

Managing the Pregnant Female

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by Troy Smith, field editor

Think about the amount of time that 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. So, 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 urged his audience to think about that, while speaking at the Applied Reproductive Strategies in Beef Cattle (ARSBC) workshop hosted

Aug. 20-21 in Knoxville, Tenn. Lemley, a Mississippi State University reproductive physiologist, said 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.



Lemley said the placenta is the vital link between the dam and a developing fetus, 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.

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

Lemley explained 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 for the 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 cited evidence suggesting that 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. **A**

Editor's note: The 2019 ARSBC workshop was 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 slides — visit the Newsroom at www.appliedreprostrategies.com.

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