EFFECT OF YEARLY MILK PER COW ON PROFITABILITY OF DAIRY HERDS

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Summary

An analysis of Kansas Holstein herds in 1992 indicated that the yearly milk production per cow had a significant effect on returns to labor and management. The lowest quartile herds (13,445 lb per cow average) had a negative return to management. Herds averaging 20,614 lb per cow yielded $479 return to management. Records become increasingly important in managing the dairy operation, especially those that are readily analyzed and predict the degree of economic change when management is modified.

(Key Words: Milk Production, Profit, Dairy Cattle.)

Introduction

Compared with other agricultural projects, dairying is considered to be a highly skilled, labor-intensive business requiring medium capital investment with favorable long-term returns. However, dairy records show great variation among individual cows' production as well as among dairy herds. Numerous studies have shown that level of management has greater impact on profitability than degree of capitalization. One method of evaluating level of management is to measure average yearly milk production response.

Procedures

Kansas Holstein herds (n =565) participating in the dairy herd improvement program (DHI) were ranked by yearly milk production per cow (rolling herd average) and categorized by quartile. The data were analyzed using the KSU Dairy Computer Programs (DyS91-1): Cost and Returns (COST-RET) and Dairy Herd Analyzer (DHA). The data set included the calendar year - 1992.

Results and Discussion

Table 1 notes the effect of yearly milk per cow on feed costs and return above feed cost. With any production trait, increased yield must be accompanied by greater feed input especially during early lactation when appetite is near maximum. Comparing the four groups, feed costs increase 35% or $273 per cow. The efficiency of converting feed into milk at higher levels of yearly milk is evident by the 10% decline of feed cost per cwt milk from the high to low production groups. The 53% increase in production results in 79% improvement in income-over-feed cost when the bottom and top groups are compared.

Table 1. Effects of Yearly Milk Production per Cow on Income-Over-Feed Cost in Kansas Holstein Herds Ranked by Production Quartile

Yearly milk	Feed cost	Income/ feed cost	Feed Cost/ cwt milk
(lb)			
13,445	$ 788	$ 846	$5.81
16,470	943	1,082	5.65
18,213	988	1,282	5.42
20,614	1,061	1,512	5.23

The impact of feed required for maintenance is often overlooked. Like all animals, cows use feed first and foremost for body function and sustenance. Maintenance requirements are based on body weight and are similar for cows of comparable size. As illustrated by maintenance feed cost in Table 2, little difference in body weight was reported among the four groups. The value per unit of feed for maintenance was held constant across groups.

Table 2. Feed Cost Partitioned between Maintenance and Milk Production in Kansas Holstein Herds Ranked by Production Quartile

Yearly milk	Feed cost	Feed Cost	
		Milk	Maintenance
13,445 lb	$ 788	$ 437	$ 351
16,470	943	583	360
18,213	988	627	361
20,614	1,061	697	364

When the top and bottom groups are compared, feed cost increased by 35% but the portion of total feed intake used for milk production improved by 59% in the 20,614 lb group. Further evidence of improved efficiency is shown by the percent of total feed used for maintenance in the low and high groups: 45% vs 34%.

Dairying requires a high labor input per cow unit (50-60 hr/cow/yr). Although studies have shown some increase in labor as production increases, the cost of investment is not necessarily related to cow productivity. Table 3 considers the effect of investment and feed costs for cows and heifers as generated by the KSU COST-RET program on return to labor and management. Although some return to labor occurs at all levels, the greatest impact of yearly milk per cow is on return to management only after the labor bill has been acknowledged.

Table 3. Effects of Yearly Milk Production per Cow on Return to Labor and Management in Kansas Holstein Herds Ranked by Quartile Production

Yearly milk	All costs	Return to management	
		+ labor	only
13,445 lb	$1,968	$198	$(-76)
16,470	2,106	+467	+159
18,213	2,195	+612	+285
20,614	2,298	+833	+479

Figure 1 indicates the lactation curves for the four groups of herds ranked by average yearly milk per cow. The effect of summit milk yield (SMY) and lactation profile on yearly milk production is readily apparent. Each pound increase in SMY generates another 300 lb increase in yearly milk. Once cows come off their peak (SMY), production declines at a rather constant rate (O. 1 lb/day).

Table 4. Changes in Income-over-Feed Cost per Cow during 1992 with Constant Milk and Feed Prices Compared with 1991

Management Area	Change: 1992 v 1991
Reproduction	- 8$
Nutrition	+22$
Milk Quality	0$
Genetics	+ 2$
	+16$

Table 4 provides an insight on the changes that occurred among Kansas Holstein herds in 1992 compared with the previous year. The four management areas are evaluated by keeping milk price and feed costs constant, which provides an accurate measure of changes in cash flow on an individual cow basis. Dairy produc-

ers can use this method of evaluating management levels in their herds by comparing their respective data with reachable goals.

As management intensifies, the value of records and the ability to interpret data and implement changes becomes more critical.

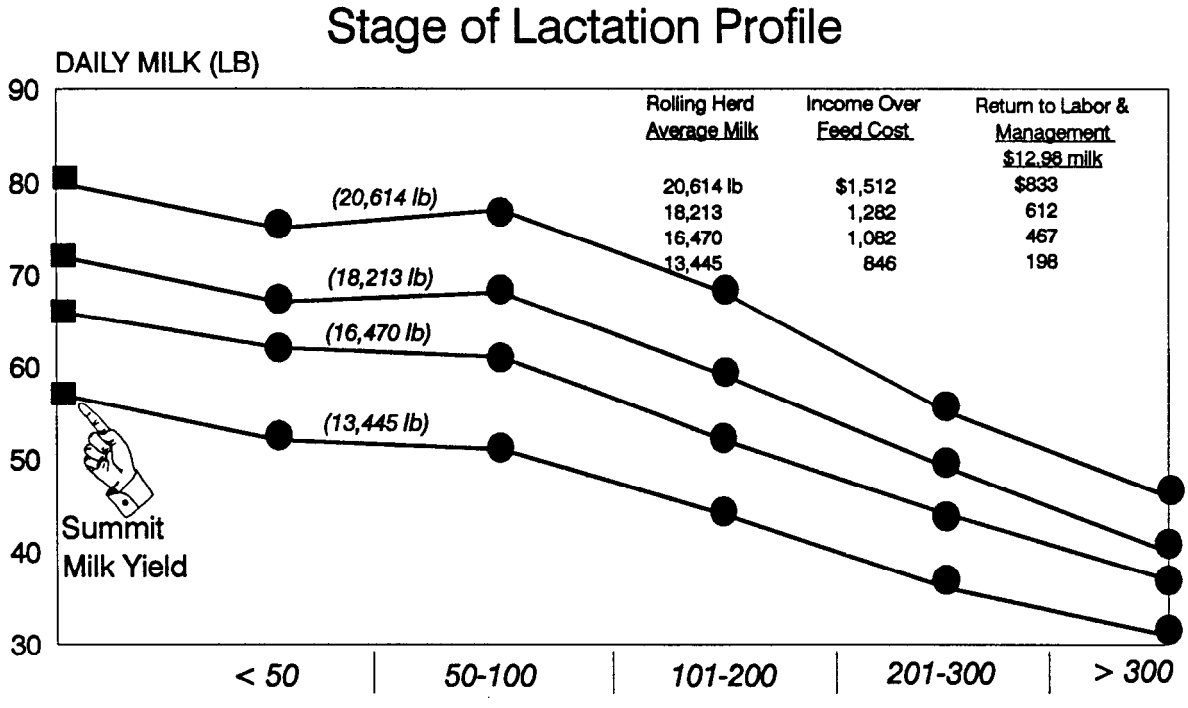

Figure 1. Summit Milk Yield (■), Lactation Profiles (0), and Income-over-feed Cost for Kansas Holstein Herds at Various levels of Rolling Herd Averages (Milk per Cow per Year)