

# The Role of DHI Records in Herd Health Programs

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Dairy farmers are managers of a large business. Dairy Herd Improvement (DHI) Association records indicate that the average herd size for the United States is 91 cows, Minnesota having the smallest average herd size with 42 cows, while Hawaii has 444 cows, the largest herds. Most farms would also have a similar number of replacement heifers at various stages of growth. Oklahoma data indicate that herds not enrolled in DHI programs are 20% smaller in herd size than the DHI average.

Dairymen, as managers of such large operations, must utilize all the management tools available in their decision-making process. The various records that become management tools by providing data for sound management decisions are DHI records, herd health programs, enterprise accounting, cost and return budgets, and crop yield records. DHI records are vital to the operation because they contain complete details on production, cow and heifer inventory, feeding, breeding, cost and returns and genetic progress of the dairy enterprise. DHI records are as important to the dairymen and veterinarian as a road map is to a traveler. DHI records show where the herd is now, which direction it should go, and will show the results of movement toward the goal.

Complete herd health programs are becoming a more important portion of dairy farm management. Stringent quality controls are forcing more detailed planning of treatment regimes, inoculations, immunizations, etc. The cost price squeeze continually requires greater efficiency to be profitable. Successful herd health programs have increased dairymen's income as much as \$300 per cow, depending on how the total value was determined. Good herd health programs will change income through: increased milk production; longer herd life; increase sales of breeding stock; allowing increased selection pressure for desired traits; reduced breeding, drugs, and labor costs; and increased personal pride in operation.

Veterinarians, as the providers of key professional service to the dairy enterprise, must insist on having records available that will indicate problem areas as well as measure results of their herd health program. DHI records will provide both of these answers, giving complete details on milk production and reproduction efficiency. DHI record computing centers have optional programs that will provide duplicate copies of the herd reports to cooperating veterinarians if the

herd owner desires. Also, management lists to aid the veterinarian and herd manager are available.

An explanation and interpretation of the various reports and columns of the reports and summary data should be helpful in understanding how DHI record information could be used by veterinarians. The Iowa State Dairy Records Center reports will be discussed as they are used by the author. Other centers would have similar information in their DHI report.

**The Sample Day and Lactation Report** (Table 1) is a monthly update of information for each cow in the herd. For ease of reading and understanding, the Sample Day Report should be divided into four areas: Sample Day Data (Figure 1), Lactation-To-Date (Figure 2), Annual Projections (Figure 3), and Management Data (Figure 4).

**Sample Day Data** (Figure 1) include the pounds of milk, percent butterfat and the grain mix fed on sample day. The dairymen's particular milk price and grain cost is used to determine the income over feed cost for each cow. A cow's grain needs are determined by calculating requirements for milk production, body maintenance, stage of gestation and growth allowance. Nutrients supplied by the forage fed is subtracted from total requirements to determine pounds of grain mix needed at the protein and energy level reportedly being fed. Most cows in this example are reported as being offered more grain than their calculated needs, indicating that energy and protein intake should be adequate.

There is a wide variation in the milk produced on sample day by the cows listed in Figure 1, ranging from 25.9 pounds for "Amy" to 95.0 pounds for "71". Without having the rest of the information listed on the report, we have no basis for determining the reason for the large difference.

**The Lactation-to-Date** (Figure 2) section is an accumulation of production data since calving. The total days of lactation are listed with the totals of milk and butterfat calculated for those days based on the sample day production. The butterfat percentage is a weighted average. The income over feed cost is the income accumulated after subtracting the cost of the previous dry period plus all feed consumed to date.

This information will begin to tell a story about each cow. At approximately 120 days of lactation, a cow will have produced 50% of her actual production

Table 1  
The Sample Day and Lactation Report

COW NUMBER	IDENTIFICATION NUMBER	Breed	SAMPLE DAY DATA					LACTATION TO DATE					305 2X-M.E.		DIFFERENCE FROM HERDMATES			DUE DATE	ACTION NEEDED OR SERVICE SIRE				
			MILK POUNDS	FAT %	FAT POUNDS	INCOME OVER FEED COST	GRAIN MIX FED	AGE	DAYS DRY	FRESHENING DATE	DAYS	MILK	FAT %	FAT POUNDS	COMP REC	INCOME FEED COST	PERSISTENCY %			MILK	FAT		
163	48VEH6947	H	48.3	3.4	1.6	2.10	19	15	6-29	7-07	292	2170	2.9	638	683	101%	22150	650	+6890	+120	11-05	P	
12	86719116	H	25.9	4.9	1.3	1.32	16	17	9-21	3-05	130	4090	4.8	195	31	101%	8330	423	-6930	-100	1-11	P	
151	71LR05898	H	61.0	3.0	1.8	2.31	25	21	9-06	4-00	223	14850	2.8	423	455	102%	19220	537	+3910	+5	9-27	P	
111	8863604	H	59.5	2.9	1.7	2.10	24	20	2-26	2-06	50	3130	2.2	70	90	102%	20020	440	+4600	-148	9-27	B	
113	42DEV4720	H	49.3	3.0	1.5	1.72	20	15	9-15	3-10	214	13190	3.2	428	435	102%	17820	567	+2490	+36	9-27	B	
111	46JHM0809	H	84.3	3.7	3.1	3.56	34	37	3-08	6-08	39	3080	3.6	110	86						04-23	B	
111	C014234	H	43.0	4.2	1.8	1.81	18	16	4-10	2-07	7	300	4.2	7	7						05-25	B	
17	45GF9469	H	77.5	2.6	2.0	2.69	31	28	2-09	3-06	67	4820	2.7	128	105						05-25	B	
17	C009391	H	82.3	2.9	2.4	3.01	33	33	1-27	4-09	80	5750	3.4	197	197	103%	17520	594	+1040	+10	05-20	P	
25	47PHC0520	H	66.8	2.8	1.9	2.33	27	22	10-9	12-16	5-09	122	8390	3.4	285	227	103%	17110	575	+620	-10	05-20	P
71	73CWR3633	H	95.0	3.4	3.2	3.86	38	42	4-73	2-03	6-06	70	5470	3.4	186	154	118%	17620	599	+2140	+15	12-12	P
76	71RMO0131	H	ESTIMATED				36	36	4-53	12-09	6-06	129	11890	3.5	420	425	108%	22590	789	+7240	+219	11-17	P
91	43FMO1320	H	79.5	3.6	2.9	3.30	32	34	2-44	3-25	3-10	23	1830	3.6	66	52					05-09	B	
96	8319112	H	85.5	3.1	2.7	3.27	34	34	2-61	3-11	3-11	37	2850	3.4	96	76					04-25	B	
104	C012048	H	59.1	4.4	2.6	2.67	25	25	4-04	3-05	13	770	4.4	34	43						05-19	B	
106	71DFP0244	H	76.8	4.2	3.2	3.68	31	35	12-24	4-07	114	8950	3.9	352	352	103%	19920	884	+4500	+307	11-29	P	
117	8613792	H	60.1	3.1	1.9	2.23	24	21	10-13	3-07	86	6420	3.9	248	65						11-06	P	
145	C014233	H	51.5	2.9	1.5	1.81	20	17	4-08	2-07	9	460	2.9	13	16						05-23	B	
147	46MOM03178	H	39.0	3.7	1.4	1.43	18	13	4-09	2-07	8	310	3.7	12	11						05-24	B	
STR-ING			63.6	3.4	2.1	2.51	27	25															

BARN NAME OR NUMBER	SAMPLE DAY DATA					STR-ING	BARN NAME OR NUMBER
	MILK POUNDS	FAT %	FAT POUNDS	INCOME OVER FEED COST	GRAIN MIX FED		
ADA	48.3	3.4	1.6	2.10	19	15	1
AMY	25.9	4.9	1.3	1.32	16	17	1
HONEY	61.0	3.0	1.8	2.31	25	21	1
NANCY	59.5	2.9	1.7	2.10	24	20	1
RUSE	49.3	3.0	1.5	1.72	20	15	1
SKINNY	84.3	3.7	3.1	3.56	34	37	1
TUBBY	43.0	4.2	1.8	1.81	18	16	1
9	77.5	2.6	2.0	2.69	31	28	1
17	82.3	2.9	2.4	3.01	33	33	1
25	66.8	2.8	1.9	2.33	27	22	1
71	95.0	3.4	3.2	3.86	38	42	1
76	ESTIMATED				36	36	1
91	79.5	3.6	2.9	3.30	32	34	1
96	85.5	3.1	2.7	3.27	34	34	1
104	59.1	4.4	2.6	2.67	25	25	1
106	76.8	4.2	3.2	3.68	31	35	1
117	60.1	3.1	1.9	2.23	24	21	1
145	51.5	2.9	1.5	1.81	20	17	1
147	39.0	3.7	1.4	1.43	18	13	1
15	63.6	3.4	2.1	2.51	27	25	

Figure 1. Sample Day Data.

for the lactation. Four cows in Figure 2 are near the 120-day point in lactation; "Amy," "25," "76," and "106." "Amy" has only 1/2 to 1/3 the production of the other three cows. She also has only accumulated \$31 over feed cost for this lactation compared to \$425 for cow "76."

**Annual Projections (Figure 3).** Each month the milk production accumulated for Lactation-to-Date is projected to a 305-2X-ME basis. This standardizes each cow's record to a 305-day lactation length, milked two times daily and the same age, mature equivalent. By projecting all records to a standard level, valid comparison can be made between cows. The comparison is listed as Difference From Herdmates. In this group of cows, "Ada" is projected to produce 6890 lbs. more than herdmates while "Amy" is projected at 6930 lbs. less than herdmates.

**Management Data (Figure 4)** includes the remaining columns of the Sample Day and Lactation Report. "Lactation Number" records the number of calvings while "Days Dry" gives only the dry days for the previous dry period. First lactation animals, such as "Nancy" would not have a dry period. The "Days Dry" column may give some indication of past breeding management. Cows should have 45 to 60 days dry. Research does not indicate that dry periods longer than 60 days will have beneficial effect on the following lactation unless the cow is in extremely poor condition and would need extra time to recover body condition.

The "Freshening Date" listed is the day of last calving with the "Age" being the age at time of calving. An indication of calving interval can be determined by looking at Freshening Date and Due Date. "Ada," for example, will have approximately a 16-

BARN NAME OR NUMBER	DAYS	MILK	FAT		INCOME OVER FEED COST
			%	POUNDS	
ADA	292	21720	2.9	638	683
AMY	130	4090	4.8	195	31
HONEY	223	14850	2.8	423	455
NANCY	50	3130	2.2	70	90
ROSE	214	13190	3.2	428	435
SKINNY	39	3080	3.6	110	86
TUBBY	7	300	4.2	7	7
9	67	4820	2.7	128	105
17	80	5750	3.4	197	197
25	122	8390	3.4	285	227
71	70	5470	3.4	186	159
76	129	11890	3.5	420	425
91	23	1830	3.6	66	52
96	37	2850	3.4	96	76
104	13	770	4.4	34	43
106	114	8950	3.9	352	352
117	86	6420	3.9	248	65
145	9	460	2.9	13	16
147	8	310	3.7	12	11

Figure 2. Lactation-To-Date.

month calving interval (Fresh 6-29, Due 11-05). "Rose" has an indicated calving interval we always hope for (Fresh 9-15, due next year 9-27).

The "Due Date" column is updated with each breeding date. Cows may be reported open or pregnant on the subsequent barn sheets, following pregnancy testing. When reported pregnant, an asterisk (\*) will be put in the due date, as for cows "Elsie" and "20" in Table 1. When reported open, the due date will clear and a (B) for breeding reminder will appear in the "Action Needed" column. Other Action Needed reminders are (D) for Dry at 42 or 60 days before due date, (F) for start increasing grain 14 days before calving, and (P) for pregnancy check 42 days following breeding.

Persistency is a percentage figure which tells how well the animal is holding up in production. It is the extended 305-2X-ME record for the lactation-to-date for this test shown as a percentage of the comparable figure for last month. Persistency tells how well a cow's production is fitting the average production curve. Cow "71" in this example has a persistency of 118% at 70 days in lactation. Eighteen percent above last month probably indicates that she had some problems at the start or early in lactation that affected production which has now been corrected.

All cows being above 100% persistency could indicate better management conditions on the current sample day (4-16-77) were more favorable to milk production than the previous month (3-20-77). A change of feed quality, labor problems, milking equipment problems, etc., which will affect the entire herd will be quite obvious in changes up or down of percent in this column.

The "Condition Affecting Record" column lists any

S T R I N G	BARN NAME OR NUMBER	AGE	305-2X-M.E.		DIFFERENCE FROM HERDMATES	
			MILK	FAT	MILK	FAT
1	ADA	7-07	22150	650	+6890	+120
1	AMY	3-05	8330	423	-6930	-100
1	HONEY	4-00	19220	537	+3910	+5
1	NANCY	2-06	20020	440	+4600	-148
1	ROSE	3-10	17820	567	+2490	+36
1	SKINNY	6-08				
1	TUBBY	2-07				
1	9	3-06	18840	491	+3390	-96
1	17	4-09	17520	594	+1040	+10
1	25	5-09	17110	575	+620	-10
1	71	6-06	17620	599	+2140	+15
1	76	6-06	22590	798	+7240	+219
1	91	3-10				
1	96	3-11				
1	104	3-05				
1	106	4-07	19920	884	+4500	+307
1	117	3-07				
1	145	2-07				

Figure 3. Annual Projections.

particular information that would affect the size or validity of the record being produced. The "M" on cow "9" indicated that she had mastitis during this lactation. It could also be used as a reminder to treat the cow while dry. Fifteen different letter codes may be used in this column.

The information on the Sample Day and Lactation Report has been discussed in sections for ease of understanding; however, it must be used as a total unit in making decisions. Cows "Amy" and "17" would be good examples of how the total information could be used. Sample Day Data show "Amy" making \$1.32 income over feed cost at 25.9 pounds milk. "17" is producing 82.31 pounds milk making \$3.01. "Amy" is 130 days into lactation and is open (no due date) as is "17" after 80-day milking. Cow "17" deserves veterinary attention to determine her breeding status. She is making money now and is projected to milk 17,520 pounds, which is 1040 pounds more than herd mates. "Amy," on the other hand, would not warrant veterinary expense. She is projected at 6930 pounds less than her herd mates, has produced 1/2 of this lactation and would not be expected to improve. Selling her now before the daily income over feed cost drops below overhead costs would be the best economic decision.

The Herd Summary, Table 2, summarizes the information of the monthly Sample Day and Lactation Report to give running 365-day averages of all data. The information of the Herd Summary is listed in box form and divided into six areas: Reproductive Summary (Figure 5), Summary of Animals to be Milking Dry or Fresh (Figure 6), Feeding Summary (Figure 7), Cost and Return Summary (Figure 8), Lactation Summary and Dry Days Summary (Figure 9), and

BARN NAME OR NUMBER	LACT NO	DAYS DRY	FRESHENING DATE	AGE	COND AFF. REC.	INCOME OVER FEED COST	PERSISTENCY %	DUE DATE	ACTION NEEDED OR SERVICE SIRE
AMY	2	100	9-21	3-05		31	101%		B
HONEY	2	55	9-06	4-00		455	102%	1-11	P 05-19
NANCY	1		2-26	2-06		90			B
ROSE	2	63	9-15	3-10		435	102%	9-27	
SKINNY	5	59	3-08	6-08		86			B 04-23
TUBBY	1		4-10	2-07		7			b 05-25
9	2	89	2-09	3-06	M	105			B
17	3	66	1-27	4-09		197	103%		B
25	4	109	12-16	5-09		227	103%	1-12	P 05-20
71	4	73	2-03	6-06		159	118%	12-12	P
76	4	53	12-09	6-06	EQ	425	108%	11-17	P
91	2	44	3-25	3-10		52			B 05-09
96	2	61	3-11	3-11		76			B 04-25
104	2	69	4-04	3-05		43			B 05-19
106	3	68	12-24	4-07		352	103%	11-29	P
117	3		10-13	3-07	X	65		11-08	P
145	1		4-08	2-07		16			B 05-23
147	1		4-09	2-07		11			B 05-24

Figure 4. Management Data.

REPRODUCTIVE SUMMARY															
GROUP	REPLACE- MENT FEMALES	PRODUCING FEMALES		NO. OF ANIMALS OPEN			AVG. DAYS OPEN	NO. OF ANIMALS BRED			DAYS TO FIRST BRED	BREEDING INTERVAL			DAYS MINIMUM FRESHENING INTERVAL
		NUMBER	AVG. DAYS SINCE FRESH	< 60 DAYS	60-120 DAYS	> 120 DAYS		ONCE	TWICE	3+ TIMES		< 18 DAYS	18-24 DAYS	> 24 DAYS	
PREGNANT	4	15	296		10	5	107	2	2	1	97	1	4	1	386
POSSIBLY PREGNANT	4	8	152	1	7		92	3	1	1	79		1		371
OPEN	23	12	70	9	1	2	70	TOTAL ANIMALS: 19			AVERAGE SERVICES PER CONCEPTION: 1.5				
								TOTAL SERVICES: 28							

Figure 5. Reproductive Summary.

SUMMARY OF ANIMALS TO BE MILKING, DRY OR FRESH											
REPLACEMENTS TO FRESHEN	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	
	PRODUCING ANIMALS TO FRESHEN		2	1	1			3	1		
EXPECTED TO BE MILKING	27	30	36	33	33	34	37	40	41	43	
EXPECTED TO BE DRY	8	7	2	6	6	5	5	3	2		

Figure 6. Summary of Animals to be Milking, Dry, or Fresh.

Production Summary (Figure 10).

The **Reproduction Summary** (Figure 5) should be of particular interest to veterinarians. It would tell the reproductive status of the herd at the time a herd health program was initiated and would measure the results of an on-going program. Each box is two lines deep, with information concerning replacement heifers printed on the top line, producing cow on the lower line. Animals listed in the "pregnant" box include animals diagnosed pregnant, plus those that are 90 days or more past last reported breeding. The "possibly pregnant" box includes animals that have

been bred less than 90 days and not diagnosed pregnant. The "open" box includes all cows and heifers of all ages that have not had a breeding date reported.

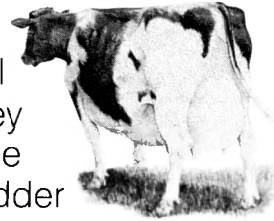
The number of animals open, bred, and breeding interval can aid in your evaluation of herd timing and breeding practices. This example of the pregnant cows appear to indicate the herd owner is missing estrous cycles or deliberately holding cows open to change calving time. The 15 pregnant cows averaged 97 days calving to first service, and 107 days calving to conception. With 1.5 services per conception, 107 days open seems to be caused by missed estrous cycles



# NAQUASONE.<sup>®\*</sup>

## Quickly gets caked udders back to normal production.

Untreated, caked udder (physiological parturient udder edema) can cost you money by keeping first calf heifers off the milking line for weeks. When not treated promptly, the udder swells, blood circulation is impaired, and milk production suffers.



Caked udder can also shorten a cow's productive life, lead to permanent udder damage and mastitis, and increase labor costs. So it's important to get caked udders back to normal fast. That's what NAQUASONE does.

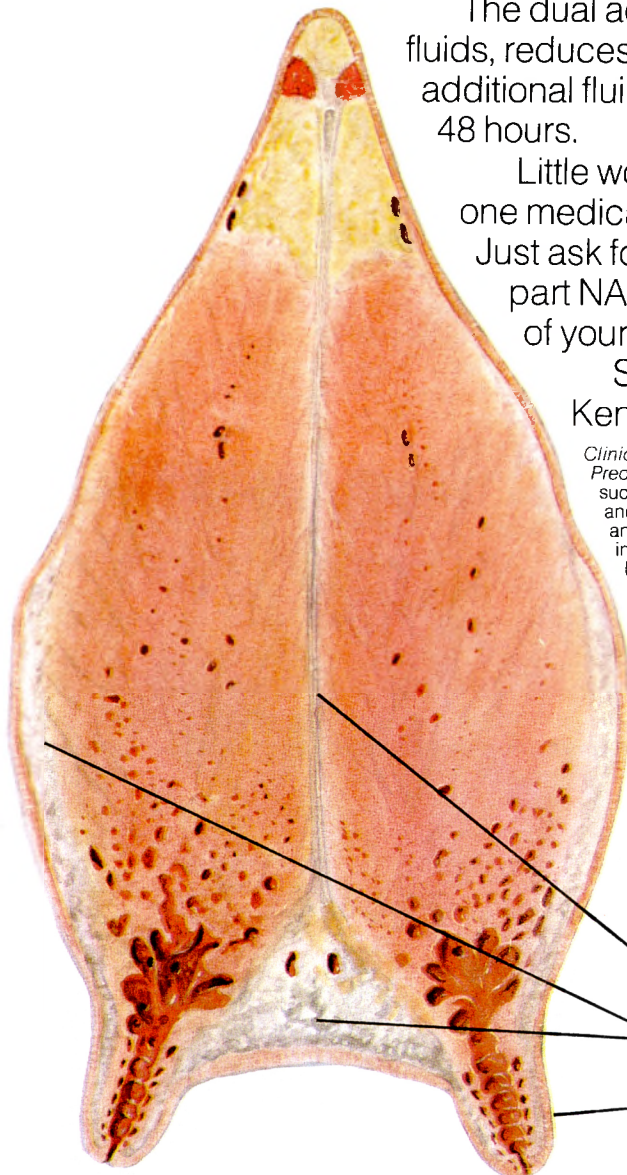
The dual action of NAQUASONE quickly drains trapped fluids, reduces swelling and inflammation, and prevents additional fluid formation. You'll see results within 24 to 48 hours.

Little wonder NAQUASONE has become the number one medication for caked udder. Your veterinarian has it. Just ask for the "big yellow pill." He'll explain the important part NAQUASONE plays in protecting the economic life of your herd.

Schering Corporation, Animal Health Division,  
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*Clinical synopsis:* Response: visible in 24-48 hours; average recovery in 3-4 days.  
*Precautions:* veterinarian should be aware of the possible side effects of dexamethasone such as suppression of inflammation, reduction of fever, increased protein degradation and its conversion to carbohydrate leading to a negative nitrogen balance, sodium retention and potassium diuresis, retardation of wound healing, lowering of resistance to many infectious agents such as bacteria and fungi, reduction in numbers of circulating lymphocytes. *Contraindications:* animals with severe renal functions, impairments and untreated infections. *Warnings:* Milk taken from dairy animals during treatment and for 72 hours after the latest treatment must not be used for food. Clinical and experimental data have demonstrated that corticosteroids administered orally or parenterally to animals may induce the first stage of parturition when administered during the last trimester of pregnancy and may precipitate premature parturition followed by dystocia, fetal death, retained placenta and metritis.

Schering



Strain on suspensory ligament

Excess fluid accumulation

Swollen teats

\*Each bolus contains 200 mg. trichlormethiazide and 5 mg. dexamethasone.

Table 2  
The Herd Summary

REPRODUCTIVE SUMMARY																
GROUP	REPLACEMENT FEMALES	PRODUCING FEMALES		NO OF ANIMALS OPEN			AVG. DAYS OPEN	NO OF ANIMALS BRED			DAYS TO FIRST BRED	BREEDING INTERVAL			DAYS MINIMUM FRESHENING INTERVAL	
		NUMBER	AVG. DAYS SINCE FRESH	< 60 DAYS	61-120 DAYS	> 120 DAYS		ONCE	TWICE	3+ TIMES		1K-1824 DAYS	1825-24 DAYS	> 24 DAYS		
PREGNANT	4	15	296	10	5	107	2	2	9	5	1	97	1	1	1	386
POSSIBLY PREGNANT	4	8	152	1	7		3	1	5	2	1	79		1		371
OPEN	23	12	70	9	1	2	70	TOTAL ANIMALS BRED 19			AVERAGE SERVICES PER CONCEPTION 1.5					
								TOTAL SERVICES 28								

SUMMARY OF ANIMALS TO BE MILKING, DRY OR FRESH												
REPLACEMENTS TO FRESHEN	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN		
			2	1	1				3	1		
PRODUCING ANIMALS TO FRESHEN		2	6	1	1	5	1	4	1	2		
EXPECTED TO BE MILKING	27	30	36	33	33	34	37	40	41	43		
EXPECTED TO BE DRY	8	7	2	6	6	5	5	3	2			

FEEDING SUMMARY										
STR. ONLY	1	SAMPLE DAY FEED REPORTED	KIND CODE	POUNDS FED	S TON	% D.M.	THERMS/ N.E.	% PROTEIN	LBS PER COW ANNUALLY	
HAY			52	10	50	90	56	15	4,910	
HAY SILAGE			65	15	18	35	51	16	5,870	
CORN SILAGE			75	15	20	35	65	8	8,570	
GRAIN MIX			25	20	80	90	92	10	5,527	
LACT. NUMBER			AVERAGE BODY WEIGHT: 1390				SAMPLE DAY		ANNUAL AVERAGE	
FIRST	11	56.4	PROTEIN NEEDED IN GRAIN MIX				14			
OTHER	24	78.2	LBS FORAGE D.M. PER BODY CWT				1.5		1.9	
ALL	35	72.4	LBS MILK PRODUCED PER LB. GRAIN				2.0		2.8	

COST AND RETURN SUMMARY				
	\$ PER COW		\$ PER HERD	
	SAMPLE DAY	365 DAYS	SAMPLE DAY	365 DAYS
FORAGE COST	.54	288	19	9,210
GRAIN COST	.80	271	28	8,667
TOTAL FEED COST	1.34	559	47	17,877
VALUE OF PRODUCTION	3.69	1,421	129	45,474
INCOME OVER FEED COST	2.35	862	82	27,597
MILK SHIPPED DAILY, LBS.	1,435		3.30	3.61
MILK ON SAMPLE DAY, LBS	1,421		2.76	2.54
% OF MILK SHIPPED	101		9.10	9.17
			FEEED COST PER CWT MILK	
			RETURN PER \$1 FEED COST	
			MILK PRICE PER CWT	

PRODUCTION SUMMARY													
SAMPLE DATE	DAYS IN TEST PERIOD	PRODUCING FEMALES			% IN MILK	COW-DAYS ON TEST	TEST INTERVAL DAILY AVERAGE			ROLLING 365 DAYS			
		ENTERED	LEFT	ON FARM			MILK	%	FAT	MILK	%	FAT	
4-18-76	2				32	82	64	38.9	3.51	1.38	14,130	3.51	496
5-14-76	26	2			34	80	884	38.5	3.48	1.34	14,176	3.52	499
6-12-76	29		1		33	84	957	40.9	3.63	1.48	14,680	3.44	505
7-18-76	36	1			34	86	1224	42.8	3.27	1.40	15,059	3.40	512
8-14-76	27		3		31	83	837	40.7	3.11	1.27	15,854	3.28	520
9-12-76	29	2			33	85	957	41.6	3.54	1.47	16,238	3.19	518
10-15-76	33		2		31	87	1023	42.4	3.38	1.43	15,723	3.32	522
11-17-76	33				31	89	1028	44.9	3.22	1.45	16,458	3.19	525
12-09-76	22		1		30	92	660	45.7	3.08	1.41	15,793	3.28	518
1-15-77	37	1			31	87	1147	43.8	3.31	1.45	15,357	3.36	516
2-18-77	34	1	1		31	84	1055	44.2	3.41	1.51	15,262	3.44	525
3-19-77	29				31	83	899	42.5	3.53	1.50	15,398	3.39	522
4-16-77	28	5	1		35	80	939	41.7	3.49	1.46	15,507	3.37	523
NO. TESTS =	13	365	10	9	365 DAY TOTALS			11674	COW-YEARS = 31.98			HERD AVERAGE	

LACTATION SUMMARY					
LACT. NO.	305-2X M.E.		DIFFERENCE FROM HERDMATES		
	MILK	FAT	MILK	FAT	
1	15,921	502	+446	-44	
2	17,066	562	+1613	+15	
3	17,683	637	+1888	+75	
4	18,653	638	+3075	+81	
AVG.	17,170	550	+1628	+23	
DRY DAYS SUMMARY					
NUMBER	NUMBER	NUMBER	TOTAL		
< 40	40-70	> 70	NUMBER	AVG. DAYS DRY	
6	15	5	26	54	

in early lactation. The 12 open cows are developing the same long intervals. One cow is in the 60- to 120-day interval and two are past the 120-day open.

If this particular dairyman requested a herd health program to improve the reproductive efficiency of his herd, he would certainly have to agree to change management to make the program work. We have records on several Oklahoma dairy herds where veterinarians have spent several months of palpation and diagnostic tests to determine that lack of heat detection was the only cause of low breeding efficiency; however, some of the dairymen would not accept that diagnosis.

The Summary of Animals to be Milking, Dry or Fresh (Figure 6) is a projection of animals' lactation status based on the animals reported bred, using

separate breed gestation lengths and an expected 60-day dry period. Separate counts of replacement females to first freshen and currently producing females are provided. This summary should be helpful to both dairymen and veterinarians in planning ahead for dry cow and post-calving treatments and calfhoo vaccination schedules.

The Feeding Summary (Figure 7) provides the complete feeding information for string one on sample day and annual averages for the previous 365 days. The kind of ration being fed and the quality codes for each part are listed. On an annual basis, the forage dry matter consumed should normally be around 2.0 pounds per body cwt. With excellent quality forage the forage dry matter might reach 2.3 pounds per body cwt. without reducing milk produc-

FEEDING SUMMARY								
STR. 1 ONLY	SAMPLE DAY FEED REPORTED	KIND CODE	POUNDS FED	\$ TON	% D.M.	THERMS N.E.	% PROTEIN	LBS. PER COW ANNUALLY
	HAY	52	10	50	90	56	15	4,910
	HAY SILAGE	65	15	18	35	51	16	5,870
	CORN SILAGE	75	15	20	35	65	8	8,570
	GRAIN MIX	25	20	80	90	92	10	5,527
LACT. NUMBER	AVG PEAK LBS. MILK	AVERAGE BODY WEIGHT : 1390				SAMPLE DAY	ANNUAL AVERAGE	
FIRST	11	56.4	PROTEIN NEEDED IN GRAIN MIX			14		
OTHER	24	78.2	LBS. FORAGE D.M. PER BODY CWT.			1.5	1.9	
ALL	35	72.4	LBS. MILK PRODUCED PER LB. GRAIN			2.0	2.8	

Figure 7. Feeding Summary.

COST AND RETURN SUMMARY				
	\$ PER COW		\$ PER HERD	
	SAMPLE DAY	365 DAYS	SAMPLE DAY	365 DAYS
FORAGE COST	.54	288	19	9,210
GRAIN COST	.80	271	28	8,667
TOTAL FEED COST	1.34	559	47	17,877
VALUE OF PRODUCTION	3.69	1,421	129	45,474
INCOME OVER FEED COST	2.35	862	82	27,597
MILK SHIPPED DAILY, LBS.	1,435	FEED COST PER CWT. MILK	3.30	3.61
MILK ON SAMPLE DAY, LBS.	1,421	RETURN PER \$1 FEED COST	2.76	2.54
% OF MILK SHIPPED	101	MILK PRICE PER CWT.	9.10	9.17

Figure 8. Cost and Return Summary.

LACTATION SUMMARY				
LACT. NO.	305-2X-M.E.		DIFFERENCE FROM HERDMATES	
	MILK	FAT	MILK	FAT
1	15,921	502	+446	-44
2	17,066	562	+1613	+15
3	17,683	637	+1888	+75
4+	18,653	638	+3075	+81
AVG.	17,170	550	+1628	+23
DRY DAYS SUMMARY				
NUMBER	NUMBER	NUMBER	TOTAL	
< 40	40-70	> 70	NUMBER	AVG. DAYS DRY
6	15	5	26	54

Figure 9. Lactation Summary

tion. Higher levels of dry matter would probably reduce total energy intake, causing loss of milk production. Forage dry matter intake of much less than 1.9 to 2.0 pounds body cwt. would usually increase feed costs more than increased production would make profitable.

The Cost and Return Summary (Figure 8) lists the feed costs, value of product, and income over feed costs. This information is figured on a per cow and per herd basis for sample day and the previous 365

days average. Hopefully, feed costs would never amount to more than 50% of the value of product. Since DHI records do not include the cost of feeding replacement heifers, feed costs in this summary should run 40 to 45% of the value of milk sales. Oklahoma cost and returns studies of dairy farms of the southwest region indicate that as the profit decreases, the amount of money dairymen spend on breeding and veterinary supplies decrease. During 1973-77 studies, when feed cost-milk ratio was 1 to 2, veterinary expenditures were \$22 per cow. However, in 1975, when feed costs began to soar and milk prices declined, veterinary expenditures per cow dropped by 54%.

The summary data concerning milk production are in three areas: Average Peak Production (Figure 9), Lactation Summary (Figure 9), and Sample Day Production Summary (Figure 10). The peak production is calculated for cows in first lactation, cows in second or later lactations and all cows. Peak milk flow data would give some indication of general management of the herd.

The Lactation Summary (Figure 9) provides data to compare the producing animals by lactation groups. First lactation animals should be equal or superior to later lactation groups when replacements are properly raised and sired by superior sires. Low

PRODUCTION SUMMARY												
SAMPLE DATE	DAYS IN TEST PERIOD	PRODUCING FEMALES			% IN MILK	COW-DAYS ON TEST	TEST INTERVAL DAILY AVERAGE			ROLLING 365 DAYS		
		ENTERED	LEFT	ON FARM			MILK	%	FAT	MILK	%	FAT
4-18-76	2			32	82	64	38.9	3.51	1.38	14,130	3.51	496
5-14-76	26	2		34	80	884	38.5	3.48	1.34	14,176	3.52	499
6-12-76	29		1	33	84	957	40.9	3.63	1.48	14,680	3.44	505
7-18-76	36	1		34	86	1224	42.8	3.27	1.40	15,059	3.40	512
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4-16-77	28	5	1	35	80	939	41.7	3.49	1.46	15,507	3.37	523
NO. TESTS = 13		365	10	9	365 DAY TOTALS		11674	COW-YEARS = 31.98		HERD AVERAGE		

30.9 COW-MO.

Figure 10. Production Summary.

$$34 \times 38.5 = 1309 \div (34 \times 80\%) = 52\# \text{ milk}$$

$$30 \times 45.7 \div (30 \times 92\%) = 49\# \text{ milk.}$$

first lactation average may indicate a need for better heifer management or improved sire selection.

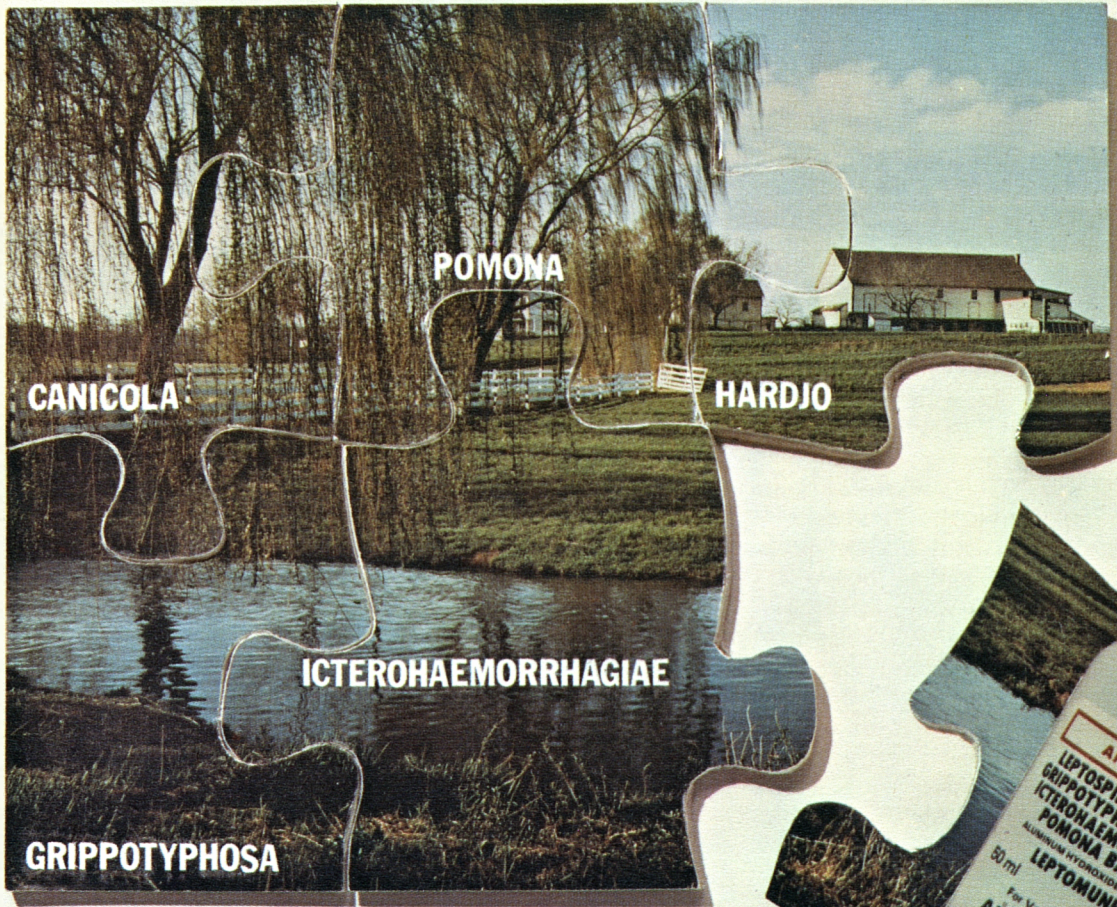
The Production Summary (Figure 10) includes data for each sample date during the previous 365 days. Trends can be noted relative to herd size, turn-over, percent in milk, daily milk, and fat test. Herd averages for the 365-day period ending with each sample date can measure the herd production progress. Percent cows in milk must always be considered when comparing test interval daily milk averages. The daily milk average includes data with 80% in milk for all cows—milking and dry. In comparing the May sample and December sample date with 92% cows in milk, the cows milking in May were producing the most.

Herd owners that insist on having herd health programs without including DHI records as the criteria for measuring results are penalizing the veterinarian and themselves. Herd health programs should be profitable to both dairymen and veterinarian. Many studies list veterinary and drug costs at \$15 to \$20 per cow per year. A 100-cow herd on this basis would be a good addition to any veterinarian's practice. Likewise, if the dairyman reaps his proportionate increased returns, he should welcome the expenditure. However, neither individual should plan programs without a means of measuring the results. DHI records will furnish the answers you need for both parties.



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