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## Management strategies: reproduction

### Abstract

Despite the negative effects of milk production on some reproductive traits, calving intervals between high- and low-producing groups varied by only 9 days (414 vs 423). First-service conception rates were 8 percentage points greater in the low-producing group than in the high-producing group. However, the percentage of cows not yet inseminated that were more than 120 days in milk was 18 percentage points greater in the low- than highproducing herds. When Kansas dairy herds in the DHIA program are evaluated, the higher producing herds seem to have lower firstservice conception rates and more services per conception. However, managers of high-producing herds are doing a better job of servicing cows inseminated earlier in lactation and putting replacements into the milk string at a younger age. This occurs because managers of high-producing herds have reproductive records and heat detection programs that allow them to detect a higher percentage of the cows in heat before 120 days in milk. Fine tuning the reproductive management program also can improve the profitability of a dairy operation. The reproductive losses in high-producing herds are considerably less than those in lowproducing herds (\$139 vs \$203). There are no magic formulas in establishing a good reproductive program. Combining good records, diligent heat detection, and sound artificial insemination technique can increase the profitability of a dairy.; Dairy Day, 1995, Kansas State University, Manhattan, KS, 1995;

### Keywords

Dairy Day, 1995; Kansas Agricultural Experiment Station contribution; no. 96-106-S; Report of progress (Kansas Agricultural Experiment Station and Cooperative Extension Service); 742; Management; Reproduction

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## MANAGEMENT STRATEGIES: REPRODUCTION

*J. F. Smith and J. S. Stevenson*

### Summary

Despite the negative effects of milk production on some reproductive traits, calving intervals between high- and low-producing groups varied by only 9 days (414 vs 423). First-service conception rates were 8 percentage points greater in the low-producing group than in the high-producing group. However, the percentage of cows not yet inseminated that were more than 120 days in milk was 18 percentage points greater in the low- than high-producing herds. When Kansas dairy herds in the DHIA program are evaluated, the higher producing herds seem to have lower first-service conception rates and more services per conception. However, managers of high-producing herds are doing a better job of servicing cows inseminated earlier in lactation and putting replacements into the milk string at a younger age. This occurs because managers of high-producing herds have reproductive records and heat detection programs that allow them to detect a higher percentage of the cows in heat before 120 days in milk. Fine tuning the reproductive management program also can improve the profitability of a dairy operation. The reproductive losses in high-producing herds are considerably less than those in low-producing herds (\$139 vs \$203). There are no magic formulas in establishing a good reproductive program. Combining good records, diligent heat detection, and sound artificial insemination technique can increase the profitability of a dairy.

(Key Words: Management, Reproduction.)

### Introduction

Dairy producers often lose significant income because of poor reproductive performance in their herds. The costs associated with substandard reproductive performance can be significant and often go undetected. In this report, 402 Kansas Holstein dairy herds participating in the Heart of America DHIA were divided into three production groups based on 365-day rolling herd averages. The reproductive performance of the three production groups was evaluated using the Kansas State University Dairy Herd Analyzer.

#### **Effect of Milk Production Level on Reproductive Performance**

The rolling herd averages of three production groups evaluated were 14,580 (low), 19,167 (medium), and 23,426 (high) lb. Rolling herd averages of the individual herds ranged from 12,000 to 30,000 lb. Measures of milk production and reproductive performance of the three groups are presented in Table 1. As the rolling herd average increased, days dry, age at first calving, and calving interval decreased. Average number of services per conception and days in milk increased as milk production increased. Days open were greatest in the low production group. When we look at the information in Table 1, it is also apparent that cows in higher producing herds tend to breed earlier in lactation. Thirty-five percent of the cows in the low group had not yet been inseminated by 120 days in milk compared to 17% in the high-producing group.

Most studies monitoring genetic trends for reproductive traits report negative relationships between milk yield and some reproductive traits. In contrast, the superior management in most high-producing herds seems to maintain good reproductive performance.

### **Economics of Reproductive Performance**

The Dairy Herd Analyzer calculates the amount of reproductive loss per cow based on the average performance of the herd. The reproductive loss per cow is calculated using the following criteria: 1) \$1 per day when the calving interval is between 365 and 395 days and \$3 per day when the calving interval is over 395 days; 2) \$3 per day when average days dry are <45 days or >60 days; 3) \$2 per 0.1 service per conception over 1.7; and 4) \$30 per month for each month of age at first calving >24 months. When calving interval, age at first calving, or days dry are extended, reproductive loss is associated with additional feed cost, lost milk production, and loss in future replacements. The costs associated with services per conception over 1.7 cover additional semen and labor costs.

When these criteria were used to evaluate the low-, medium-, and high-production groups, the reproductive losses per cow were \$203, \$158, and \$139, respectively. These costs that are assessed by the Dairy Herd Analyzer for reproductive failure are not “true” costs, because they do not represent out-of-pocket expenses but losses in potential income. These losses in income can have a significant effect on the profitability of a dairy operation.

### **Techniques for Successful Reproductive Management**

- ✓ Use an estrus-synchronization program for replacement heifers to begin inseminations by 13 months of age. This practice ensures that replacements calve by 24 months of age.
- ✓ Establish an elective waiting period consistent with herd goals. Generally, for each 1-day decrease in days to first service in cows, a 0.8-day decrease in days open or calving interval occurs.
- ✓ Use some estrus-synchronization protocol for programming first services in cows. These protocols ensure timely first inseminations by a given target day in milk.
- ✓ Manage repeat services by effective and diligent heat detection, which reduces intervals between repeated services by eliminating more missed heats.
- ✓ Use prostaglandins effectively to induce estrus for efficient rebreeding of cows identified open at pregnancy diagnosis.
- ✓ Establish and adhere to a herd-specific preventive herd health program including disease prevention by vaccination, cleanliness, and routine veterinary consultation and care.
- ✓ Make routine observations of suspect cows for various health disorders while watching cows for estrus.

**Table 1. Reproductive Profiles of Low-, Medium-, and High-Producing Kansas Dairy Holstein Herds Enrolled in the Heart of America Dairy Herd Improvement Association**

Rolling herd average	No. of herds	No. of cows per herd	Age at 1st calving	Days in milk	Days open	Days dry	Calving interval	Services per conception
milk, lb	no.	no.	months	days	days	days	days	no.
14,580	84	76	29	191	143	74	423	1.93
19,167	270	88	28	193	136	65	416	2.17
23,426	48	91	26	206	134	63	414	2.51

  

Rolling herd average	Conception rate		% of cows not inseminated			Low income per cow associated with reproduction
	First	1 + 2	<60 days	60-120 days	>120 days	
milk, lb	%	%	%	%	%	\$/cow
14,580	51	78	41	24	35	203
19,167	45	72	51	24	25	158
23,426	39	66	51	27	17	139