

# MANAGING THE PREGNANT FEMALE

Fetal programming can affect an animal's feed efficiency, carcass merit, milk production and reproductive function.

Story & photo by Troy Smith, field editor

Think about the amount of time a calf spends within its dam's uterus. For a normal pregnancy, gestation can range from 279 to 287 days, or roughly nine months. That's a longer period of time than a calf will spend in any other single phase of production — more days than it will spend nursing its mother, as a growing stocker animal or in a finishing yard. Is it any wonder that what happens to a calf during gestation can significantly affect what happens during any and all of those other phases of a calf's life?

Caleb Lemley urges cattlemen to think about that. The Mississippi State University reproductive physiologist says that regardless of an animal's genotype, an environmental stimulus or insult can program the observed phenotype of the animal. That's true — even when the environment is the dam's womb. Fetal or developmental programming often has permanent effects, influencing the animal's eventual feed efficiency, carcass merit, milk production or reproductive function.

The placenta is the vital link between the dam and a developing fetus, Lemley says, so the placenta plays a key role in developmental programming. The placenta must become more efficient at transporting nutrients and waste as the fetus grows, and that efficiency is directly related to blood flow in the reproductive tract.

"Understanding the impacts of maternal environment on placental function is especially relevant," says Lemley, "since nearly a third of a beef animal's life (from conception to harvest) is spent developing *in utero*."

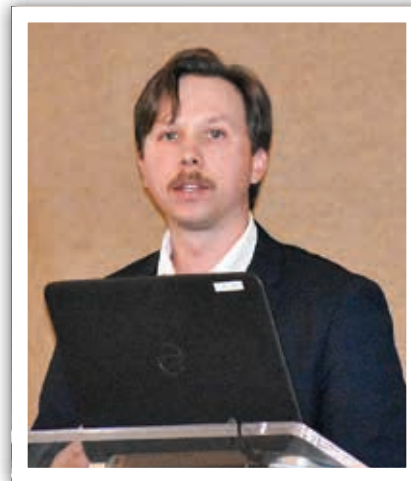
He explains that environmental stimulus or insult to the dam certainly can influence

uterine blood flow and placental function. The timing of experiences, such as nutrient restriction or heat stress, matters. Studies

suggest that early to mid-gestation nutrient restriction may increase placental efficiency. However, late-pregnancy (third-trimester) nutrient restriction has been associated with decreased birth weight, increased mortality and slowed postnatal growth of surviving offspring.

According to Lemley, research shows that low-input heifer development programs targeting 50% of mature weight by breeding should not negatively affect uterine blood flow and placental function. He

also cites evidence suggesting spring-calving heifers exhibit higher uterine blood flow than fall-calving heifers, which may be related to environmental differences and hormonal changes associated with day length. ■



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Editor's note: Troy Smith is a freelance writer and cattleman from Sargent, Neb. Caleb Lemley was a presenter at the 2019 Applied Reproductive Strategies in Beef Cattle (ARSBC) symposium hosted Aug. 20-21 by the University of Tennessee and the Beef Reproduction Task Force at the Hilton Knoxville in Knoxville, Tenn. For details on Lemley's presentation — including the accompanying proceedings and PowerPoint — visit the Newsroom at [www.appliedreprostrategies.com](http://www.appliedreprostrategies.com).