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DAIRY Fact Sheet

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THE ECONOMIC IMPORTANCE OF CALVING INTERVALS

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Why is there so much interest in calving intervals? Calving intervals are manipulated for several economic reasons, including:

- Optimizing milk supplies and taking advantage of changing marketing conditions or dairy policy changes
- Manipulating annual yields per cow
- Controlling income and costs of the dairy production operation

Recent research at Texas A&M University shows the relative importance of calving intervals in dairy production management decisions.

Impact of Calving Intervals on Supplies and Marketing

The dairy diversion program of 1983 encouraged some dairy producers to alter breeding patterns. Breeding patterns were delayed and cows were kept dry for longer periods to change individual production patterns and to delay peak production patterns. In many Federal Milk Marketing Orders, seasonal base plans have been developed to even out marketing fluctuations. Some dairy producers have changed calving intervals to adjust to these seasonal base plans.

Dairy producers who must alter marketing plans to comply with base programs are reluctant to sell many of their better cows during times of milk surplus and lower cow prices. Many believe selling cows during surplus supply situations will force them to buy replacements during times of milk shortages when they must pay premiums for good replacement cows. As a result, dairy producers shorten or lengthen calving intervals to tailor marketings and replacements to anticipated market needs. For dairymen, the question becomes, "Should we lengthen the calving interval by holding cows open longer (although dairy milk yields are lower) or should we hold cows dry longer before rebreeding?" This is a critical economic question for many producers. A key factor in this decision is understanding the relationship between calving intervals and milk yields.

Calving Interval and Milk Yield

Average calving interval of Texas dairy herds is about 14 months. The national average is about 13 months. Figure 1 illustrates lactation yield potential of an example cow with calving intervals of 12, 13 or 15 months. The cow is mature and can produce 17,000 pounds of milk in a 10-month lactation. Because of fewer days pregnant, cows with long calving intervals are expected to produce more milk over a 10-month lactation than those with short calving intervals. For this example, additional milk was credited to the lactation when calving intervals were 15 months instead of 13 months and 13 months instead of 12 months. Cows with a 15-month calving interval had a 13-month lactation instead of the 10-month lactation associated with a 12-month calving interval. Cows with a 13-month calving interval had 11 months of lactation.

The four curves shown in Figure 1 illustrate the relationships between daily yields of milk and length of the calving interval. Each of the curves is based on the assumption that the cow will not be dried off early and that the cow will continue to be milked until 60 days

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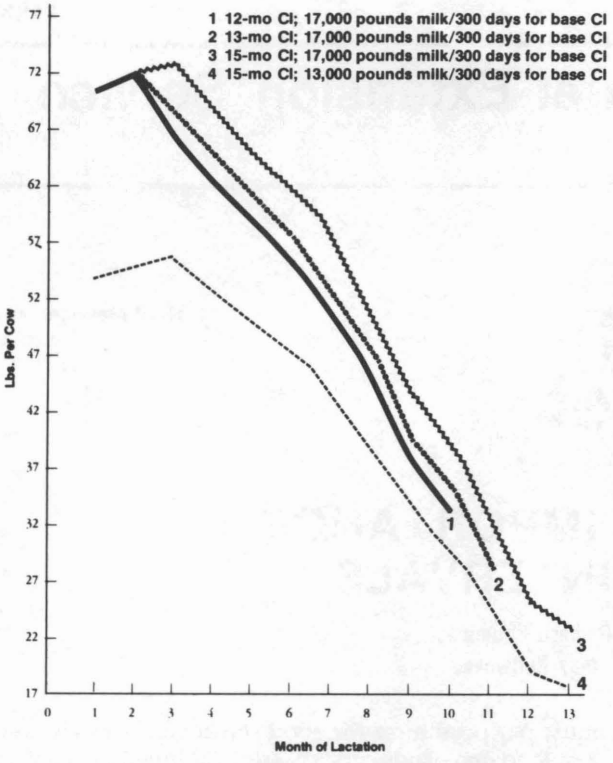

Figure 1. Lactation Curves

before she calves.

Curve 1 illustrates a cow that has the ability to produce 17,000 pounds of milk over a 300-day lactation. Curves 2 and 3 illustrate the same cow with 13- and 15-month calving intervals, respectively. For comparison, curve 4 illustrates a cow with the potential to produce 13,000 pounds of milk in a 300-day lactation that has a 15-month interval.

In each new case, production peaks between the second and third month of lactation. After the third month, daily production declines for each cow. After the fifth month, production declines at a somewhat faster rate than it did prior to the fifth month. When the cow is milked beyond the 300-day lactation, production declines at a slower pace. In each case illustrated, the dry period was limited to 60 days or less. Nutritionally adequate diets were fed and income maximizing feeding strategies throughout the lactation and dry period were maintained. Average herd and udder health management and normal persistency lactation were assumed.

Costs Per Day Open

Previous studies indicated that the cost for each additional day open totaled 50 cents to $2.00. These previous studies assumed that lactation period was a standard 300 days and that the cow would be dried off at the end of the 300-day lactation so the cow remained dry longer for longer calving intervals. In the Texas A&M research the days dry were limited to 65 days or less and profit-maximizing feeding regimes were followed during the entire lactation period. Table 1 contains the values per day open by extending calving interval. Four milking abilities were investigated: 13,000 pounds; 15,000 pounds; 17,000 pounds and 19,000 pounds per 10-month lactation.

Extending the calving interval from 12 to 13 months increased the income over feed costs per additional day open for each milk producing ability. However, extending the calving interval from 12 to 15 months did not increase the positive value of days open as significantly as increasing from 12 to 13 months. Increasing the calving interval from 13 to 15 months led to a modest decline in income over feed costs per additional day open. In all cases studied, lactation was initiated in November and December.

It is evident from the study that the small cost of extra days open for calving intervals longer than 13 months suggests that commercial dairy producers have little need to plan for shorter calving intervals. The study concluded that the 13-month calving interval is near optimal for commercial dairy herds and for cows of average to better than average milking ability. If the expected yields and income from the next lactation cover the costs of maintaining the dry cow, then the dairy producer can afford to maintain a longer calving interval.

The Texas A&M study only addressed the income over feed costs for additional days open. There is one other economic consideration to changing calving intervals--the portion of income that is derived from the sale of young stock. The longer the calving interval, the smaller the number of calves available for sale or introduction into the dairy herd. Furthermore, genetic progress within the herd is slower.

Table 1: Value[1] of days open by alternative calving interval and milk producing ability.

Calving interval (month)	Milk producing ability lb/10-month lactation			
	13,000	15,000	17,000	19,000
	$/day open			
12 to 13	.36	.21	.40	.36
12 to 15	.12	-.07	.07	.00
13 to 15	-.04	-.23	-.12	-.20

[1/]Value = income over feed cost per additional day open. Lactations initiated in November-December.

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