Association between first calving age and milk production at first lactation in 100 Dutch dairy farms

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The total costs of rearing a heifer will be reduced by lowering the first calving age (FCA). A lower FCA could, however, coincide with a lower development of the reared heifer, influencing milk production at first lactation. To establish the possible economic impact of lowering the FCA, the association between FCA and milk production in first lactation needs to be investigated. The objective of this study is to determine this association at cow level. Data on FCA and milk production at first lactation of 8,454 heifers in 100 intensive Dutch dairy herds from 2003 to 2010 were gathered. The average FCA was 26 months and the average 305 d milk production at first lactation was 7,493 kg. The median FCA of the herds ranged between 24 and 32 months of age. The difference between the FCA of the individual heifer and the median FCA of the herd was defined as the relative FCA. The association between relative FCA with 305 d milk production at first lactation was analyzed using a linear mixed effect model and included herd, year and calving season. Relative FCA was categorized monthly, and relative FCA not deviating from the median FCA of the herd was the reference category. Heifers having a FCA one or two months lower than the median FCA of the herd have a 90 kg and 179 kg lower 305 d milk production at first lactation, respectively. Heifers having a FCA one month higher than the median FCA of the herd have a 87 kg higher 305 d milk production at first lactation. Relative FCA gives a deviation of a heifer’s FCA from a similar management. The results indicate that a lower FCA on a farm by earlier insemination but not adjusting the management to ensure sufficient development will reduce rearing costs but with a lower milk production at first lactation. A higher FCA results in a higher milk production but with a higher rearing costs. For dairy farmers, there is an economic optimum between rearing costs and FCA with regard to heifer rearing.