EFFECTS OF PRODUCTION ON REPRODUCTIVE TRAITS IN KANSAS HOLSTEIN HERDS

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Summary

The analysis of dairy herds to evaluate the reported negative effect of production on reproduction failed to identify a real relationship. Higher-producing herds excel in all areas of reproductive performance, except conception rate. Of greatest importance is the annual reproductive loss that is affected by the reproductive traits measured. As production per cow increased, the yearly dollar loss per cow declined from a high of $163 to $73 yearly in the group averaging 20,118 lb milk.

Introduction

Reproductive inefficiency in dairy herds continues to be a perennial problem. Moreover, there exists a genetic antagonism between production and reproduction, in that higher-producing cows settle less efficiently than lower-producing cows. From a practical standpoint, some studies have suggested that sound management practices may overcome this negative genetic effect.

Procedures

The study surveyed 546 Kansas Holstein herds that had been enrolled in a production testing program (DHIA) for more than one year in April, 1988. The herds were ranked by rolling herd average (RHA). RHA is defined as the average production per cow during the preceding 365-day period, including dry-cow days. Factors that affect RHA include percentage days in milk, summit milk yield, average days in milk, and average dry days.

Results and Discussion

Table 1 notes the management and production characteristics of the herds surveyed. As expected, RHA increased as daily milk and summit milk yield increased. Average days in milk did not vary among groups. Milk price was stable across the study, whereas income over feed cost reflected greater efficiency at higher levels of production. It is noteworthy that the percent of cows identified by sire increased from 40% in the low group to 87% in the highest production group. Likewise, the higher-producing herds used a larger percentage of proven bulls (PD$), which was reflected in the average production merit of the service sires.

Table 2 examines the reproductive differences among groups. The negative genetic effect of production on reproduction was only evident in conception rate. The improvement in calving interval at the higher levels was due partly to earlier breeding (days to first breeding). The higher-producing herds had a definite advantage in cows not yet bred (open cows) in both categories: average days open and percentage of cows open greater than 120 days. Higher-producing herds had cows in milk a greater percent of the time, as noted by average days dry and percent of cows dry more than 70 days. Another favorable aspect of the herds producing more milk was the average age at calving of first-calf heifers.

Heat detection efficiency, as measured by the percentage of intervals occurring between 18-24 days, remains one of the real problems, regardless of the level of production. Although some

cows (8-10%) suffer embryonic abortion after 24 days, the major problem is failure to detect the repeat-heat period.

The reported genetic antagonism of production and reproduction apparently is overcome by more intensive management by producers with higher levels of production, especially in the area of cows not yet serviced. Veterinary examination and(or) milk progesterone testing of this class of cows coupled with synchronization of those cows eligible (presence of corpus luteum) is an effective way to minimize cows not yet bred. Estimates of yearly reproductive losses declined as production increased.

Table 1. Characteristics of Management and Production Aspects of 549 Kansas Holstein Herds Surveyed

| Item | Rolling herd average, lb | | | | |
	12,116	14,061	16,007	17,992	20,118
No. of herds	43	116	193	138	59
No. of cows	65	65	68	88	78
Production, lb					
Daily milk	41.3	47.0	52.0	57.2	63.5
Days in milk	179	176	179	179	174
Summit milk yield					
Lactation -1	43.3	48.4	53.8	59.9	65.4
Lactation- 2+	56.2	64.5	72.0	79.8	88.0
Economics, $					
Milk price	11.54	11.65	11.77	11.77	11.82
Income over feed cost	791	956	1155	1340	1543
Service sires					
Proven %	45.9	51.1	60.7	73.1	75.6
PD $	+55	+62	+74	+93	+97
Cows identified by sire, %	40	56	74	80	87

Table 2. Reproduction Characteristics of 549 Kansas Holstein Herds Ranked by Yearly Production per Cow

Item	Rolling herd average, lb				
	12,116	14,061	16,007	17,992	20,118
Calving interval, days	410	404	409	405	399
Cows not bred					
Days open	127	114	98	89	71
>120 days, %	36	32	28	24	17
Days to first breeding	86	83	82	81	76
Conception rate, %					
First service	56.5	53.8	48.1	48.6	45.4
First + second	82.6	76.9	74.1	73.0	74.0
Age at first					
calving, mo	29	29	28	28	27
Days dry	75	69	64	63	61
>70 days, %	41	35	26	22	17
Heats detected					
18-24 days, %	38	33	36	38	41
>24 days, %	56	60	64	59	53
Estimated reproductive					
loss per cow, $	163	126	121	11	72