

Dairy Cattle Reproduction Reality

Check #2: Reasonable Fertility

By: George Heersche, Jr., Ph.D.



In the old days we expected to get a 50-55% conception rate (1.9 to 2.0 services/conception) with milking cows. We have done a great job of breeding high producing Holsteins. Unfortunately, the modern high producing Holstein is not highly fertile, and the conception rate in many high producing herds is 40% (2.5 services/conception).

Fertility is influenced by many factors, and the overall fertility achieved is determined by multiplying the efficiency level of those factors together, not adding. For example, the AI industry uses the following "Fertility Equation" to demonstrate how various factors can influence the success of an AI program. The percentage of cows or heifers which become pregnant during a given period of time can be calculated by multiplying the following four factors:

- A = % cows accurately detected in heat and inseminated
- B = Fertility level of the herd (%)
- C = Semen fertility level (%)
- D = Inseminator efficiency (%)

The Fertility Equation: $A \times B \times C \times D = \% \text{ Pregnant}$

Note that this is a product and not a sum. Therefore, everything must be done at an optimal level to maximize pregnancy rate (example 1 below). A few slips here and there can result in a low pregnancy rate (example 2) and a total bomb in any of the areas results in zero pregnancies during that period to time (example 3).

Example 1: $95\% \times 90\% \times 95\% \times 100\% = 81.2\%$

Example 2: $60\% \times 80\% \times 60\% \times 60\% = 17.3\%$

Example 3: $95\% \times 95\% \times 95\% \times 00\% = 00.0\%$

Dairymen, veterinarians and reproductive physiologists spend a lot of time discussing and fussing conception rates. Discussing because they are important. Fussing because of the difficulty encountered in figuring out what causes low conception rates in a cow or herd of cows.

Factors which can lower conception rate are: incorrect transition period management, inaccurate heat detection, summer heat and humidity, not vaccinating for reproductive diseases, inferior quality semen, sloppy semen handling and insemination techniques, incorrect timing of insemination, high milk production, severely negative energy balance, gross vitamin and mineral deficiencies/imbbalances, high level of blood urea nitrogen, infected fescue, mycotoxins in feed, short days postpartum at breeding, advancing age of cows, and inheritance. It is important to manage breeding, feeding and cow comfort to minimize these negative influences.