

A Steady Diet

Managing heifers to avoid stress-induced fertility issues can set them up for a longer stay in the herd.

Story by
TROY SMITH, field editor

How important is beef cow longevity? That was a question posed by South

Dakota State University (SDSU) reproductive physiologist George Perry during the Applied Reproductive Strategies in Beef Cattle (ARSBC) symposium this winter in Sioux Falls, S.D.

“Research has indicated it takes the net revenue from approximately six calves to cover the development

and production costs of each replacement heifer,” said Perry. “In addition, any cow that misses a single calving is not likely to recover the lost revenue of that missed calf. That makes longevity of a beef female pretty important to the sustainability and profitability of any beef operation.”

Perry urged his audience to consider that, according to National Animal Health Monitoring System (NAHMS) data, problems related to reproduction are the leading reasons for culling cows. Failure to breed and other fertility problems account for 37% of females eliminated from breeding herds. Furthermore, greater than 15% of animals culled were less than 5 years of age, and nearly 32% were between the ages of 5 and 9 years.

“Females that are culled from a herd prior to producing six calves increase the developmental cost of other heifers and do not contribute to the profitability and sustainability of the operation,” added Perry. “Therefore, understanding how management decisions impact pregnancy success and longevity will have an effect on profitability and sustainability.”

Find more online

George Perry and Allen Bridges spoke during a session at the 2012 Applied Reproductive Strategies in Beef Cattle symposium focused on management of stress. Visit the Newsroom at www.appliedreprostrategies.com to listen to their presentations and to view the accompanying PowerPoints and proceedings papers. Comprehensive coverage of the symposium, including coverage of all 28 presentations, is available in the Newsroom. Compiled by the *Angus Journal* editorial team, the site is made possible through sponsorship by the Beef Reproductive Task Force and *LiveAuctions.tv*.

Avoid common mistake

According to Perry, a common approach to replacement heifer development may contribute to reproductive failure. This can occur

“It is best to avoid big changes in diet at breeding or right after AI.”

— *George Perry*

when heifers are grown and prepared for breeding while confined to a feedlot. Heifers may then be turned out to pasture for natural service, or turned out after artificial insemination (AI). The change in environment, including an abrupt change in diet, may trigger a period of weight loss. For heifers exposed

to natural service, the ability to conceive may be hindered. Embryo survival may be jeopardized among heifers very recently bred by AI.

Perry noted that consistently better pregnancy rates are achieved when heifers are developed on grass from weaning to breeding. This development method may not be possible for many producers, and Perry admitted there is no single “best” way to develop heifers.

“It is best to avoid big changes in diet at breeding or right after AI. It’s particularly important that heifers don’t go through a period of negative energy intake,” said Perry.

Managing heifers to conceive early in the breeding season is a first step toward improving longevity of the herd, but Perry emphasized that managing heifers to minimize embryonic losses is essential to maximizing productivity.



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Nutritional Excess, Deficiency Can Harm

Body condition affects oocyte quality and embryo survival.

Story by
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For successful reproduction in the female bovine, several benchmarks must be reached. She must exhibit a normal estrous cycle. She must have functional ovaries. She must be capable of producing a viable oocyte or “egg,” and she must be capable of providing a uterine environment suitable for embryo development and maintenance of pregnancy. According to Allen Bridges, University of Minnesota reproductive physiologist, for all of that to work, the female bovine must have adequate nutrition.

“It’s pretty basic. We’ve known it for a long time. When they receive inadequate energy or protein, cows don’t get pregnant,” said Bridges, during the Applied Reproductive Strategies in Beef Cattle (ARSBC) conference this winter in Sioux Falls, S.D.

Bridges said researchers have investigated how the estrous cycle is influenced by nutrition. His research is focused on discovering what direct effects nutrition has on oocyte maturation and competence, and how nutritional status during early gestation impacts



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uterine function and embryo survival. He offered examples of the ways certain nutritional hormones affect reproductive tissues and how changes in nutrition and body condition during the postpartum period affect reproductive processes and pregnancy success.

Insulin, explained Bridges, is a

metabolic hormone produced by the pancreas to regulate fat metabolism. Insulin level also affects production of estradiol, which is essential to reproductive function. Inadequate nutrition means lower insulin production and lower fertility.

“Too much body condition means too much insulin and the same end result,” warned Bridges. “Whether females are thin and staying thin or fat and getting fatter, neither is good.”

Bridges said nutritional stress also causes reduced production of insulin-like growth factor-1 (IGF-1), which plays a role in cell growth. Additionally, nutrition can affect production of leptin, which appears to be associated with insulin and IGF-1 levels.

“Nutritional stress can have dramatic effects on a developing follicle and oocyte,” emphasized Bridges, recommending that females be managed for appropriate body condition — not less than body condition score (BCS) 4 and not more than 6.

“It is possible to get too much of a good thing,” he added. “Nutritional excess can have the same results as deficiency.”

