



# Heifer Management Blueprints

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## Dynamics of Age at First Calving Effect on Lifetime Milk

### Introduction

The prospect of increasing lifetime milk along with growing costs of raising dairy heifers has brought about an interest in decreasing heifers' age at first calving. Theoretically, decreasing a heifer's age at first calving could lead to higher lifetime milk production due to an earlier start to her productive life. If, however, decreasing a dairy cow's calving age were to decrease the length of her productive life or decrease first lactation milk yield, lifetime milk may suffer. Previous studies have concluded that age at first calving has some effect on lifetime milk and often suggest younger calving ages are desired. However differing management practices, such as milkings per day, were not taken into consideration in these studies. Milking either 2X or 3X is known to cause significant milk yield differences throughout lactation. It is possible that in combination with either 2X or 3X milking strategies, lifetime milk would be affected by age at first calving.

### Decreasing Age at First Calving

Herd management strategies, such as milking either 2X or 3X, are known to have an effect on milk production and cannot be dismissed when making conclusions on how to optimize lifetime milk of dairy cattle. Recently, a study was conducted on 69,145 Holstein dairy cattle that calved in 2005 to try to evaluate the effects of 2X or 3X milkings and the age of calving on lifetime milk. The cattle were grouped into either 2X or 3X milking herds and subsequently into two levels of production by rolling herd average (RHA) for a total of four groups. It was found that in 3X herds, as age at first calving decreased, both days in milk and lifetime milk increased. For 2X herds, a different relationship was found with lifetime milk peaking when calving occurred at about 23 months. There was no apparent change in lifetime days in milk or

lifetime milk yield in herds milking 2X when heifers were calved early (<23 months).

### Factors in Lifetime Milk

Though it appears as if cows milked 3X benefit more from decreased age at first calving than those milked 2X, the true reasons are not this simple to define. A number of other management practices commonly associated with either 2X or 3X milking frequency likely confounded the results of the study, making it difficult to determine the exact management practices responsible for the observed relationships.

Some differing management practices include the increased tendency for bovine somatotropin, TMR, and sand bedding usage in 3X herds. Freestall housing is also more common in 3X herds while cows that are milked 2X are more likely to be housed in tiestall housing. While freestall housing allows for overcrowding, tiestall housing keeps the number of milking cows very static as only one cow can occupy a stall at a time. When a new cow freshens, an older cow must be culled in order to make space. Therefore, if age at first calving is decreased, it is likely that the age when culled or forced to leave the herd will also decrease.

### Ideal Age at First Calving?

A number of management factors exist that can affect lifetime milk and no one age at first calving can be considered ideal for all operations. Early calving ages at around 22 months may be the best choice for operations that milk 3X and house their animals in freestall housing, but for a tiestall operation calving at 22 months appears to give no real benefit in regard to lifetime milk yield.

Postponing age at first calving past 24 months, however, does not improve first-lactation milk yield or longevity of cows and may actually be detrimental to lifetime milk production in both 2X and 3X herds. Individual herd management practices should be considered in deciding on an appropriate age at first calving for a herd. Unfortunately, not all management practices are well understood in terms of their effect on lifetime milk and more controlled studies will be needed in order to isolate the effects of particular management strategies on lifetime milk in dairy cows.