

What is producing the dramatic improvement in reproductive efficiency in U.S. dairy herds from 2000 until now?

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ABSTRACT

Background: Efficient reproduction is essential for profitability on dairy farms. Nevertheless, reproductive efficiency is not optimal on many dairies in the United States (US) and Brazil.

Review: Daughter pregnancy rate has been used to monitor changes in reproductive efficiency in US dairy herds using data on days open collected by the US Department of Agriculture. Between 1977 and 2000, this value decreased over 25%, from 27.78 to 20.97, for an average decrease of about 1% per year. The decline in reproductive efficiency was due to declines in both fertility (pregnancies per AI; P/AI) and heat detection rate (percentage of eligible cows that receive AI every 21 days). Surprisingly, there has now been a sustained increase in daughter pregnancy rate from 20.97 to 25.48 between 2000 and 2008, representing an increase at about twice the rate (2%/year) as the previous decline. The increase in reproductive efficiency is due to improvements in heat detection rate without any consistent change in P/AI. Between 1998 and 2008, there was a dramatic change in the US dairy industry from less than 10% (1998) of dairy cows managed on dairies that used timed AI (TAI) to more than 50% (58%) of cows on dairies that use TAI by 2008. The improvements in reproductive efficiency were observed in herds using TAI and not in herds that were not synchronized. The P/AI are similar on herds that use TAI, compared to herds that breed after detection of estrus. Protocols, such as Ovsynch, that allow TAI but do not increase P/AI are termed “service rate programs” because they only improve the heat detection rate without a change in P/AI. An understanding of the physiology of dairy cows has allowed the development of TAI protocols that consistently improve P/AI, compared to AI after detection of estrus. However, these “fertility programs” are just beginning to be effectively utilized on most commercial US dairies, leaving the possibility for further improvements in reproductive efficiency in US dairy herds during the next few years. Further, the TAI programs utilized in the US generally have a lack of an effect of milk production on either heat detection rate or P/AI.

Conclusion: It is now possible to achieve high milk production and exceptional reproduction by effectively utilizing current nutritional, genetic, and reproductive management programs.

Keywords: fertility, reproductive management, dairy cattle.

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