Potential Impacts of Spring Grazing on Pregnancy Rates in Beef Heifers

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The calving season for many beef producers is here, or right around the corner. Not long after calving ends, producers will be planning for the grazing season. Many believe it is beneficial to get cattle on the pasture as early as possible. Muddy pastures can be an unhealthy environment for young animals, and fresh forage is perceived to be much better nutritionally than last year's hay. There is also the belief that grazing is the most economical way to feed cattle and maximizing the length of the grazing season lowers the overall cost of production. These concepts are accurate, however, it is important to consider that the start of the grazing season often coincides with the cattle breeding season. Several researchers, including Allen Bridges at the University of Minnesota and George Perry at South Dakota State University, have investigated the interaction of reproductive efficiency and sudden changes in cattle diets. Their work was primarily with heifers having their first calf. The cost of developing replacement heifers has a tremendous impact on the profitability of cow-calf operations.

Yearling heifers in many cow-calf operations are placed in a confined feeding situation after weaning. A typical diet would include forages and a concentrate supplement designed to achieve a predetermined body weight by breeding time. At breeding time, with artificial insemination (AI) protocols, heifers are often inseminated in the dry lot, then turned out to pasture. When breeding is done with bulls, heifers have been on pasture for only a short time. In these situations the heifers may not have had adequate time to adjust to their new surroundings and they become stressed. While in the dry lot, the heifers knew what they would eat and where it was located. Their rumen was populated with the correct microbes to digest the feed. They knew where the water was and they did not walk much. When the heifers are put on pasture, they have to adjust to a different lifestyle. The heifers have not grazed for several months, so they need to relearn that skill. It is a different type of feed and the heifer's rumen has to repopulate with the appropriate microbes. This change in nutritional management has the potential to influence the reproductive efficiency and performance of the heifer for the rest of her life.

Spring forage can vary tremendously in nutrient content. Pasture forages may undersupply or oversupply protein and energy. In response to nutritional deficiency, various aspects of metabolic systems are changed. The system most rapidly and drastically affected is reproduction. Bridges found the nutritional status of a heifer not only affects conception rates, but also embryonic survival. Bridges studied heifers raised on a diet that provided 125% of the National Research Council (NRC) requirements for growth and maintenance. Estrous was synchronized and timed AI was conducted. On the same day as AI, heifers were placed in one of two nutritional treatments. Half continued on the pre-AI diet (125% of NRC requirements), targeting an average daily gain (ADG) of 1.5 lbs/head/day. Remaining heifers were fed at 80% of NRC requirements. Six days after AI, embryos were non-surgically flushed. Research found nutrient restriction immediately following AI resulted in embryos of lesser quality and developmentally retarded at an early stage of development. Putting heifers on pasture to consume variable quality forage soon after AI or during breeding may produce a similar effect on developing embryos. Perry studied the influence of moving feedlot heifers to grass before time of AI on pregnancy success. Fifty heifers were equally divided into two treatments: 1) move to grass 30 days prior to breeding, and 2) left in the feedlot until breeding, then moved to grass. Thirty-five days post AI, heifers moved to grass early gained 17 lbs but heifers left in the feedlot only gained 0.6 lbs. Pregnancy success between the groups did not differ, however, 13% of the feedlot heifers that conceived through AI lost their pregnancy compared to only 5% of those placed on grass 30 days prior to AI.

Producers desiring to get cattle on pasture in early spring may want to give special attention to heifers. Research shows: 1) heifers raised in dry-lots, although receiving a primarily forage-based diet during development, experience considerable weight loss when introduced to pastures in the spring, 2) introduction of heifers developed in the dry-lot to pastures immediately after AI results in reduced AI pregnancy rates, and 3) immediate alterations in early embryonic development are observed in heifers that fail to receive adequate nutrition following insemination.