Student Clinical Report

Problem Identification in a Dairy Herd

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This study herd of 110 Holstein cows has a rolling herd average production of 19,500 lbs. The young family that owns and operates this dairy has a goal of a high quality registered herd with a 22,000 lb. rolling herd average. The 75 stall milk cow barn has a round-the-barn pipeline milking system. Because of the shortage of stalls, some of the cows are housed in loose-housing and milked in shifts in the milking barn. The single-group TMR is fed at an outside bunk and in the stall barn. This report is the work of three senior veterinary students. Their assignment was to identify and prioritize the production problems on this dairy using the "Goal Form" from *The Bovine Practitioner*, No. 26, 1991, pages 21 to 28.

Reproduction

Problems:

		Goals
1. Calving interval:	14.4 mos.	13 mos.
2. Average Days in Milk:	175 days	150 days
3. Dry period:	76 days	60 days
4. Voluntary Waiting Period:	75 days	55 days
(VWP heavy producers):	100 days	55 days
5. Days in Milk to First Breeding:	94 days	65 days
6. Heat Interval:	36 days	21 days
7. Calving to First Breeding Interval:	47% <85d	80% <85d
8. Services per conception:	2.9	1.8

Economics:
Milk sales lost due to herd milking late and lower in the lactation curve:

$$\underset{\text{rolling ADIM}}{(175} - \underset{\text{days}}{150)} \times \underset{\#\text{cows}}{97} \times \underset{\text{lb/day}}{.17/100} \times \$11/\text{cwt} \times 365 = \$16{,}552$$

Discussion:
This herd's reproductive problems are significant and they feed into their replacement heifer problem. To gain insight into the economic loss due to the reproductive problems we calculated the loss in milk sales due to their late ADIM and found $16,500 in lost profit. Their elevated ADIM is due to their prolonged calving interval. We found that the prolonged calving interval is due to their voluntary waiting period of 75 days (100 days high producers) and poor heat detection. The prolonged VWP also inflates the dry period. Because animals aren't bred back sooner they milk later in their lactation curve when they are producing milk at lower levels. The owners watch for heat 5 minutes twice a day after turning the cows out and by watching for secondary signs of estrus while milking. The heat interval of 36 days indicates that they miss more than 50% of their heats.

Recommendation:
To improve the reproductive performance of this herd we recommend that the voluntary waiting period be shortened to fifty five days and that a teaser animal is used to improve their heat detection. These recommendations represent minimal investment with substantial economic gain.

Replacements

Problems:

1. Shortage of replacement heifers: 76 presently in herd

$$97 \text{ cows} \times 47\% \text{ cull rate} \times \underset{\text{heifer cull factor}}{15\%} \times \underset{\text{Age at 1st calf factor}}{(1+27/24)} \underset{\text{10\% calf mortality}}{\text{ and }}$$

$$= 127 \text{ heifers needed in herd}$$

2. Overage at first calving: Average = 27 months
   Goal = 24 months

3. Cull rate is too high: 47% cull rate . . . Goal = 30%

4. Overage at 1st breeding (too old to calve at 24 months): 15-16 months old before brought to farm to heat check & breed

5. Losses of calves to Angus bull crosses: heifers not pregnant on 1st breeding are bred by an Angus cleanup bull.

   75% conception . . . 25% of 76 = 19 Angus crosses sold
   = 9 lost Holstein heifer calves

Class Advisor: Dr. Ken Nordlund

Size of first calf heifers at calving is acceptable, although most are older than 24 months (see table). Prepuberal heifer growth does not show any excess or deficient rate of growth (see graph).

Economics:

Maintenance of heifers for 3 months extra prior to first calving:

3 (mo. over 24) x 30 days/mo. x $1.66/day x 38 (1st lact. heifers/yr)
= $5677

Replacement heifers in herd - number needed =
76 - 127 =
51 heifers SHORT
Changing age at 1st calving to 24 mo = 119 needed =
-43 (raise / buy 8 fewer)
Changing cull rate from 47% to 30% = 84 needed =
-8 (raise / buy 43 fewer)
Changing both cull rate and age 1st calf = 76 needed =
0 None short! . . . 51 fewer

Cull rate: costs $25 per cow for every 5% over 30% goal
. . . $25 x 97 cows x 4 = $9700
This does not include buying replacements:

Cull cow selling price*	=	+ $ 700
Springing heifer purchase	=	- $1200
		- $ 500

*(1400 lb at $.50 / cwt)

Reasons for culling (N=45):		
Low production	=	15%
Mastitis	=	18%
Infertility	=	24%
Injured/sick	=	27%
Other	=	15%

Recommendations:

Current culling practices require a much larger herd of replacement heifers to keep the milking herd steady at 97 cows. Selling heifers should be discontinued until an excess is available, so that fewer springing heifers will need to be purchased. Because a large share of the culled cows are first lactation animals, it is unlikely that the $500 lost on a cull cow replaced by a springing heifer is paid back before the new cow is culled.

Heifers calving on average later than 24 months of age also increases the size of the replacement herd required. By simply beginning to breed the heifers at 13 - 14 months of age and increasing heat detection ability, the age at first calving can be decreased from 27 to 24 months. To increase the ease of detecting heats, unbred heifers should be kept in a separate lot at the home farm, instead of being mixed in with a large group (20) of dry cows.

The use of an Angus cleanup bull for all heifers that don't settle on the first breeding leaves 25% of their heifers calving Angus crosses that are sold, losing 9 heifers that are potential replacements. If the heifers are bred twice, with a similar 75% conception rate on 2nd breeding, only 25% of the 19 would be bred to Angus. Then only 2 heifer crosses would be sold instead of 9, yielding 7 extra Holstein heifers.

Mastitis

Problems:

1. Average log linear somatic cell count (LLSCC) of 3.5
2. Only 75% of the herd below 200,000 scc (goal is 85%)
3. Increased incidence of teat injury = 9% (goal 2%)
4. 30% incidence of clinical mastitis (goal is 12% per year)

As in most dairy herds, mastitis is claiming a significant amount of potential revenue from this herd. Revenue loss is composed of reduced milk production, lost milk quality premiums, expenses incurred because of clinical cases and expenses due to culling.

Economics:

Revenue losses breakdown as follows:

31 cases of clinical mastitis/year:
31 - 12 (goal) x $163 / case = $2097 / year

Log linear SCC of 3.5:
3.5 - 2 (goal) x 333 lbs / lact / LLSCC x 97 cow
= 48,500 lbs milk lost
485 cwts x $11 / cwt = $5335

Premiums lost:
31 cent potential gain x 97 cows x 19595 (RHA)
= $5892

Cull cost:

Since the owners buy animals to maintain cow numbers, the simplest way to calculate the cost is to compute the selling value - vs - buy back cost.

Cull cow (1400 lb) at .50/cwt	= + $ 700
Springing heifer	= - $1200
	- $ 500

Recommendations:

Certainly it would be better to have wider stalls in the old barn. Currently the stalls are only 40" wide. Remodeling would need to be based on cow comfort and

HERD SUMMARY

COOPERATIVE EXTENSION PROGRAMS
UWEX University of Wisconsin Extension
University of Wisconsin Madison
College of Agricultural and Life Sciences

WISCONSIN DHI COOPERATIVE
5101 TOKAY BLVD.
MADISON WI 53711

ASSOC NO 92 265 TECHNICIAN 265 SUSAN MITCHELL

[A] HERD CODE	TYPE OF TEST	BREED
131212	DHIR-AP-T	HOL

RECV 6-21-91 PROC 6-24-91

TEST INTERVAL	DAYS ON TEST INTRV	DAYS ON TEST YEAR	TESTS IN 365 DAYS
5:40 AM 5-22 TO 6-21	30	365	12

KEN NORDLUND
U.W. SCHOOL OF VET MED.
2015 LINDEN DR. WEST
MADISON WI 53706

[B] COMMENTS

FOR ASSISTANCE CONTACT YOUR UW-EXT. AGENT AT 608-266-4271 OR YOUR DHI ASSOCIATION OFFICE AT 800-234-9344

** JOIN OVER 200 DHI MEMBERS STATEWIDE IN THE AM/PM TRIAL PROGRAM **

YES, THIS PAST MONTH, 200 MEMBERS ARE TRYING DHI'S AM/PM PROGRAM WITHOUT PURCHASING THE MONITOR FOR THREE MONTHS. YOU HAVE UNTIL JULY 31 TO SIGN UP. SAMPLE THE LABOR SAVINGS, ACCURACY AND CONVENIENCE OF THE AM/PM TEST. IT WORKS LIKE THIS:

- GET AN APPLICATION FROM YOUR FIELD TECHNICIAN TO ENROLL.
- TRY THE PROGRAM FOR THREE MONTHS BY REPORTING MILK WEIGHTS AND MILKING TIMES.
- ACCURACY IS MONITORED BY COMPARING DHI WEIGHTS TO BULK TANK WEIGHTS.
- WHEN YOUR THREE MONTH TRIAL IS OVER, EITHER PURCHASE THE MONITOR AND CONTINUE AM/PM OFFICIAL TEST OR RETURN TO ANOTHER TYPE OF TEST.

ACT QUICKLY, JULY 31 IS THE FINAL SIGN-UP DATE. TRY THE AM/PM PROGRAM NOW! ASK YOUR FIELD TECHNICIAN OR CALL WDHIC AT 800-234-9344. CALL TODAY!

[C] TEST DAY FEED

FEED	AVG CONSUMED LBS	AVG CONSUMED COST	COST / TON	% DM	% PRO	% NDF	% ADF
HAY				90	13		
HAY SILAGE							
CORN SILAGE							
OTHER FORAGE							
PURCHASED FORAGE							
ALL FORAGE (DM)				100			
HMC ( )							
GRAIN MIX				87	12		
PURCHASED FEED (NON FORAGE)							
PROTEIN SUP				90	44		
ALL NON FORAGE (DM)				100			
TOTAL AVG (DM)				100			

[D] TEST DAY RESULTS

$ VALUE PROD	$ VALUE PRODUCT MINUS FEED COST	LBS MILK LB NON FORAGE
$5.72		

MILK PRICE PER CWT	TOTAL FEED COST PER CWT	NON FORAGE FEED COST PER CWT
$10.23		

305 DAY $ VALUE

TOTAL HERD	AVG PER COW	AVG COW ME
$208842	$1916	$2046

TEST DAY MILK TOTALS

BULK TANK	DHI WGT	% OF BULK
4802	4974	104

COW DAY INDEX	HERD AVERAGE DIM	% 1ST MILK
165.95	195	85

[E] TEST DAY AVERAGE PRODUCTION

TEST DATE	TOTAL COWS	% DIM	MILKING COWS ONLY MILK	% FAT	FAT	% PRO	PRO	SCC	CODE
62191	107	88	559	3.80	2.12	2.98	1.67	198	3
52291	107	87	615	3.07	1.89	3.11	1.91	221	V3
41991	103	87	629	3.44	2.17	3.13	1.97	420	3
32191	104	84	646	3.92	2.53	3.12	2.01	216	3
22191	99	84	725	3.81	2.77	2.95	2.14	193	3
12291	96	87	649	3.85	2.50	3.12	2.03	192	3
121990	91	86	727	3.49	2.53	3.03	2.20	151	3
111590	93	81	669	3.51	2.35	3.08	2.06	215	
101690	93	78	656	3.59	2.35	3.09	2.02	192	
91790	91	82	610	3.35	2.05	3.12	1.90	285	
82190	89	86	541	3.36	1.82	2.97	1.60	130	
71890	93	86	541	4.13	2.23	2.96	1.60	282	
61890	93	87	557	3.63	2.02	2.98	1.66	279	
365 DAY TOTALS	1903361		68726		58324				

ROLLING HERD AVERAGE — ENTIRE HERD

NO COWS	DIM	MILK	% FAT	FAT	% PRO	PRO
97.1	310	19595	3.61	708	3.06	600
95.7	310	19596	3.64	713	3.06	600
94.6	309	19586	3.69	723	3.05	597
93.9	309	19461	3.70	719	3.04	592
93.8	309	19379	3.68	713	3.05	591
93.7	309	19316	3.66	707	3.07	593
94.1	307	19091	3.66	699	3.09	591
95.0	304	18796	3.65	686	3.12	586
95.7	304	18675	3.64	679	3.14	586
96.7	305	18631	3.65	680	3.15	587
97.5	305	18680	3.66	684	3.16	590
97.0	304	18856	3.64	687	3.18	599
96.9	302	19035	3.61	688	3.19	607

[F] AVERAGE PTA OF SIRES

GENETIC GROUP	TOTAL NO	MILK LBS	FAT %	FAT LBS	PROTEIN %	PROTEIN LBS	USDA $VALUE
SERVICE SIRES	5	+2065	-.05	+64	-.01	+62	+252
HEIFERS	60	+1205	-.01	+41	-.05	+27	+139
1ST LACT	26	+1173	+.04	+49	+.00	+36	+158
LATER LACT	25	+978	-.04	+26	-.03	+25	+108
ALL COWS	51	+1077	+.00	+38	-.01	+30	+134
STATE AVG		+221	+.01	+9	-.01	+5	

[G] YEARLY HERD TURNOVER

LACT GROUP	COWS ENTER NO	COWS ENTER %	COWS LEAVE NO	COWS LEAVE %
1ST	57	59	21	22
LATER	2	2	24	25
ALL	59	61	45	47
STATE AVG		33		33

[H] COWS CURRENTLY IN THE HERD - AVERAGES

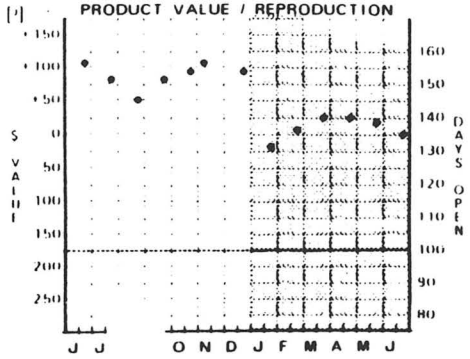
LACT GROUP	COW LACTS	2X 305 ME LACT MILK	FAT	PRO	AGE MO	BODY CWT	PEAK POUNDS MILK	1 100 DAYS NO	MILK	%1ST	101 200 DAYS NO	MILK	%1ST	201 305 DAYS NO	MILK	%1ST	% IO MISS SIRE	DAM
1ST	43	19106	731	576	27	.	67	10	53.3	85	15	60.4	92	7	50.8	89		
LATER	66	20876	740	635	61	.	100.	9	82.6	95	12	67.0	85	22	52.5	87		
ALL	109	20178	736	611	48	.	87	19	67.2	89	27	63.3	89	29	52.1	88		
STATE AVG		18574	678	581	52	1.28	87		66.0	102		59.0	96		49.0	95		

[I] REPRODUCTIVE ANALYSIS

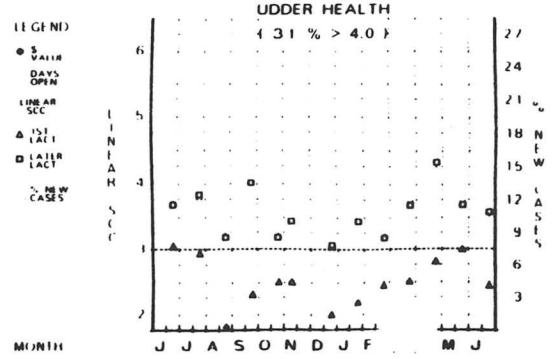
GROUP	PRE BREEDING NO	PRE BREEDING TO FIRST HEAT (DAYS)	PRE BREEDING % HEATS DTCTD	ACTIVE BREEDING NO	ACTIVE BREEDING FIRST SRD (DAYS)	ACTIVE BREEDING 1ST SRD % > (90 DIM)	ACTIVE BREEDING % HEATS DTCTD	PREGNANT NO	PREGNANT SERV PER CONC	PREGNANT % 1 SERV	PREGNANT % >1 SERV	PREGNANT PROT CALV (INTVL)	PREGNANT AVG DAYS OPEN	PREGNANT % >120 DO	PREGNANT % HEATS DTCTD
COWS															
CURRENT	8			56	122	63		43	2.1	49	14	14.4	162	67	
HISTORY	92			81				57	.			14.2			
GOAL(*) AVG(†)		25	80		55	20	80		1.8	60	5	125	100	15	80
HEIFERS		(MO)			(MO)	(15 MO)						(AGE)	DRY PERIOD		
CURRENT	18			119					.				AVG. DAYS	% 0 TO 19 DAYS	% 7TO DAYS
HISTORY	137							47	.			27	76	0	40
GOAL(*) AVG(†)		12	80		15	50	80		1.5	65	0	24	55		

LIST DATE 24-91 13:42 PHONE: 608-846-4715

[J] PRODUCT VALUE / REPRODUCTION



UDDER HEALTH



feasibility. Placing grates in the gutters behind the cows would increase stall length from the current length of 5' 6".

Building a mound in the pasture south of the calf hutches would provide a dry comfortable resting place during the summer months.

Obviously the overall cleanliness of the bunk area and the stalls in the barn is important. A milking time procedures analysis would be warranted to insure proper milking technique.

Finally a milking order based on high scc cows and known infected cows would also help reduce any transmission of contagious organisms.

Nutrition

Problems:		Goals
1. Heifer peaks depressed in summer (see graph)	67 lbs.	75 lbs.
2. Heifer / cow peak ratio is depressed in summer	67 lbs.	73-77 lbs
3. Inadequate bunk space	1.25 ft/cow in herd 1.44 ft/cow in milk	2.5 ft/cow in milk

Positive Indicators:

1. Prepuberal heifers are not overconditioned (see graph).
2. First calf heifers are of adequate size (see table).
3. Balance of ration is good (June cow peaks support 23,000 lbs. RHA)
4. Lactating animals are in good condition.

Economics:

Increase heifer peaks by 10 lbs during summer months:

10 lbs X 43 heifers X $14 net/lbs peak X .5 years
= $3,010 / yr

Discussion:

This herd has a good ration as born out by the June cow peaks of 100 lbs, which would support a RHA of 23, 000 lbs. However, the bunk space is not adequate. The industry standard is 2.5 feet per cow. With a milking herd of 107 cows we would need 268 feet of bunk space. The limited bunk space limits the milking cows dry matter which drives milk production.

Recommendations:

We would recommend lengthening the bunk space so all milking cows could have equal access to feed. We also would recommend installing dividers in the bunk to decrease competition. (Total Economic Opportunity = $49,263)

Report prepared August 9, 1991.