

2002 Dairy Herd Improvement Herds in Arkansas

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Story in Brief

During 2002, 79 of the 312 dairy cattle herds in Arkansas were enrolled in the Dairy Herd Improvement (DHI) program. Seventy-two herds completed at least four DHI tests and averaged 9.3 tests per year with a rolling herd average of 16,581 lb milk, 621 lb and 3.6% fat, and 527 lb and 3.1% protein; mature equivalent averages were 18,490 lb milk, 3.6% fat, and 3.2% protein.

The Arkansas average for milk/cow was 12,281 lb/year on all cows in 2002, which indicates that non-DHIA herds averaged less than 12,000 lb/cow/year because 25% of the cows participated in the DHIA program, compared to the 16,581 lb/cow/year for herds on DHI. This difference of over 4,500 lb/cow/year affected income per cow by almost \$550/cow or approximately \$60,000/herd/year. The quartile data of milk production for the Holsteins with DHI records also reinforced that income over feed costs were \$450/cow less than in 2001, due primarily to lower milk prices. Other records for health, reproduction, genetics, and inventory, as well as production, contributed to this difference in income/cow. Overall, 29.5% of the Holsteins left the herd, and 36.6% of those left because of injury, disease, or death, up from 31.4% last year and 24.1% in 2000. Opportunities exist for raising the level of milk production and profitability in the state by encouraging more producers to use DHI records.

Introduction

Successful dairy producers must have accurate and reliable records to make sound management decisions. The Dairy Herd Improvement (DHI) program provides a comprehensive herd analysis and management report that includes information concerning production, reproduction, genetics, herd health, animal and feed inventory, and finances. The data can be used to improve efficiency of milk production by (1) identifying least profitable cows for culling, (2) feeding for more efficient production, (3) selecting animals with the greatest genetic potential for production as replacements, and (4) utilizing summaries of the data to make precise management decisions that improve net income.

Typically, herds on DHI produce 3,500 to 4,500 lb more milk per year nationally than herds not on DHI. Although many factors affect production per cow, this difference in production has a significant effect on net income for the dairies. Increased income over feed costs is associated with greater milk production per cow. The dairy herd summaries also allow a dairy producer to compare production, health, reproduction, and financial aspects of his dairy to other dairies, so that areas of management that need improvement can be detected.

Experimental Procedures

Dairy cattle herds on test ($n = 79$) were used to report production and management data for DHI herds. The test milking (or day) for each cow included weighing milk, taking a sample of milk to be analyzed for percent of fat, protein and somatic cell count (SCC), plus recording of other management parameters as indicated in Table 1. Milk samples were analyzed at the Heart of America DHI Lab in Manhattan, KS. Records were processed at Dairy Records Management Services (DRMS), Raleigh, NC.

Results and Discussion

In December 2002, 79 of the 312 dairy cattle herds in Arkansas were enrolled in the Dairy Herd Improvement (DHI) program. Seventy-two herds completed at least four DHI tests and averaged 9.6 tests per year with a rolling herd average of 16,581 lb milk, 621 lb and 3.6% fat, and 527 lb and 3.1% protein; mature equivalent averages were 18,490 lb milk, 3.6% fat, and 3.2% protein.

Rolling herd averages for breeds of DHI herds with the 10 tests to be considered official herds are in Table 1. Income minus feed cost averaged \$1,044/cow this year for the Holstein herds compared to \$1,505/cow last year. The decrease in income minus feed cost primarily related to near-record high milk prices in 2001, which were much higher than in 2002. In 2000, Holstein herds averaged \$1,184 in income minus feed costs. The Jersey herds averaged \$1,253/cow/year for income minus feed costs; however, only three herds are included in the Jersey Summary. Few non-Holstein herds were on DHI in Arkansas, but the Jersey herds showed a similar trend in yield to reports from other states. In the United States, over 95% of the cows on test are Holsteins and almost 4% of cows on test are Jerseys. The average milk/cow for the 57 herds in Arkansas with at least six test periods during the year was 16,204 lb/year with 3.5% fat and 3.2% protein in 2002 compared to 16,075 lb milk, 3.6% fat, and 3.1% protein in 2001.

Table 2 shows the Holstein DHI averages for herds with 10 tests by quartile of milk production. The quartile data for the 35 Holstein herds illustrate the relationship of higher milk production to higher income minus feed costs. The high quartile of herds also had lower somatic cell scores than other herds and greater percentage of days in milk than herds in other quartiles. Table 3 shows that higher producing herds also used more proven sires, had fewer days dry, less days open, and lower calving intervals than lower producing herds, but lower producing herds had fewer services per pregnancy compared to higher producing herds.

Table 4 shows that 29.5% of Holstein cows left the herd last

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year. Only 7.5 % of the Holstein cows left the herd because of low production. This compares to 16.3 % of the cows leaving because they died and another 21.6 % of cows left because of reproduction. Injury, disease, or death accounted for 26.6 % of the Holstein cows leaving the herd compared to 31.4% in 2001 and 24.1% in 2000. However, the overall cull rate dropped to 29.5 % from 34.6% in 2001 and 32.5% in 2000. These data are similar to results from all states included in the Heart of America DHIA Summary for other years.

The 38 dairy cattle herds in Table 1 were less than the 79 dairy herds that were reported on DHI through other summaries. The primary reason for the difference in numbers was that herds reported in Table 1 had at least 10 test periods. For quartile data, the 35 Holstein herds were official herds with 10 tests during the year. There also were three goat herds on DHI, plus the list included any herd on DHI in 2002, including herds no longer on the DHI program. Additionally, one dairy cattle herd used the PC DART on-farm computer program for production testing and was not included in the 79 dairy cattle herds listed here that were processed through DRMS.

Still, only 25% of the 312 herds in 2002 were involved in the DHI program. Herds on DHI averaged 16,581 lb milk/cow/year compared to the Arkansas average of 12,281 lb/milk/year, according to the Arkansas Agricultural Statistics Service. Omitting DHI herds from the state average indicated that the non-DHI herds averaged less than 12,000 lb milk/year. This difference of over 4,500 lb milk/cow/year affected income by almost \$550/cow/year. This difference in milk income would be \$60,000 per year in a 115-cow herd.

Implications

DHI program participation affords dairy producers an opportunity to maintain records of milk production on individual cows and other management practices. Herds utilizing DHI records averaged 16,581 lb milk/cow/year versus less than 12,000 lb/cow for herds not on DHI test. We should continue to encourage producers to enroll in the DHI testing program.

Table 1. 2002 Arkansas DHIA breed averages for selected traits.

| Trait | Breed ^a | |
|---|--------------------|--------|
| | Holstein | Jersey |
| Number of herds | 35 | 3 |
| Rolling herd average, milk, lb | 17,301 | 14,546 |
| Peak milk, lb | 69.4 | 60.0 |
| Somatic cell count (SCC) average (x 1000) | 471 | 358 |
| Days to 1st service, total | 83 | 76 |
| Days open | 179 | 119 |
| Projected calving interval, mo | 15.1 | 13.1 |
| Income minus feed cost, \$ | 1,044 | 1,253 |

^a One mixed and no Ayrshires, Brown Swiss, Milking Shorthorn, or Guernsey herds had 10 tests during 2002.

Table 2. 2002 Arkansas DHI averages for official Holstein herds.

| Production trait | Quartile 1 ^a | Quartile 2 | Quartile 3 | Quartile 4 |
|--|-------------------------|------------|------------|------------|
| Number of herds | 8 | 9 | 9 | 9 |
| Number of cows | 157 | 172 | 91 | 96 |
| Rolling herd average milk, lb | 21,501 | 17,920 | 16,139 | 13,495 |
| Rolling herd average fat, lb | 769 | 634 | 567 | 482 |
| Rolling herd average protein, lb | 662 | 554 | 495 | 418 |
| Average days in milk | 190 | 197 | 186 | 186 |
| Average test day milk (milking cows), lb | 67 | 58 | 53 | 44 |
| Average percent in milk | 87 | 85 | 84 | 83 |
| Average standardized 150-d milk, lb | 73 | 63 | 57 | 48 |
| 1st Lactation peak milk, lb | 75 | 60 | 57 | 50 |
| 2nd Lactation peak milk, lb | 92 | 77 | 70 | 62 |
| 3+ Lactation peak milk, lb | 98 | 80 | 76 | 65 |
| All lactation peak milk average, lb | 83 | 70 | 66 | 55 |
| Somatic cell count (SCC) x 1000 | 362 | 426 | 420 | 515 |
| 1st Lactation cows with SCC 0-3, % | 72 | 61 | 68 | 59 |
| 2nd Lactation cows with SCC 0-3, % | 62 | 57 | 61 | 62 |
| 3+ Lactation cows with SCC 0-3, % | 53 | 46 | 53 | 36 |
| All lactation cows with SCC 0-3, \$ | 61 | 54 | 60 | 47 |
| Income minus feed cost, \$ | 1,428 | 1,000 | 1,112 | 724 |

^a Quartile 1 = top 1 – 25 percentile herds for milk production; Quartile 2 = top 26- 50 percentile herds; Quartile 3 = bottom 26- 50 percentile herds; and Quartile 4 = bottom 1- 25 percentile herds.

Table 3. 2002 Arkansas DHI for official Holstein herds.

| Breeding or reproduction trait | Quartile 1 ^a | Quartile 2 | Quartile 3 | Quartile 4 |
|--|-------------------------|------------|------------|------------|
| 1st Lactation AIPL ^b PTA\$ ^c – cows | 87 | 79 | 77 | 137 |
| 2nd Lactation AIPL PTA\$ - cows | 67 | 84 | 107 | 71 |
| 3+ Lactation AIPL PTA\$ - cows | 20 | 43 | 74 | -17 |
| All lactations AIPL PTA\$ - cows | 52 | 61 | 63 | 0 |
| 1st Lactation AIPL ^b PTA\$ ^c – sires | 228 | 195 | 263 | 264 |
| 2nd Lactation AIPL PTA\$ - sires | 207 | 206 | 219 | 189 |
| 3+ Lactation AIPL PTA\$ - sires | 111 | 151 | 165 | 110 |
| All lactations AIPL PTA\$ - sires | 177 | 179 | 210 | 137 |
| Days to 1st service, current | 90 | 96 | 49 | 80 |
| Days to 1st service, total | 89 | 103 | 63 | 77 |
| Services per pregnancy, pregnancy | 2.1 | 1.6 | 1.6 | 1.6 |
| Services per pregnancy, all | 3.5 | 2.4 | 2.1 | 2.2 |
| Average days dry | 68 | 72 | 74 | 79 |
| Days open | 153 | 196 | 194 | 185 |
| Projected calving interval, mo | 14.2 | 15.7 | 15.6 | 15.3 |
| % Successful first breedings | 36 | 49 | 24 | 38.8 |
| % Successful total breedings | 38 | 46 | 27 | 39.1 |
| Average percentage of heats reported | 36 | 29 | 43 | 29.1 |
| % Herds bred to proven sires | 73 | 34 | 37 | 19 |
| % Herds bred to AI young sires | 7 | 2 | 6 | 7 |
| % Herds bred to other sires | 21 | 52 | 22 | 51 |

^a Quartile 1 = top 1 – 25 percentile herds for milk production; Quartile 2 = top 26- 50 percentile herds; Quartile 3 = bottom 26- 50 percentile herds; and Quartile 4 = bottom 1- 25 percentile herds.

^b AIPL = From USDA's Animal Improvement Programs Laboratory

^c PTA\$ = Predicted Transmitting Ability Dollars

Table 4. 2002 Arkansas DHIA reasons for cows entering and leaving herds from official Holstein herds^a.

| Item | Quartile 1 ^b | Quartile 2 | Quartile 3 | Quartile 4 | Average |
|-------------------------------------|-------------------------|------------|------------|------------|---------|
| Number left herd, all lactations | 47.9 | 53.7 | 29.3 | 29.1 | 40.0 |
| Total % left herd | 29.4 | 27.6 | 31.7 | 29.4 | 29.5 |
| % Left dairy | 5.3 | 14.2 | 9.2 | 30.0 | 14.9 |
| % Low production | 3.4 | 9.9 | 2.4 | 14.4 | 7.5 |
| % Reproduction | 57.5 | 17.5 | 28.0 | 13.4 | 21.6 |
| % Mastitis | 14.5 | 11.4 | 9.9 | 4.8 | 10.2 |
| % Udder | 1.1 | 0.0 | 0.3 | 4.1 | 1.4 |
| % Feet and legs | 12.6 | 6.7 | 2.0 | 2.7 | 6.0 |
| % Injury or other | 13.2 | 8.9 | 5.5 | 3.4 | 7.8 |
| % Disease | 5.9 | 1.5 | 0.0 | 2.4 | 2.5 |
| % Died | 15.8 | 16.4 | 11.3 | 21.6 | 16.3 |
| % Not reported | 1.7 | 14.9 | 31.7 | 2.1 | 12.6 |
| Number entered herd, all lactations | 57.3 | 72.9 | 37.6 | 24.3 | 48.0 |
| % Entered herd, all lactations | 36.5 | 42.4 | 38.3 | 26.4 | 35.0 |

^a Some cows may have more than one reason for leaving herd.

^b Quartile 1 = top 1 – 25 percentile herds for milk production; Quartile 2 = top 26- 50 percentile herds; Quartile 3 = bottom 26- 50 percentile herds; and Quartile 4 = bottom 1- 25 percentile herds.