

Negative Energy Balance and Conception Rates

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Preventing excessive mobilization of body fat in the first 4 weeks of the dairy cow's lactation is of primary importance for subsequent fertility. Cows will tolerate a loss of approximately 1 body condition scoring unit in the first 4 weeks after calving; more extreme condition loss will result in lower conception rates at first service. One unit change in body condition score represents about 120 lbs of body weight change and about 400 Mcal of energy.

Feeding management that maximizes dry matter intake is also essential to minimize body condition loss and to reinitiate ovarian cycles within approximately three weeks after calving. Ideally, the second ovulation will occur by 50 days after calving when uterine involution and repair will also be complete. Increased negative energy balance may delay first ovulation 60 to 75 days or longer extending the postpartum effects and recovery of the uterine environment.

The stimulation of appetite to ensure adequate dry matter intake in normal, healthy cows is essential to provide nutrients for maximum milk production, follicular growth, ovulation, uterine involution, and the initiation of pregnancy. First ovulation usually occurs approximately 10 to 15 days after the point of greatest negative energy balance and sometime before the peak in daily milk secretion. Nevertheless, dairy cows with greater dry matter intake, despite having a negative energy balance, produced more milk, lose less body weight, and ovulate earlier postpartum than those with lower intakes.

Additionally, cows with greater intakes also reach their low point of energy balance earlier and experience a more severe, but shorter, period of negative energy balance, suggesting that when cows are more efficient in partitioning dietary and stored nutrients toward milk synthesis, they also start cycling sooner.

Increased feeding frequency and better feed bunk management to maintain a fresh, adequate supply of feed and multiple sources of clean water are critical for stimulating appetite and maximizing dry matter intake.

(Original text by Dr. Ray Nebel, Extension Dairy Specialist, Virginia Tech. Edited by Dr. George Heersche, Extension Dairyman, University of Kentucky.)