The stress associated with calving creates significant fresh cow challenges.

Metabolic risk factors

Minimize fresh cow problems

By Fernando Diaz

Most of the metabolic problems of the dairy cow happen during the first two weeks of lactation. It has been reported nearly 25% of the cows that leave herds do so during the first 60 days in milk (DIM). After calving, the requirements for energy increase due to colostrum production while dry-matter intake is reduced drastically. The mammary gland at four days postcalving has increased demands for glucose (3 times), amino acids (2x) and fatty acids (3x) when compared to the uterus at 250 days of gestation. The mismatch between nutrient intake and demand generates a negative energy balance during several weeks after calving.

KETOSIS CHALLENGES

Canadian researchers (Tatone et al., 2017) published in the Journal of Dairy Science the results from an observational study of 3,042 Ontario herds to estimate risk factors for ketosis in dairy cows. Ketosis was diagnosed as milk β-hydroxybutyrate ≥ 0.15 millimoles per liter (mmol/L) at the first dairy herd improvement association test when tested within the first 30 days in milk. The overall prevalence of ketosis in Ontario herds was 21%. The authors reported the following risk factors associated with having ketosis:

> Seasonality: Summer (20.0%) and Autumn (18%) had lower prevalence than Winter (26%) and Spring (25%).

> Breed: Jerseys had more than 1.46 times higher odds of succumbing to ketosis than Holsteins.

> Number of lactations: Increased days dry and longer calving intervals, for multiparous animals, and older age at first calving for primiparous animals increased the odds of ketosis at first test.

> Milk fat yield: ≥ 2.7 lb. per day at the last test of the previous lactation was associated with decreased odds of ketosis in the current lactation (odds ratio: 0.56).

SUBCLINICAL HYPOCALCEMIA

Researchers from Cornell University estimated risk factors associated with subclinical hypocalcemia (SCH) in dairy cows. Using data from two New York dairy herds, the authors (Neves et al., 2017) conducted a cohort study including 301 animals. Subclinical hypocalcemia was defined as Calcium concentrations ≤ 2.1 mmol/L Ca based on a blood sample collected within four hours of calving.

The overall prevalence of SCH at calving was 2%, 40% and 66% for first, second and third or greater parities, respectively. The study was published in the Journal of Dairy Science and reported the following risk factors associated with having SCH at parturition:

> Number of lactations: Cows in third or greater parities were 70% more likely to have SCH than second-lactation cows.

> Prepartum Ca status: Multiparous cows with blood calcium levels ≤ 2.4 mmol/L in the prepartum period were 40% more likely to have SCH at parturition than cows with calcium concentrations > 2.4 mmol/L.

Interestingly, prepartum plasma magnesium concentration were not associated with SCH at calving. Moreover, the authors found subclinically hypocalcemic cows at calving had an increased risk (3.2 times) of having SCH at two days in milk. This suggests cows can carry over the hypocalcemic status at least in the first two days postcalving.

Photo: Mike Oppermann