7H137			45 30 30 NSS CR
157	105	F		11H107	4-7-80 1	OPEN	30 25 30 NSS CR OK
205	51	F	5-30-80 6-20-80	7H137			35 30 40 CL FR CYST.
281	65	F	5-15-80 6-6-81	7H204			30 35 35 FL CR OK
295	135	M		11H107	4-25-80 2	OPEN	OPEN
350	50	F		7H137			35 25 35 CL FR OK
							30 30 30 CL NSS OK

^ LAST REPORTED HEAT
^ NEXT EXPECTED HEAT
^ LAST BREEDING DATE
^ TOTAL NUMBER OF BREEDINGS

Cows remain on this list until bred. They will reappear on the list if diagnosed open at pregnancy check.

6) *The Cows to Dry Off* (Figure 10) report identifies all cows that are 60 days from freshening. The cows are listed in order by closest to freshening. The "number of cases of clinical mastitis" includes only cases from the current lactation. Cows will stay on this report until either a dry-off or calving date has been entered.

7) *The Cows Due to Freshen* (Figure 11) report lists all

COWS TO DRY OFF					
		FARM ID	SAMSON	DATE 6-1-80	
COW ID	DIM	DATE TO BE DRIED OFF	EXP. FRESH DATE	CURRENT PRODUCTION	# OF CASES OF CLINICAL MASTITIS
431	310	6-3-80	8-3-80	40	0
474	300	6-3-80	8-3-80	21	1
451	325	6-3-80	8-3-80	35	0
456	315	6-15-80	8-15-80	45	0
472	340	6-15-80	8-15-80	19	3
498	301	6-15-80	8-15-80	42	1
470	290	6-15-80	8-15-80	50	1
407	295	6-21-80	8-21-80	42	1
489	310	6-21-80	8-21-80	28	0
427	298	6-29-80	8-29-80	35	0
465	315	6-29-80	8-29-80	30	1
415	310	6-21-80	8-21-80	35	0
447	305	6-29-80	8-29-80	35	0
413	307	6-29-80	8-29-80	40	1

Figure 10

COWS DUE TO FRESHEN				
		FARM ID	SAMSON	DATE 6-1-80
COW ID	DUE DATE	LACTATION #	DRY DATE	PAST MEDICAL HISTORY**
			DAYS DRY	
431	6-5-80	4	4-10-80	DYSTOCIA
129	6-5-80	1	4-10-80	
219	6-10-80	2	4-15-80	MF
134	6-15-80	3	4-15-80	KETOSIS
314	6-18-80	1	4-18-80	RP
251	6-25-80	2	4-25-80	RP
152	6-25-80	2	4-25-80	
521	6-30-80	1	5-1-80	

* HEALTH DIAGNOSIS FROM PREVIOUS FRESHENING.

Figure 11

cows due to calve within the next 14 days. Cows closest to freshening are listed first. The column labelled "past medical history" shows all health problems associated with calving during the previous lactation. Heifers would be included on this list and would be recognized by having a "laction #" equal to 0. No entries would be included under "Past Medical History" for heifers. Cows will remain on the list until a calvine date or disposal date has been recorded.

8) *The Cows to Pregnancy Check* (Figure 12) list includes all cows which have been bred 45 days or more (variable)*. Once a cow is checked for pregnancy, whether she is found to be pregnant or open, she is removed from this list. If she is open she will reappear on the *Cows to Breed* list.

9) *The Cows for Routine Postpartum Check* (Figure 13) report lists all cows that are at least 30 days postpartum (variable)* and have not been examined. Cows that have been designated for recheck will also appear. All health problems associated with the current calving will appear and "Current Medical History".

10) *The Problem Cow* (Figure 14) report lists all cows that are at least 50 days fresh but not reported in heat, 90 days fresh and not bred, and 150 days fresh and not pregnant. A

COWS TO PREGNANCY CHECK										
		FARM ID	SAMSON	DATE 6-1-80						
COW ID	LBD**	DIM	LOC.	PREG	CERV	LHRN	RHRN	LOVY	ROVY	COMMENTS
TREATMENT DRUG DOSE ROUTE										
315	4-15-80	95	F	30	35	35	CL	NSS	OK	
371	4-10-80	100	F	32	40	30	FL	CR	OK	
385	4-10-80	85	F	35	25	28	CL	CR	OK	
413	4-15-80	89	F	30	25	35	CL	NSS	MET	
429	4-13-80	115	M	OPEN						OK
				OPEN						OK
				35	40	30	TET	1GM.	IU	OK
				35	45	30	TET	1GM.	IU	MET

* LAST BREEDING DATE
 ** DAYS FROM LAST BREEDING
 *** TOTAL NUMBER OF BREEDINGS

Figure 12

COWS FOR ROUTINE POST-PARTUM CHECK														
		FARM ID	SAMSON	DATE 6-1-80										
COW ID	LOC.	DIM	HEAT DATE/#**	BRED DATE/#**	CHECK DATE/#**	CURRENT MEDICAL HISTORY**	PREG	CERV	LHRN	RHRN	LOVY	ROVY	COMMENTS	TREATMENT DRUG DOSE ROUTE
197	F	28	5-28-80	/1		MILK FEVER								
138	F	35	5-25-80	/1										
155	M	100	5-5-80	/3	4-1-80	/1	RET. PLAC	OPEN	30	40	30	<1	NSS	
			5-15-80	/2				OK	TB				IMU	IU
													35	50
													TET	26M
													45	65
													TET	26M
185	F	30				LAME								
207	F	38												
315	F	45	5-20-80	/1	5-15-80	/1		OK	30	25	35	FL	CR	
328	F	20				OFF FEED								
340	F	55	5-15-80	/2	5-5-80	/1	RET. PLAC. KETOSIS		35	30	80	NSS	CR	
													PGF2	25MG
													IM	

* LAST HEAT DATE / TOTAL FOR CURRENT LACTATION
 ** LAST BREEDING DATE / TOTAL FOR CURRENT LACTATION
 *** LAST REPRODUCTIVE CHECK DATE / TOTAL FOR CURRENT LACTATION
 **** HEALTH DIAGNOSIS FOR CURRENT LACTATION

Figure 13

cow will stay on this report until she is culled or the problem is corrected.

PROBLEM COWS		FARM ID SAMSON		DATE 6-1-80	
ROW	COL	ROW	COL	ROW	COL
COW ID	DIM	LBD	POST PARTUM FINDINGS		
	RP	TUB	PREG	CERV	LHRN
		LHD	RHRN	LDVY	ROVY
		LCD	TREATMENT		
			DRUG DOSE ROUTE		
			COMMENTS		
525	160	5-15-80	OPEN		
	3	4			CULL
		5-1-80	OPEN	35	40
				40	NSS NSS
				ECP	10MG IM
531	100	0	30	30	30
	2	0			CYST NSS CYST
		4-10-80	35	35	35
		5-15-80			CYST NSS CYST
581	110	0	30	25	25
	2	0			CL NSS OK
		5-10-80	30	25	25
					NSS NSS OK
			30	25	25
					NSS NSS OK
					ECP 10MG IM
591	65	0	30	40	45
	1	0			CL FR MET
		5-10-80			TET 1GM. IU
			40	45	50
					NSS NSS MET
					TET 1GM. IU

REASON FOR APPEARING
 1. 50 DIM AND NO REPORTED HEATS
 2. 90 DIM AND NO BREEDINGS
 3. 150 DIM AND NOT PREGNANT

LAST BREEDING DATE
 TOTAL NUMBER OF BREEDINGS
 LAST HEAT DATE
 LAST REPRODUCTIVE CHECK DATE

Figure 14

11) The Mastitis, Production and Reproduction Culling Reports (Figure 15, 16, 17) are used as culling aids. The Mastitis Report includes all cows with 6 or more cases of clinical mastitis during her lifetime. Cows are listed in order by number of cases of mastitis. Pregnancy status is indicated. The due date is shown if pregnancy has been

CULLING REPORT**MASTITIS		FARM ID SAMSON		DATE 6-1-80	
ROW	COL	ROW	COL	ROW	COL
COW ID	LACT.#	PREG STATUS	DIM	CURRENT PRODUCTION	# OF CASES OF MASTITIS C/T
		DRY DATE			DATE OF LAST MASTITIS
95	2	OPEN	45	84	3/14
					5-20-80
108	4	OPEN	90	71	1/12
					12-1-80
237	4	PREG 8-1-80	300	20	0/12
					11-1-79
54	3	PREG 9-5-80	250	61	2/11
					4-3-80
45	3	OPEN	105	75	1/11
					2-9-80
327	5	OPEN	30	80	4/10
					6-15-80
59	6	OPEN	62	40	2/9
					2-8-80
372	4	PREG 7-5-80	315	15	1/9
					1-13-80
113	5	PREG 11-3-80	150	42	0/8
					12-7-80
103	3	PREG 12-1-80	100	49	1/7
					10-14-79
62	5	OPEN	75	81	1/6
					9-10-79
31	5	PREG 9-18-80	280	7	2/6
					5-25-80
13	4	OPEN	150	45	2/6
					6-2-79
71	4	OPEN	125	52	3/6
					4-19-80
84	3	PREG 12-25-80	200	40	1/6
					9-18-79
48	5	PREG 7-15-80	350	10	1/6
					12-25-79

ALL COWS WITH 6 OR MORE CASES OF MASTITIS
 CURRENT LACTATION / TOTAL FOR LIFE TIME

Figure 15

CULLING REPORT**PRODUCTION		FARM ID SAMSON		DATE 6-1-80	
ROW	COL	ROW	COL	ROW	COL
COW ID	CUR. PROD.	DIM	LACT.#	PREG STATUS	# OF CASES OF MASTITIS
				DRY DATE	
142	15	300	3	PREG 6-15-80	2
214	15	421	4	PREG 5-15-80	2
12	20	250	2	PREG 7-5-80	0
21	22	180	1	OPEN	1
315	25	214	5	PREG 6-15-80	0
92	25	305	2	PREG 8-2-80	0
81	25	340	2	PREG 7-8-80	0
68	30	195	3	OPEN	2
118	35	285	4	PREG 5-28-80	1
27	35	355	1	PREG 8-15-80	1
431	35	401	5	PREG 8-15-80	4
49	40	350	3	PREG 7-15-80	0
31	40	330	2	PREG 7-1-80	0
137	40	300	2	PREG 6-15-80	0
317	40	295	3	PREG 6-5-80	1

ALL COWS PRODUCING LESS THAN 40 LBS. OF MILK ON LAST TEST DAY Figure 16

CULLING REPORT**REPRODUCTION		FARM ID SAMSON		DATE 6-1-80	
ROW	COL	ROW	COL	ROW	COL
COW ID	DIM	CURRENT MILK PRODUCTION	LACT.#	LOCATION	LBD

					TUB
452	350	18,905	4	1	4-18-80
122	290	16,008	3	1	5-25-80
212	210	15,294	6	2	3-18-80
254	201	18,370	1	1	5-5-80
424	190	12,045	2	2	5-25-80
107	182	8,045	2	2	0
719	161	7,000	3	2	5-15-80
317	160	8,200	1	2	5-10-80
29	155	6,800	3	2	4
197	151	5,000	3	1	0

ALL COWS 150 DIM AND NOT PREGNANT
 LAST BREEDING DATE
 TOTAL NUMBER OF BREEDINGS Figure 17

confirmed. The Production Culling report includes all cows producing less than 40 lbs of milk (variable)*. Pregnancy status, dry date (if applicable) and the number of cases of clinical mastitis for the current lactation are shown. Cows remain on this list until drying off, culling, or calving dates are recorded. The Reproduction Culling Report lists all cows that are 150 days in milk and not yet diagnosed pregnant.

12) The Mastitis Summary (Figure 18) report lists cows that have had at least one case of mastitis during the current lactation. The date of the last case, diagnosis and treatment are shown. Cows are listed in order by the number of cases.

13) The Monthly Herd Summary (Figure 19) is divided into 4 parts. The first part is a summary of important reproductive parameters by lactation number (1st, 2nd, 3rd, and above) and time (previous month, and average over the

MASTITIS SUMMARY*									
		FARM ID SAMSON				DATE 6-1-80			
COW ID	# OF CASES	LACT. #	DJM	DATE OF LAST CASE	TREATMENT LAST CASE	DIAGNOSIS LAST CASE			
						DRUG DOSE ROUTE	COMMENTS		
451	6	4	245	5-12-80	CEPH	STAPH LR			
139	5	1	180	4-13-80	PEN	3X RF			
317	5	3	315	3-2-80	NOV	3X STAPH LF			
415	5	2	95	5-22-80	NOV	3X			
213	4	1	200	5-10-80	NOV	3X RR			
411	3	2	57	4-15-80	CEPH				
931	3	3	98	4-5-80	CEPH	RF, LR			
59	2	4	205	3-25-80	CEPH	C-STREP AG			
137	1	5	305	3-30-80	PEN				
114	1	3	250	4-20-80	PEN				
95	1	3	135	5-5-80	PEN				
154	1	4	208	5-1-80	PEN				

* ALL COWS HAVING A CASE OF MASTITIS DURING CURRENT LACTATION Figure 18

MONTHLY HERD SUMMARY									
		FARM ID SAMSON				DATE 6-1-80			
1ST SERVICE CONCEPT RATEX	SERV./ CONCEPT	CALVING INTERVAL	DAYS OPEN	DAYS TO FIRST SERVICE	PREG RATEX	INFERT. RATEX	COWS RETURN 3RD SERVICE	# TREAT FOR METR.	
		1M 12M	1M 12M	1M 12M	1M 12M	1M 12M	1M 12M	1M 12M	1M 12M
1ST	60 45	1.8 1.9	12.5 13	110 95	55 60	95 90	10 5	0 2	6 5
2ND	65 60	1.9 2.5	13 12.5	100 85	50 45	85 95	5 3	5 2	9 7
3RD	50 55	2.1 2.5	13.5 13	105 90	55 40	90 85	25 2	3 8	12 8
AV.	63 55	1.9 2.2	13 12.8	105 90	53 63	90 90	20 4	3 4	9 7
		1M 12M		1M 12M					
COWS IN HERD		100	105	MASTITIS	8	4			
COWS FRESH		5	20	RET.PLAC	0	3			
COWS EXAMINED ROUT.		20	25			SIRE #		# OF CONC	TOTAL
COWS EXAMINED PROB.		5	3			SIRE #		1ST RATE	# OF
COWS IN HEAT		15	20					%	SERV
COWS EXAMINED PREG.		7	10						
% COWS OPEN		30	40			11H437	40	52	50
COWS MILKING		80	70			7H1984	30	65	45
COWS DRY		10	15			20H421	20	70	25
						11H927	20	40	45
						7H1087	15	33	50
						7H243	10	55	15
						7H100	10	58	15
CULLING REPORT**									
		REASON		1M	12M				
PROD		2	3						
MASTITIS		2	4						
REPROD		2	5						
LAME		1	3						
PNEUMON		1	1						
INDIGEST		1	2						
PROLAPSE		1	5						

* LAST 30 DAYS
 ** MONTHLY AVERAGE FOR LAST YEAR
 *** ALL CULLING REASONS FOR FIRST 30 DAYS
 **** ALL BULLS WITH 10 OR MORE SERVICES Figure 19

previous year). The next section is an inventory of the cows in different reproductive and production categories. One and twelve month averages are shown. The third section indicates first service sire conception rates for all sires with 10 or more first services. The fourth section is a culling report that summarizes the "reasons" cows were culled during the last month and compares it to the previous year. Another component to DHMR is a dairy nutrition package. This system is broken down into four programs (1) Herd Management Program. This program obtains background and environmental information concerning the herd. This accomplished two goals. One is that when this

information is entered into the computer, the producer can see the reduction in animal response, which hopefully will inspire the producer to make appropriate changes in his management practices. It also relieves some of the pressure on individuals formulating rations for herds where the environment is less than optimum; (2) Feed Programs. This program allows the user the option of either calling feeds from a file that has been previously setup or entering the data directly from the keyboard. Data from this program is stored on a diskette and the program control is turned over to the Ration Formulate Program; (3) Ration Formulate Program. The first major question of the Ration Formulate Program is desired herd milk production. The next series of questions concern the herd including number of days open and the age distribution (which will have an effect on the lactation curve). The dry matter intake is predicted based on milk production, body weight, and other factors. A diet is then formulated based on either what the farmer is currently doing or what the user feels would result in a reasonable ration. These results (including the dry matter intake) are stored and the program then calls the Dairy Analyzer; (4) Dairy Analyzer. This program first recalls the data from Feed Program and also from Ration Formulate Program. It calculates energy requirements and goes through a series of edits until the energy is balanced to the satisfaction of the user. It then calculates and balances the protein requirement. Once the protein and energy have been balanced to the user's satisfaction it then goes on and calculates and balances the rest of the major and micro elements and vitamins required. The information is then displayed and the user has the option of making another run or having the information printed out.

The most important aspect of the entire system is the interpretation of the reports and summaries and their application to the development of improved management systems. A computerized record-keeping system has the ability to generate a tremendous number of reports. If these reports are not utilized, the system is useless and the investment, time, and effort put into its development have been wasted. The bovine practitioner plays an important role in the interpretation and use of these health management records; with their aid, the practitioner can more accurately evaluate certain disease trends within a farm, reproductive parameters, individual cow health histories, and make more effective recommendations on the specific findings. He can also make comparisons between farms within a practice area; these can be important in recognizing and solving certain health problems.

Collecting the information needed to generate health management reports is not an easy task. The approach that has been taken with DHMR is just one approach - there are many others. Regardless of the record-keeping system, be it computerized or hand-written, the utilization of the information learned from the reports becomes the single most important consideration. The system must function in a way that it increases farm productivity and profitability.