



Research Review:

Limit-Feeding Cows and Fetal Programming

Researchers share highlights from current studies.

by **Kindra Gordon**

As grazing lands have become less available — either due to drought or because of urbanization or conversion to cropland — producers might consider feeding cows in confinement for a period of time, suggests Karla Jenkins, a range-management cow-calf specialist with the University of Nebraska (UN) at the Panhandle Research and Extension Center in Scottsbluff.

She and her colleagues have been conducting studies to learn more about limit-feeding cows in confinement. She underscores that limit-feeding means producers want the animals to maintain weight, not gain weight.

Particularly as the industry faces drought recovery of pastures and

higher grazing costs, Jenkins says, “Producers may need to rethink their utilization of grass and think outside the box as they look at different possibilities.” She suggests confinement may become a part of a producer’s system and provide opportunities to save high-quality grass for gains. She adds, “We used to think grass was the cheapest place for gains, but that has changed.”

For those who utilize limit-feeding in confinement, Jenkins says there are some key considerations. They include:

1) Knowing the nutrient content of feedstuffs, which can be tricky with byproducts. She encourages using TDN (total digestible nutrients) values

produced by universities for feeding trials. Extension personnel can assist in helping develop a diet.

- 2) Understanding the nutrient requirements of cows. A cow’s needs will change depending on stage of gestation or lactation — and if she has a calf at her side, the diet will need to be adjusted to account for the feed the calf consumes too.
- 3) Recognizing that byproducts don’t always have to mean ethanol. She suggests looking at other regionally available byproducts — such as beet pulp for producers in western Nebraska. If a feedstuff is seasonally available, there might be an opportunity to bag and store it until it is needed for feed as well.

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— **Karla Jenkins**



While the cow confinement studies that Jenkins is involved with are in their second year, she reports that from the first year of data, researchers have not seen differences in performance between early weaned and late weaned pairs, weaning weights of calves, body condition scores of cows, or pregnancy rates of cows.

Pregnant cow nutrition

Regarding ongoing research with nutrition of pregnant cows and the impact on progeny, researcher Rick Funston reports, “We can decrease marbling before calves are born based on how we feed cows.” Funston is a researcher at the UN Central Research and Extension Center at North Platte.

Funston explains that several studies are being initiated in the area of “fetal programming” — which is explained as how what the cow eats and what she endures during pregnancy affects subsequent lifetime performance of the calf she’s carrying.

Regarding his statement about research showing a decrease in a calf’s marbling before it is even born, Funston added, “These cattle were all the same genetics and we are affecting things we are selecting for. This brings home the point — it [selection] is not going to work unless it is managed for.”

Fetal programming has been studied in humans, and, now, the consequences to calves from cows fed restricted diets are being researched more.

Funston says data from several studies show that restrictions to a cow’s diet during pregnancy can affect weaning weight and carcass weight of the steers, as well as the fertility of heifers, before they’re ever born.

Funston says fetal programming responses can result from a negative



Room for improvement in beef operations

As the world prepares for its population to grow to more than 9 billion people by the year 2050, food production will also need to increase — by as much as 70% — to meet global demand.

Becoming better beef producers will be integral to meeting that increased demand, and use of technology in agriculture will be key to meeting that growth, points out University of Wyoming Extension Beef Cattle Specialist Steve Paisley.

Paisley notes that technology is already helping beef producers do more with less. As an example, beef numbers nationwide have declined, while beef production has been able to increase. “That’s testament to our industry; we are using technology to improve,” Paisley says.

Technology, in addition to improving production, Paisley notes, is also helping the beef industry use environmental resources more efficiently. Paisley credits producers for implementing many changes over the last 50 years, but he adds, “We have to continue to change.”

Many of the technologies already exist — now the next hurdle is to get more cattle producers to start utilizing them. Paisley says by maximizing the use of many of these tools, the U.S. beef industry can continue to improve and add efficiency to the U.S. cow herd. These tools include better use of:

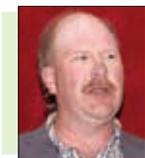
- **Crossbreeding.** Currently only about 44% of operations utilize this tool.
- **Genetic information or EPDs (expected progeny differences).** An example would be the use of feed efficiency information on bulls being purchased for the herd.
- **Artificial insemination (AI).** Today only 7-8% of U.S. herds use AI. Paisley notes that costs of AI and labor needs are being reduced with the many synchronization programs that are available.
- **Implants.** Presently 10% or fewer operations use implants, which can increase average daily gain by .10 to .13 lb./day.
- **Record keeping.** Only 12-15% of operations use any type of computerized records. Paisley notes that individual animal identification as a part of a record keeping system can help provide information for continued performance improvement. **HW**

nutrition environment, which can be caused by several factors, including:

- Breeding of young dams, who compete for nutrients with rapidly growing fetal systems;
- Increased incidences of multiple fetuses or large litters;
- Selection for increased milk production, which competes for nutrients with increased energy demand from fetal and placental growth; or

- Breeding of livestock during high environmental temperatures and pregnancy occurring during periods of poor pasture conditions.

The bottom line to this ongoing research is that proper management of cow nutrition during gestation can improve progeny performance and health. Interestingly, new research with mice also suggests there may be a paternal influence to fetal programming — meaning sires require proper nutrition management during development and prebreeding as well. **HW**



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