

DairyMetrics for Arkansas Herds in May, 2007

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Story in Brief

DairyMetrics, a benchmarking tool from Dairy Records Management Systems (DRMS), was used to obtain the average and standard deviation of the traits, highest and lowest herd for the traits, and number of herds in the comparison for Holstein herds and all dairy herds in Arkansas on the Dairy Herd Improvement program. DairyMetrics also was used to compare groups of Arkansas Holstein herds to illustrate the importance of greater rolling herd averages for milk, improved estrus detection, greater genetic merit, and reduced somatic cell counts (SCC) in milk on efficiency of producing milk as indicated by daily income-over-feed costs (IOF\$). DairyMetrics demonstrated that percentages of cows died, percentages of cows leaving the herd, and days open had little effect on IOF\$ per cow this year in Arkansas. However, herds with lower conception rates had greater IOF\$ compared with herds with greater conception rates (\$5.86 versus \$4.86), one of the largest difference in IOF\$ within parameters. Often there is an inverse relationship between milk production and conception rates and the relationship with IOF\$ varies. Herds with more replacements per 100 cows had greater IOF\$ than herds with fewer replacements.

Many factors in DairyMetrics are interrelated and can affect herd profitability and IOF\$. Arkansas dairy producers are now paid a premium for maintaining a herd's SCC of less than 300,000. Another of the greatest differences in IOF\$ resulted in herds with less than 300,000 SCC (\$5.66/day IOF\$) compared to herds with greater than 300,000 SCC (\$5.15/day IOF\$). However, herds with less than 3.5% fat in milk had greater IOF\$ than herds with higher fat tests. Herds with greater than \$5 IOF\$, averaging \$6.08, had slightly more rolling milk (17,469 versus 17,195 lb), lower SCC, and lower culling rates than herds with less than \$5 IOF\$ which averaged \$4.31.

Introduction

DairyMetrics is a benchmarking tool that allows producers on the Dairy Herd Improvement (DHI) program to compare 72 variables on their DHI records to other herds in the state or region concerning general herd traits, such as milk production, reproduction, udder health and genetics. Data obtained from DairyMetrics can show individual dairy producers their herd's average and percentile for any of the 72 variables compared to other herds, which can indicate where they might improve the herd.

DairyMetrics also can be used to compare these variables among groups of herds to illustrate how the various traits affect efficiency of producing milk. For example, Arkansas herds of various sizes can be compared to determine the relationship of herd size with other traits included in DairyMetrics. These comparisons of variables can be used for within herd comparisons and group comparisons in extension meetings to illustrate the importance of recommended practices on the efficiency of producing milk, especially daily income-over-feed costs (IOF\$). Data for IOF\$ are highly correlated with the profitability of milk production.

Experimental Procedures

DairyMetrics was used to obtain the average, standard deviation, and low and high herds for various general, production, reproduction, udder health, and genetic variables for Holstein herds in the state ($n = 26$; Table 1) and for herds of all breeds ($n = 36$ or 10 additional herds) in Arkansas on May 7, 2007 (Table 2).

DairyMetrics also was used to compare groups of Arkansas herds for selected variables (Table 3) to illustrate the importance of

these variables on efficiency of milk production, using daily IOF\$ as the indicator of efficiency. In comparing DHI herds, other studies indicate that IOF\$ is highly correlated with profitability.

Results and Discussion

The average, standard deviation, low herd, and high herd for 72 variables from DairyMetrics for Holstein herds in Arkansas are shown in Table 1 and for all breeds in Table 2. Previously designated ranges of variables can be selected for comparison; however, each category must have had at least 6 herds to assure anonymity of individual herds. If an individual herd comparison is conducted, the means for the herd for each trait and percentile are displayed. The percentile of each variable is relative to the variables that are selected for comparison (e.g., the cohort herds or selected group of herds).

As illustrated by the comparisons of Table 1 and Table 2, Holstein herds were the predominant herds on tests in Arkansas. Compared to last year, one of the most significant changes in the parameters is that milk blend price for all breeds had improved to \$15.45/cwt in 2007, after it had decreased to \$13.14/cwt in 2006 from \$15.69/cwt in 2005 (compared to \$14.91, \$11.98, and \$14.12/cwt in 2002, 2003, and 2004, respectively). This increase in milk prices helped maintain a reasonable daily IOF\$ per cow of \$4.88 which was lowered by the increased feed costs (\$6.83/cwt versus \$5.42/cwt in 2006). In 2005, daily IOF\$ was \$5.00 compared to \$5.92 in 2004 (compared to \$5.18, \$3.61, and \$5.07 per day in 2001, 2002, and 2003, respectively). Daily feed costs/milk cow were \$4.59, an increase from \$3.50 in 2006. This compares to daily feed costs/cow of \$2.97 in 2002, \$3.15 in 2003, \$3.24 in 2004, and \$3.28 in 2005.

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Table 3 shows the effects on daily IOF\$ for groups of Arkansas Holstein herds with different levels of the variables in DairyMetrics. It was surprising that IOF\$ for (1) the Holstein herds exceeded the non-Holstein herds by \$0.92/d and (2) Holstein herds with greater than 100 cows exceeded the smaller herds by \$1.63/d. The latter may have resulted in part from larger herds having feed contacts that locked in lower feed prices since feed prices rose dramatically in the fall. Daily feed costs were \$3.79 for larger herds which had slightly higher milk production and \$4.32 for smaller herds.

DairyMetrics also was used to compare groups of Arkansas Holstein herds to illustrate the importance of higher rolling herd averages for milk, higher estrus detection rates, higher genetic merit, and lower somatic cell count (SCC) in milk on efficiency of producing high levels of milk yield as indicated by daily IOF\$. DairyMetrics demonstrated that percentages of cows died, percentages of cows leaving the herd, and days open had little effect on IOF\$ per cow this year in Arkansas. However, herds with lower conception rates had greater IOF\$ compared with herds with higher conception rates (\$5.86 versus \$4.86/d). Generally, conception rate and other reproductive parameters have had small but varying effects on daily IOF\$ for milking cows but can affect profitability of the dairy herd. Data show an inverse relationship between milk production and conception rates. Cull rates can affect the total costs of replacements. Herds with more replacements per 100 cows had greater IOF\$ than herds with fewer replacements, indicating that those herds are better able to cull cows and maintain herd size.

Many factors in DairyMetrics are interrelated and can affect herd profitability and daily IOF\$. Herds with greater than \$5 IOF\$, averaging \$6.08, had slightly more rolling milk (17,469 versus 17,195 lb), lower SCC, and lower culling rates than herds with less than \$5 IOF\$ which averaged \$4.31. Arkansas dairy producers are now paid a premium for maintaining a herd's SCC of less than 300,000. Another of the largest difference in IOF\$ resulted in herds

with less than 300,000 SCC (\$5.66/day IOF\$) compared to herds with greater than 300,000 SCC (\$5.15/day IOF\$). Additionally, no extra value is given to milk from a cow or herd with low SCC on the DHIA records which could have increased the difference in IOF\$ between herds with high and low SCC. In total, these data illustrate the importance of having herds with optimal udder health.

Data in Table 3 also illustrate that daily IOF\$ costs per cow for Holstein herds were slightly affected by percentage of fat in the milk. This relationship between fat percentage and IOF\$ varies from year-to-year, but dairy producers are paid for additional fat. This year's relationship is negative for milk fat percentage in milk and IOF\$; milk per cow was greater and SCC was lower in the herds with higher fat percentage which makes the averages for IOF\$ in the lower fat herds inconsistent with some of the other results.

Many factors in milk production are interrelated and can affect herd profitability without affecting daily IOF\$ on DHIA records. For example, milk production and conception rate are often inversely related, but both traits affect herd income. Some traits may positively affect income in more than one way, but are not always detectable with DHIA records. Overall, the data show the positive effects of higher milk production, improved udder health, and better genetics on IOF\$.

Implications

DairyMetrics can be used effectively either by individual producers to compare their herds to other herds throughout the region or can be used in an educational activity to illustrate the importance of specific management practices on profitability and efficiency of milk production, as indicated by daily income-over-feed costs. As expected, most variables relating to routinely recommended management practices correlated with greater daily income-over-feed costs.

Table 1. DairyMetrics for Holstein herds in Arkansas, May, 2007.

General	Number of herds	Average of herds	Std dev	Lowest herd	Highest herd
Number of cows	26	126	83	37	320
Number of 1st lactation cows	26	44	36	5	135
Number of 2nd lactation cows	26	35	23	8	96
Number of 3rd+ lactation cows	26	46	29	2	127
% number of cows-Year Change	25	7	23	-33	80
% in milk on test day	26	90	8	71	100
Days in milk	26	203	35	164	278
Age of 1st lactation cows	26	27	2	24	35
% cows left herd-overall	26	33	13	9	72
% cows left herd-1st lactation	25	19	18	0	93
% cows left herd-2nd lactation	25	27	16	1	52
% cows left herd-3rd+ lactation	25	43	24	0	85
% cows died-all lactation	25	7	4	1	18
% cows died-1st lactation	26	3	3	0	11
% cows died-2nd lactation	25	5	5	0	18
% cows died-3rd+ lactation	25	10	6	0	23
% cows left for reproduction-overall	25	5	5	0	16
% cows left for reproduction-1st lactation	26	2	3	0	13
% cows left for reproduction-2nd lactation	25	6	8	0	25
% cows left for reproduction-3rd+ lactation	25	8	9	0	30
Daily value production-milk cows	26	9.22	1.38	6.82	11.61
Daily feed costs-milk cows	21	4.04	0.93	2.14	5.66
Daily feed costs/CWT	21	6.92	1.92	4.16	11.42
Daily income/feed-milk cows	21	5.11	1.14	3.28	7.89
Milk blend price	26	15.61	2.61	13.49	24.50
Production					
Rolling milk	25	17,657	3,616	12,852	23,596
Year change in rolling milk	26	1,279	6,396	-2,778	21,140
Rolling fat	25	632	134	459	902
Rolling protein	25	546	110	387	711
Daily milk 1-40D-1st lactation	19	55	9	38	74
Daily milk 1-40D-2nd lactation	16	67	14	44	105
Daily milk 1-40D-3rd+ lactation	18	78	20	38	107
Daily milk-milk cows	26	60.3	10.7	36.6	80.5
Daily milk-all cows	26	54.5	11.8	33.0	75.5
Daily % fat	26	3.5	0.4	2.5	4.2
Daily % protein	26	3.1	0.1	2.9	3.4
Summit milk 1st lactation	26	59	10	34	77
Summit milk 2nd lactation	26	75	13	52	96
Summit milk 3rd+ lactation	26	79	14	48	102
Peak milk 1st lactation	25	63	10	47	85
Peak milk 2nd lactation	26	78	13	56	99
Peak milk 3rd+ lactation	25	84	13	60	109
Projected 305 day ME milk	26	19,895	3,575	12,962	26,151
Std 150 day milk	26	65	12	38	85
Fat-protein ratio 1-40 D-1st lactation	19	1.18	0.13	0.96	1.45
Fat-protein ratio 1-40 D-2nd lactation	16	1.15	0.14	0.89	1.42
Fat-protein ratio 1-40 D-3rd+ lactation	18	1.20	0.16	0.78	1.47
Fat-protein ratio 41-100 D-1st lactation	21	1.13	0.18	0.56	1.35
Fat-protein ratio 41-100 D-2nd lactation	24	1.18	0.18	0.70	1.63
Fat-protein ratio 41-100 D-3rd+ lactation	26	1.14	0.17	0.89	1.57
Fat-protein ratio 101-199 D-1st lactation	24	1.15	0.20	0.42	1.60
Fat-protein ratio 101-199 D-2nd lactation	25	1.13	0.13	0.79	1.37
Fat-protein ratio 101-199 D-3rd+ lactation	25	1.14	0.14	0.87	1.45
Fat-protein ratio 200-305 D-1st lactation	24	1.14	0.10	0.91	1.39
Fat-protein ratio 200-305 D-2nd lactation	26	1.11	0.13	0.91	1.47
Fat-protein ratio 200-305 D-3rd+ lactation	25	1.13	0.13	0.97	1.41
Fat % 1-40 D-1st lactation	19	3.7	0.6	2.5	4.8
Fat % 1-40 D-2nd lactation	16	3.7	0.5	2.5	4.7
Fat % 1-40 D-3rd+ lactation	18	3.0	0.0	2.0	5.0
Fat % 41-100 D-1st lactation	20	3.4	0.5	2.4	4.3
Fat % 41-100 D-2nd lactation	24	3.4	0.5	2.1	4.9
Fat % 41-100 D-3rd+ lactation	26	3.0	0.0	2.0	4.0
Fat % 101-199 D-1st lactation	23	3.7	0.5	3.1	4.8
Fat % 101-199 D-2nd lactation	25	3.5	0.4	2.6	4.3
Fat % 101-199 D-3rd+ lactation	25	3.0	0.0	2.0	4.0
Fat % 200-305 D-1st lactation	24	3.7	0.5	3.0	4.7
Fat % 200-305 D-2nd lactation	26	3.6	0.4	2.8	4.7
Fat % 200-305 D-3rd+ lactation	25	3.0	0.0	2.0	4.0

Table 1. DairyMetrics for Holstein herds in Arkansas, May, 2007 (Continued).

Udder Health	Number of herds	Average of herds	Std dev	Lowest herd	Highest herd
SCC [†] actual	26	437	201	103	951
SCC score	26	3.5	0.7	2.0	4.8
SCC score for 1st lactation	26	3.1	0.8	1.5	4.6
SCC score for 2nd lactation	26	3.3	0.8	1.6	4.4
SCC score for 3rd lactation	26	4.1	1.2	2.3	8.0
SCC score for cows 41-100 D	26	3.1	1.3	1.0	6.7
SCC score for cows 101-199 D	26	3.3	0.8	1.7	5.0
SCC score for cows 200-305 D	26	3.7	0.7	2.2	4.8
SCC score for cows 306+ D	26	3.9	0.9	2.6	5.6
% cows (SCCS of 0-3)	26	52	14	29	85
% cows (<41D with SCCS >4)	24	40	31	0	100
% 1st lactation (SCCS of 0-3)	26	59	17	22	100
% 2nd lactation (SCCS of 0-3)	26	56	17	30	92
% 3rd lactation (SCCS of 0-3)	26	42	19	0	76
% cows culled for mastitis	25	3	3	0	11
% value production lost >from SCC	26	3	2	0	7
Reproduction					
Pregnancy rate-current	24	16	8	1	39
Pregnancy rate-year average	26	11	4	0	18
Days open-projected min-all	26	181	39	124	289
Projected calving interval	26	15.2	1.3	13.3	18.7
Current actual calving interval	26	14.4	1	12.3	16.4
% cows calving-current test	26	6	5	0	18
% birth 4+ calving difficulty-1st lactation	20	3	6	0	20
Days open-projected min-1st lactation	26	207	58	129	339
Days open-projected min-2nd lactation	26	171	54	111	329
Days open-projected min-3rd+ lactation	26	170	41	118	294
Voluntary waiting period(VWP)	26	51	7	40	60
Days to 1st service (%herd< than VWP)	24	11	9	1	34
Days to 1st service (%herd VWP to 100D)	24	54	20	23	88
Days to 1st service (%herd> than 100D)	25	36	21	3	100
Days 1st service-total herd	25	103	26	67	187
Days 1st service(%herd <100D)-1st lactation	23	64	23	14	100
Days 1st service(%herd <100D)-2nd lactation	24	70	16	39	100
Days 1st service(%herd <100D)-3rd+ lactation	23	67	19	23	100
Conception rate for past 12mo-1st service	26	42	19	0	81
Conception rate for Past 12mo-2nd service	26	43	21	0	80
Conception rate for Past 12mo-3rd+ service	26	40	24	0	100
Services per pregnancy-All Lactation	25	2.0	1.0	1.0	6.0
Services per pregnancy-1st Lactation	24	3.0	1.0	1.0	9.0
Services per pregnancy-2nd Lactation	24	2.0	1.0	1.0	6.0
Services per pregnancy-3rd+ Lactation	24	3.0	1.0	1.0	7.0
% of heats observed for year	24	32	15	4	58
% of heats observed last test	22	34	20	2	62
Number of abortions in past year	26	0	0	0	0
Number of calvings in past year	26	120	76	36	321
% dry less than 40 days	26	14	9	1	35
% dry more than 70 days	26	34	14	12	64
Genetics					
%ile rank of proven AI bulls	26	37	27	0	87
%ile rank of young AI bulls	26	21	30	0	79
% of herd bred to proven AI bulls	20	60	27	1	100
% of herd bred to young bulls	26	5	9	0	38
% of herd bred to non-AI bulls	26	40	37	0	100
Net merit\$ for 1st lactation	21	49	46	-51	107
Net merit\$ for all cows	22	31	49	-69	96
Net merit\$ for heifers	21	78	69	-26	216
% of heifers ID'd by sire	22	65	31	0	100
% of cows ID'd by sire	26	59	39	0	99
Replacement rate (#heifer/#cows)*100	26	73	48	0	191
Replacement rate (#heifer 0-12 mo/#cows)*100	26	31	16	0	50
Replacement rate (#heifer 13+ mo/#cows)*100	26	41	37	0	143

[†]Somatic cell counts/1000.

Table 2. DairyMetrics for all breeds in Arkansas, May, 2007.

General	Number of herds	Average of herds	Std dev	Lowest herd	Highest herd
Number of cows	36	148	113	37	559
Number of 1st lactation cows	36	55	45	5	180
Number of 2nd lactation cows	36	40	33	2	141
Number of 3rd+ lactation cows	36	51	43	2	238
% number of cows-Year Change	34	5	21	-33	80
% in milk on test day	36	88	9	62	100
Days in milk	36	199	40	60	278
Age of 1st lactation cows	36	28	2	23	35
% cows left herd-overall	36	34	13	4	72
% cows left herd-1st lactation	34	19	17	0	93
% cows left herd-2nd lactation	34	28	16	1	58
% cows left herd-3rd+ lactation	34	42	23	0	85
% cows died-all lactation	34	7	4	1	21
% cows died-1st lactation	36	3	4	0	19
% cows died-2nd lactation	34	6	5	0	18
% cows died-3rd+ lactation	34	11	7	0	35
% cows left for reproduction-overall	34	6	6	0	28
% cows left for reproduction-1st lactation	36	3	6	0	38
% cows left for reproduction-2nd lactation	34	7	9	0	33
% cows left for reproduction-3rd+ lactation	34	9	9	0	30
Daily value production-milk cows	36	8.82	1.45	6.13	11.61
Daily feed costs-milk cows	29	3.83	0.98	2.11	5.66
Daily feed costs/CWT	29	6.83	2.06	4.16	11.70
Daily income/feed-milk cows	29	4.88	1.32	1.38	7.89
Milk blend price	36	15.45	2.27	13.49	24.50
Production					
Rolling milk	34	17,002	3,509	11,088	23,596
Year change in rolling milk	36	934	5,448	-2,778	21,140
Rolling fat	34	618	135	326	902
Rolling protein	34	531	105	358	711
Daily milk 1-40D-1st lactation	28	53	11	30	77
Daily milk 1-40D-2nd lactation	23	66	13	44	105
Daily milk 1-40D-3rd+ lactation	25	75	21	38	111
Daily milk-milk cows	36	58.0	10.3	36.6	80.5
Daily milk-all cows	36	51.7	11.8	28.8	75.5
Daily % fat	36	3.6	0.4	2.5	4.8
Daily % protein	36	3.1	0.1	2.9	3.4
Summit milk 1st lactation	36	57	9	34	77
Summit milk 2nd lactation	36	72	13	36	96
Summit milk 3rd+ lactation	36	77	14	48	102
Peak milk 1st lactation	35	61	10	44	85
Peak milk 2nd lactation	36	75	14	36	99
Peak milk 3rd+ lactation	35	80	14	42	109
Projected 305 day ME milk	36	19,196	3,437	12,962	26,151
Std 150 day milk	36	62	11	38	85
Fat-protein ratio 1-40 D-1st lactation	28	1.17	0.12	0.96	1.45
Fat-protein ratio 1-40 D-2nd lactation	22	1.14	0.14	0.89	1.42
Fat-protein ratio 1-40 D-3rd+ lactation	25	1.20	0.16	0.78	1.47
Fat-protein ratio 41-100 D-1st lactation	31	1.13	0.21	0.56	1.59
Fat-protein ratio 41-100 D-2nd lactation	33	1.17	0.18	0.70	1.63
Fat-protein ratio 41-100 D-3rd+ lactation	35	1.14	0.16	0.79	1.57
Fat-protein ratio 101-199 D-1st lactation	34	1.17	0.19	0.42	1.60
Fat-protein ratio 101-199 D-2nd lactation	34	1.14	0.14	0.75	1.37
Fat-protein ratio 101-199 D-3rd+ lactation	35	1.16	0.12	0.87	1.45
Fat-protein ratio 200-305 D-1st lactation	33	1.15	0.12	0.91	1.49
Fat-protein ratio 200-305 D-2nd lactation	36	1.15	0.13	0.91	1.47
Fat-protein ratio 200-305 D-3rd+ lactation	34	1.15	0.15	0.91	1.60
Fat % 1-40 D-1st lactation	28	3.7	0.5	2.5	4.8
Fat % 1-40 D-2nd lactation	22	3.6	0.5	2.5	4.7
Fat % 1-40 D-3rd+ lactation	25	3.0	0.0	2.0	5.0
Fat % 41-100 D-1st lactation	30	3.4	0.6	2.0	5.1
Fat % 41-100 D-2nd lactation	33	3.4	0.6	2.1	4.9
Fat % 41-100 D-3rd+ lactation	35	3.0	0.0	2.0	4.0
Fat % 101-199 D-1st lactation	33	3.7	0.5	2.9	4.9
Fat % 101-199 D-2nd lactation	34	3.6	0.5	2.1	4.4
Fat % 101-199 D-3rd+ lactation	35	3.0	0.0	2.0	5.0
Fat % 200-305 D-1st lactation	33	3.8	0.5	3.0	5.2
Fat % 200-305 D-2nd lactation	36	3.7	0.5	2.8	5.1
Fat % 200-305 D-3rd+ lactation	34	3.0	0.0	2.0	5.0

Table 2. DairyMetrics for all breeds in Arkansas, May, 2007 (Continued).

Udder Health	Number of herds	Average of herds	Std dev	Lowest herd	Highest herd
SCC ¹ actual	35	457	259	103	1,430
SCC score	35	3.5	0.8	2.0	5.5
SCC score for 1st lactation	35	3.1	0.8	1.5	4.6
SCC score for 2nd lactation	35	3.3	0.9	1.6	5.5
SCC score for 3rd lactation	35	4.1	1.2	2.0	8.0
SCC score for cows 41-100 D	35	3.1	1.2	1.0	6.7
SCC score for cows 101-199 D	35	3.3	0.9	1.7	5.9
SCC score for cows 200-305 D	35	3.8	0.9	2.0	5.5
SCC score for cows 306+ D	34	3.9	0.9	2.2	5.6
% cows (SCCS of 0-3)	35	51	15	22	85
% cows (<41D with SCCS >4)	34	40	29	0	100
% 1st lactation (SCCS of 0-3)	35	58	17	22	100
% 2nd lactation (SCCS of 0-3)	35	54	19	15	92
% 3rd lactation (SCCS of 0-3)	35	42	18	0	76
% cows culled for mastitis	34	3	4	0	20
% value production lost >from SCC	36	3	2	0	10
Reproduction					
Pregnancy rate-current	32	16	8	1	39
Pregnancy rate-year average	36	10	5	0	18
Days open-projected min-all	36	187	53	75	355
Projected calving interval	36	15.4	1.8	11.7	20.9
Current actual calving interval	36	14.7	1.6	11.8	19.3
% cows calving-current test	36	8	8	0	45
% birth 4+ calving difficulty-1st lactation	28	3	5	0	20
Days open-projected min-1st lactation	36	207	61	71	339
Days open-projected min-2nd lactation	35	176	53	111	329
Days open-projected min-3rd+ lactation	35	173	48	108	328
Voluntary waiting period(VWP)	36	51	7	40	60
Days to 1st service (%herd< than VWP)	32	13	12	1	56
Days to 1st service (%herd VWP to 100D)	33	49	20	21	88
Days to 1st service (%herd> than 100D)	34	39	22	3	100
Days 1st service-total herd	34	108	32	58	187
Days 1st service(%herd <100D)-1st lactation	32	61	23	14	100
Days 1st service(%herd <100D)-2nd lactation	33	66	20	28	100
Days 1st service(%herd <100D)-3rd+ lactation	32	63	23	18	100
Conception rate for past 12mo-1st service	36	41	21	0	81
Conception rate for Past 12mo-2nd service	36	43	23	0	80
Conception rate for Past 12mo-3rd+ service	36	39	25	0	100
Services per pregnancy-All Lactation	34	2.0	1.0	1.0	6.0
Services per pregnancy-1st Lactation	33	3.0	1.0	1.0	9.0
Services per pregnancy-2nd Lactation	33	2.0	1.0	1.0	6.0
Services per pregnancy-3rd+ Lactation	33	3.0	1.0	1.0	7.0
% of heats observed for year	33	30	15	4	58
% of heats observed last test	31	31	19	2	62
Number of abortions in past year	36	0	2	0	12
Number of calvings in past year	36	141	112	36	531
% dry less than 40 days	35	14	9	1	36
% dry more than 70 days	36	37	16	12	71
Genetics					
%ile rank of proven AI bulls	36	39	26	0	87
%ile rank of young AI bulls	36	26	30	0	79
% of herd bred to proven AI bulls	28	54	28	1	100
% of herd bred to young bulls	36	9	17	0	84
% of herd bred to non-AI bulls	36	39	35	0	100
Net merit\$ for 1st lactation	29	37	62	-146	107
Net merit\$ for all cows	31	18	60	-148	96
Net merit\$ for heifers	31	70	74	-95	216
% of heifers ID'd by sire	32	64	31	0	100
% of cows ID'd by sire	36	61	37	0	99
Replacement rate(#heifer/#cows)*100	36	77	43	0	191
Replacement rate(#heifer 0-12 mo/#cows)*100	36	33	15	0	50
Replacement rate(#heifer 13+ mo/#cows)*100	36	43	34	0	143

¹Somatic cell counts/1000.

Table 3. Effects of herd traits on income-over-feed-costs in Arkansas Holstein herds.

Trait for herds	Trait average	RHA ¹ - milk (lb)	Daily IOF ² (\$)	Calving interval (mo)	% Cows left herd	SCC ³ /1000
Holstein	---	17,568	5.33	14.3	33	445
NonHolstein	---	15,501	4.53	15.7	36	530
Herds with <15 month calving interval	14.9	18,930	5.13	13.4	38	391
Herds with >15 month calving interval	16.2	16,595	5.49	14.7	30	487
Herds < 169 days open	148	18,814	5.22	14.1	41	402
Herds > 169 days open	211	16,820	5.41	14.6	29	474
Herds < 4% died	3	17,021	5.40	14.5	26	457
Herds > 4% died	9	17,958	5.27	14.4	39	463
Herds < 16,000 lb RHA milk	13,579	13,579	4.85	14.4	31	618
Herds > 16,000 lb RHA milk	19,961	19,961	5.62	14.4	35	366
Herds < 44% conception rate	29	18,561	5.86	14.4	36	449
Herds > 44% conception rate	61	15,922	4.86	14.3	28	438
Herds < \$5 IOF	4.31	17,195	4.31	14.4	37	474
Herds > \$5 IOF	6.08	17,469	6.08	14.4	28	397
Herds<300,000 SCC	225	20,909	5.66	14.2	35	225
Herds>300,000 SCC	549	16,192	5.15	14.4	33	549
Herds<\$49 net merit for cows	2	16,756	5.24	14.2	33	426
Herds>\$49 net merit for cows	77	19,310	5.57	14.8	34	420
Herds<29% left herd	21	17,768	5.34	14.5	21	462
Herds>29% left herd	44	18,430	5.33	14.4	44	459
Herds<24% non-AI	7	18,254	5.35	14.2	39	459
Herds>24% non-AI	70	17,239	5.32	14.4	29	428
Herds<39% heats reported	20	16,666	5.19	14.3	31	443
Herds>39% heats reported	47	19,506	5.51	14.5	36	409
Herds<3.5% fat test	3.2	17,140	5.54	14.7	27	505
Herds>3.5% fat test	3.8	17,930	5.16	14.0	39	398
Herds<49 replacements/100 cows	10	15,982	5.14	13.8	32	463
Herds>49 replacements/100 cows	93	18,244	5.53	14.5	33	414

¹ Rolling herd average² Income-over-feed costs (milk\$-feed\$)³ Somatic cell counts