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EC87-262 Profitable Midwest Dairy Practices

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Profitable Midwest Dairy Practices

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Introduction

To better evaluate the management practices for dairy herds in the nine states that process Dairy Herd Improvement Records at the Midstates Dairy Records Processing Center (DRPC) in Ames, IA, a comprehensive survey was conducted. The nine states in the survey were: Arkansas, Illinois, Iowa, Kansas, Missouri, Nebraska, North Dakota, Oklahoma and South Dakota.

DHIA herds were selected because these herds have production data available for research investigation. It was also felt that the survey response from DHIA herds would be higher than non-DHIA herds since the DHIA supervisors could help to collect the data. The project was a joint undertaking between the state extension dairy specialists and the supervisors.

The main reasons for conducting the survey were:

1) to help quantify management practices associated with midwest dairying and to determine those practices that are associated with the largest herd average yields for milk and fat.

2) to spot potential and actual problem areas that need intensive extension efforts.

3) to use these results as a basis for directing research and extension efforts, and

4) to define extension and research goals in management areas that can be addressed on a state and regional basis.

The survey conducted on midwest dairy herds was an attempt to survey not only housing practices, but also various feeding and management practices used by producers for both mature cows and replacement heifers. It was felt that a comprehensive survey covering as many areas of a dairy operation would be of utmost use in planning extension and research thrusts in the midwest.

Questions

A survey was developed that addressed seven major aspects of a dairy operation. These consisted of:

1) housing categories were covered by four questions concerning facilities used for housing animals during their lifetime

2) milking categories that consisted of six questions covering various aspects of the milking operation

3) feeding categories consisting of 12 questions that dealt primarily with the types of grains and forages that are fed throughout the year along with questions dealing with methods for dispensing and storing feed for the milking herd

4) the fourth category contained six questions that deal primarily with the feeding of newborn calves

5) the fifth category addressed nine questions concerning additives and supplements being fed to the heifers and the milking herd

6) the sixth area covered management practices commonly used today, such as grouping of heifers and milking animals, computer usage, veterinarian programs, heat detection areas, mastitis control and DHIA usage

7) the seventh and last category deals with A.I. and various methods of selecting sires.

The questions asked in the questionnaire along with the options given producers for response are shown in Tables 1 through 7. An attempt was made to list as many of the options as possible that would be considered by the producers. The survey form contained 57 questions and a total of 254 possible responses.

Response

A total of 7,600 surveys covering all DHI testing systems were sent to the supervisors. The response was 4,221 surveys or 54 percent of the forms were returned. The percentage response ranged by state from 40 to 79 percent. The surveys were then sent to the various state extension dairy specialists and then all analysis of data was conducted at the University of Nebraska-Lincoln.

The survey data were merged with the DHIA production data from the Midstates DRPC in Ames, IA. The 1985 year end herd averages for milk and fat were used in the analyses. The data were further edited so that only those Holstein herds with a total of 365 days on test in 1985 and on DHIR, DHI, or DHI A/P testing were included in the analyses. These restrictions reduced the total number of herds meeting all editing restrictions from 4,221 to 2,684.

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Results

The results presented in Tables 1-7 are the herd averages in pounds for milk and fat of the various management factors included in the study. The results were obtained by solving for all management practices simultaneously. Therefore, all results presented have been adjusted for all other practices recorded.

The results are interpreted in the same manner as the USDA Sire Summaries. You can rank various management practices from high to low and you can look at differences among herd averages. Therefore, when looking at the results presented in Tables 1-7 you should look at the rank of various management practices and the differences among practices.

Housing

Table 1 contains the solutions for the various housing categories included in the survey. Tie-stall housing was associated with the highest herd averages and no housing or windbreak the lowest. The differences between the two groups is 814 lb. of milk and 20 lb. of fat. There were very few major differences associated with heifer rearing practices (questions 2-4) and herd average production for milk or fat. There is a trend where calves are grouped and/or given individual attention to be better than no grouping or being housed together without regard to age.

Milking Systems

Table 2 lists the 6 questions that dealt with milking systems or procedures. The type of milking system did not seem to have a great association with production levels, however, side-opening parlors, trigon or polygon systems, and bucket milkers, were lower than all others. These could be associated with both smaller and larger than average herd sizes where other management practices are not at optimum levels.

Neither number of milking units, automatic takeoffs or number of

Table 1. Solutions for herd average milk and fat in pounds and number of observations for various housing categories.

	Observations	Solutions	
		Milk	*Fat*
1. *Type of housing*			
Stanchion	702	13,275	471
Tie stall	303	13,587	482
Warm free stall	81	13,114	469
Cold free stall	1234	13,182	469
Loose housing	408	13,187	469
Wind break	351	13,055	462
No wind break or buildings	63	12,773	444
2. *How are heifers housed from 1 to 3 months?*			
Individual, elevated stalls or pens (cold barn)	564	13,237	471
Individual pens or stalls (warm barn)	482	13,262	473
Hutches	1100	13,224	471
Tied in cow barn	59	13,466	482
Community or group pen	843	13,231	471
Outside	118	13,178	469
Other	36	13,266	477
3. *How are heifers housed from 3 months to 1 year?*			
Group pens	1644	13,383	477
Free stalls grouped by age	112	13,554	480
Slatted floors grouped by age	10	12,819	453
Bedded pack grouped by age	536	13,405	477
Stanchion	5	13,176	471
Loose housing no grouping	349	13,138	466
Outside shed	748	13,248	471
4. *How are heifers housed from 1 to 2 years?*			
Group pens	698	13,121	466
Free stalls grouped by age	156	13,284	475
Slatted floors grouped by age	4	13,638	493
Bedded pack grouped by age	277	13,400	480
Stanchion	8	13,416	471
Loose housing no grouping	604	13,295	475
Outside shed	1485	13,132	471

Table 2. Solutions for herd average milk and fat in pounds and number of observations for various milking categories.

	Observations	Solutions	
		Milk	*Fat*
1. *Type of milking system*			
Bucket milker	58	12,804	460
Bucket milker, transfer station	53	13,103	469
High milk pipeline	1559	13,169	469
Low milk pipeline	663	13,121	466
Rotary parlor	8	13,418	477
Herringbone parlor	1074	13,092	469
Side opening parlor	274	12,824	458
Flat milking barn	191	13,389	475
Trigon or polygon	12	12,247	447
Other	63	13,020	469
2. *Number of milking units*			
≤ 4	1561	13,519	488
> 4	1123	13,708	497
3. *Automatic takeoff units*			
Yes	459	14,208	504
No	2225	14,278	506
4. *Electronic milk recording*			
Yes	44	13,033	458
No	2640	12,731	447
5. *Number of milking personnel per milking*			
≤ 2	2670	13,253	471
> 2	14	13,284	480
6. *Who does the milking?*			
Producer	2355	13,479	484
Spouse	837	13,453	477
Children	715	13,242	475
Employees	729	13,339	477

milking personnel were associated with differences in production levels. When the producer or spouse was responsible for the milking a positive effect in herd production level was noted. This may be associated with extra time spent on the small details by those being directly involved in the dairy operation.

Feeding Categories

Table 3 shows the various feeding category questions addressed in the survey. The feeding areas showed the largest differences in lactation yields among categories. Herds feeding forage in a tie or stanchion barn in the winter produced highest milk yields.

After reviewing the solutions, a trend emerges that the management practices associated with the tie or stanchion barn are related to consistently higher lactation yields than other milking/housing facilities. Alfalfa silage or haylage as winter forages were associated with higher herd averages than either sorghum silage or prairie hay.

Question three lists the systems available for feeding forage in the summer. The options involving feeding the forage outside, either in a stack feeder or on the ground gave lower lactation solutions than those fed indoors. This may be associated with poor cleaning procedures or interaction of the method of feeding with high summer heat.

Unlike alfalfa silage or haylage fed in the winter, that being fed in the summer was related to lower than average production when compared to alfalfa hay fed during the same season. Possibly the silage fed in the summer is of poorer quality and was put up as a second alternative after being cut for hay, or it may be from the first cutting in the spring which is often of poor quality due to late harvest associated with wet weather.

Table 3 (questions 6 through 12) show some practices that tend to be associated with higher herd levels of production. Method of feeding grain in which the producer has control over the amount appear to be superior. The home mix as a source of

Table 3. Solutions for herd average milk and fat in pounds and number of observations for various feeding categories.

	Observations	Solutions	
		Milk	*Fat*
1. *Where is forage fed to milking herd in winter?*			
Covered bunk	764	13,345	477
Open bunk	1419	13,275	475
Tie stall or stanchion	701	13,468	484
Free stall barn	356	12,962	466
From feed wagon	164	12,947	462
Other	87	13,493	482
2. *Type of forage fed in winter*			
Corn silage	1643	13,121	473
Sorghum silage	263	12,734	460
Alfalfa silage or haylage	1220	13,572	484
Alfalfa hay	2244	13,411	477
Prairie hay	409	12,938	462
Other silage or haylage	185	13,176	477
3. *Where is forage fed to milking herd in summer?*			
Covered bunk	730	13,402	480
Open bunk	1526	13,396	477
From feed wagon	225	13,471	477
Tie stall or stanchion	244	13,015	460
Free stall barn	301	13,658	486
Stack feeder	168	12,815	458
On ground	86	12,571	449
Other	124	13,119	469
4. *Type of forage fed in summer*			
Pasture	1013	13,255	471
Corn silage	970	13,303	477
Sorghum silage	154	13,242	473
Alfalfa silage or haylage	1469	12,817	462
Alfalfa hay	1884	13,477	480
Prairie hay	283	13,242	473
Other silage or haylage	296	13,297	475
5. *Where is grain fed?*			
Tie stall or stanchion	1008	13,660	484
Milking parlor	1243	13,515	482
Complete feed	302	13,158	466
Computer feeder	304	13,220	475
Magnetic feeder	139	13,543	480
Bunk	578	13,336	475
Other	27	13,185	482
6. *Method of feeding grain*			
Hand scoop	990	13,211	477
Scoop shovel	174	13,273	475
Mixer wagon with scales	231	13,875	495
Feed cart with scale	38	13,075	464
Feed cart with weigh cells	20	13,695	482
Mixer wagon without weigh cell	120	13,521	484
Feed cart without weigh cell	128	13,471	486
Computer controlled	319	13,438	473
Fed in parlor	877	13,202	471
Free choice	218	13,444	482
7. *Source of grain*			
Home mix	1952	12,934	464
Commercial brand	385	13,290	469
Custom mix	483	13,158	471
8. *Type of grain in custom or home mix*			
Corn dry ear	413	13,288	477
Corn dry shelled	1455	13,103	466
Milo	466	13,455	480
Oats	856	13,222	477
High moisture shell corn	517	13,442	475
High moisture ear corn	124	13,068	462
Barley	146	13,182	469
Wheat	115	13,156	466
Other	119	13,288	473

Table 3. continued

	Observations	Solutions Milk	Solutions Fat
9. How many times per day do you feed grain?			
≤ 2	2018	12,760	458
> 2	666	13,222	475
10. *How many times per day do you feed forages?*			
≤ 2	1602	13,240	469
> 2	1122	13,501	477
11. *How is succulent roughage stored?*			
Conventional upright silo	1451	13,504	482
O_2 limiting upright silo	570	13,178	471
Trench	259	13,086	469
Bunk	173	13,358	475
Bag	195	13,222	471
Stacked on ground	248	12,872	458
12. *Do you feed your heifers*			
With the cows	242	13,079	466
Separately	2503	13,284	477

Table 4. Solutions for herd average milk and fat in pounds and number of observations for various calf feeding categories.

	Observations	Solutions Milk	Solutions Fat
1. *When is first colostrum fed after birth?*			
Within 1 hr	880	13,290	475
Within 4 hr	1231	13,240	471
Within 8 hr	453	13,248	471
Within 12 hr	171	13,319	475
2. *How is colostrum fed?*			
Nursed	1145	12,989	464
Hand fed	2251	13,418	480
3. *Amount of colostrum fed at first feeding*			
≤ 3 lbs	1067	13,260	475
> 3 lbs	1657	13,508	482
4. *Kind of colostrum fed*			
Fresh	2652	13,354	480
Fermented	60	13,011	471
Commercial preparation	3	12,676	469
5. *Feeding program to weaning*			
Nurse cow	52	13,070	462
Hand fed, whole milk	1134	13,341	480
Hand fed, whole milk and replacer	1048	13,242	471
Hand fed, milk replacer only	406	13,182	473
Hand fed, fermented colostrum	149	13,545	482
Waste milk	899	13,394	475
Machine fed	12	13,618	488
6. *Frequency of feeding on first day*			
Twice daily	2519	13,343	471
Once daily	61	13,396	477
Other	59	13,853	488

grain gave a lower solution than the commercial or custom mix. This suggests poor ration balancing of home mixes. An association was noted between the number of times grain and forages were fed and production. Feeding grain and forage more frequently was associated with higher herd averages. Covered roughage storage facilities on a nonpermeable surface are always favored for higher production than stacking roughage on the ground. A 631 lbs. difference in milk yield was found to exist between herds with a conventional upright silo vs. those stacking silage on the ground.

Calf Rearing

Table 4 (questions 1-6) addresses primarily calf feeding categories. As can be gleaned from the table, when the first colostrum was fed following birth made little difference, but how it was fed and the amount fed did make a difference. Economically, it appears worthy to note that feeding of waste milk and feeding only once daily did not appear to have been detrimental to herd milk yields compared with feeding whole milk or milk replacers and twice-a-day feeding.

Additives

Table 5 shows the feed ingredient and additive categories (questions 1-9). The feed additives listed in Table 5 had almost as much relation to production as did the feeding systems in Table 3. Distillers grain and whole cottonseed were associated with increased production levels. Soybean meal when used as a supplement source showed a slight decrease in production level. Of all the additives, the use of buffers seemed to be associated with the highest herd averages. In fact, the solution for buffers gave the largest value of all factors examined.

Management

Considering the number and diversity of the management questions addressed in Table 6 one might expect to see a few more striking differ-

ences. These factors may be associated with other management factors and when all are taken into account simultaneously may not be as significant as when studied separately. There were only a few of the management factors that bear discussion.

The difference in question 11 concerning use or non-use of Somatic Cell Count (SCC) through DHIA may indicate that those who do not have a somatic cell problem avoid SCC testing on individual cows. Teat dipping as a means of mastitis control seems to be associated with better herd production levels.

It was interesting to note in question 13 that the length of time a producer had been in dairying made no difference in herd production levels, whereas in question 14 there was a trend for herd production to increase in direct relation to the years on DHIA test. Solutions to questions 15 and 16 show producers that have problems with production or mastitis are well aware of the fact and would like to change the situation.

Artificial Insemination (A.I.)

The last group of questions in Table 7 addresses the use of A.I. Those herds using A.I, totally, had a herd average for milk and fat of 1,113 lbs. of milk and 46 lbs. of fat higher than for producers strictly using a beef bull. Question 2 shows that those selecting on PDF had the highest herd averages for milk. With the high genetic relationship between PDF and PDM these producers selecting on PDF may be putting more emphasis on PDM than they realize. When deciding on the type of mating system to use, these data suggest the differences are not great. The breed association program is only slightly higher than not using any program at all.

The results as presented in Tables 1-7 may serve as a guide for additional investigations of management and environmental traits that effect production levels. The survey was a first attempt to begin investigating all management areas simultaneous-

Table 5. Solutions for herd average milk and fat in pounds and number of observations for various feed additive categories.

	Observations	*Solutions* Milk	*Solutions* Fat
1. *By-products fed*			
Hominy	17	13,347	462
Soy hulls	93	13,174	466
Distillers grain	116	13,640	493
Corn gluten meal	200	13,297	473
Brewers grain	64	13,275	466
Whole cottonseed	146	13,776	491
Dried brewers grain	40	12,877	458
Other	136	13,083	466
2. *Protein supplement source*			
Commercial supplement, no urea	1188	13,255	473
Commercial supplement, with urea	196	13,149	469
Soybeans	170	13,231	471
Soybean meal	1243	13,009	464
Anhydrous ammonia with corn silage	60	13,240	471
Natural and urea	16	13,578	482
Cottonseed meal	88	13,334	471
Other	103	13,691	486
3. *Where are minerals fed?*			
Grain mix	1773	13,266	471
Forage	150	13,539	484
Complete mixed ration	337	13,517	482
Free choice	1590	13,235	471
Topdressed	214	13,257	475
Other	16	13,603	491
4. *Do you use buffers?*			
Yes	1462	14,172	502
No	1222	13,451	475
5. *Do you feed the following additives to heifers?*			
Rumensin	459	13,266	471
Antibiotics	332	13,156	473
Yeast	56	13,103	473
Enzymes	28	13,094	462
Dewormers	936	13,004	464
6. *Are you aware of any additives for heifers that increase average daily gain or efficiency?*			
Yes	1137	13,081	462
No	1571	13,037	460
7. *Are you aware of any additives to increase milk production?*			
Yes	1170	13,380	473
No	1726	13,174	466
8. *If you feed heifers separately from cows, do you use in the ration:*			
Protein supplements	552	13,273	471
Vitamin-mineral supplement	772	13,182	471
Both	1308	13,297	473
None	267	13,132	471
9. *If you use a vitamin-mineral supplement for heifers, do you use it:*			
Winter	277	13,092	469
Summer	19	13,801	489
Year round	2037	13,127	469

ly. The results cannot be interpreted as direct cause and effect relationships, but they can point out trends and associations of management practices that would warrant additional investigations.

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Table 6. Solutions for herd average milk and fat in pounds and number of observations for various management factor categories.

	Observations	Solutions	
		Milk	*Fat*
1. *Do you feed a separate dry cow ration?*			
Yes	1543	12,837	462
No	1141	12,813	462
2. *How many groups do you have in your milking herd?*			
≤ 2	2628	13,499	480
> 2	329	13,435	482
3. *Are cows changed from one group to another?*			
Yes	565	13,240	471
No	1846	13,347	475
4. *How are milking animals grouped?*			
Production	600	13,099	466
Age	61	13,717	486
Days in milk	210	13,165	471
Days carried calf	73	13,647	488
Nutrient requirements	57	13,647	482
Body weight	63	13,229	471
Other	59	13,061	466
5. *Do you have or use a computer?*			
Yes	327	13,869	495
No	2353	13,939	493
6. *Do you have a routine veterinarian program?*			
Yes	1725	12,888	460
No	930	12,417	444
7. *How many times does the veterinarian visit your herd?*			
< 12	1459	13,011	466
≥ 12	1225	13,141	471
8. *Who is responsible for heat detection?*			
Producer	2183	13,354	475
Spouse	694	13,215	473
Children	656	13,229	473
Hired help	576	13,354	477
Partner	182	13,405	480
All of the above	342	13,396	480
9. *How many times do you check for heat daily?*			
≤ 2	1631	13,075	469
> 2	1053	13,187	471
10. *Is a heat detection aid used?*			
Gomar animal	114	13,160	466
Kamar	641	13,097	466
Chalk or grease pencil	386	13,517	484
Other	90	13,369	482
11. *Do you participate in a DHI-SCC program?*			
Yes	1396	13,556	484
No	1159	13,699	488
12. *What mastitis control programs do you use?*			
Teat dip	2374	13,682	488
Dry cow treatment	2369	13,455	482
Somatic Cell Count	1322	13,167	469
California or Wisconsin test	584	13,160	471
Vaccines	225	13,312	475
Paper towels to dry teats	1468	13,389	477
Other	129	13,343	471
13. *How long have you been dairying?*			
1- 5 yr	232	13,422	477
6-10 yr	389	13,405	477
11-25 yr	1097	13,365	475
> 25 yr	989	13,334	477

Table 6. continued

	Observations	Solutions Milk	Solutions Fat
14. *How long have you been enrolled in DHIA?*			
1- 5 yr	631	12,846	455
6-10 yr	647	13,292	469
11-25 yr	1023	13,552	480
> 25 yr	357	13,754	490
15. *What are your two major reasons for culling?*			
Low production	2144	13,048	466
Mastitis	1113	13,031	464
Breeding	1973	13,347	475
Feet and legs	194	13,105	471
Other	72	13,283	475
16. *What would you like most to see changed in your herd?*			
Production	1849	12,131	433
Reproduction	1104	13,435	480
Culling	353	13,301	473
Other	118	13,950	488

Table 7. Solutions for herd average milk and fat in pounds and number of observations for various Artificial Insemination (A.I.) categories.

	Observations	Solutions Milk	Solutions Fat
1. *Do you use A.I.?*			
Yes, totally	1813	13,636	488
Yes, milking herd only	398	12,949	464
Yes, bull as clean up	708	13,075	466
No, dairy bull	243	13,055	466
No, beef bull	29	12,522	442
No, beef & dairy bull	54	12,859	462
2. *How do you primarily select sires on production traits?*			
PD$	1035	13,306	471
PDM	977	13,121	469
PDF	568	13,462	482
TPI	1170	13,273	473
Other	335	12,989	462
3. *Do you select sires mainly on PDT?*			
Yes	531	13,246	471
No	2006	13,325	473
4. *What type of mating system do you use?*			
None	864	13,438	480
Breed association	410	13,504	482
aAa	225	13,336	478
A.I. program	835	13,317	475
Consultant	249	13,341	475
Other	191	13,605	486