

## Beef study: Heifers don't have to be pigs at the feed bunk

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Thirty-two heifers at the Fort Keogh Livestock and Range Research Laboratory at Miles City participated in a study that focused on nutrition between weaning and breeding. The heifers, part of this herd, were each half Red Angus, a quarter Charolais and a quarter Tarentais. (Photo courtesy of Richard Waterman).

Heifers being prepared for breeding don't have to eat like pigs, stuffing themselves at all-you-can-eat feed bunks with unlimited refills, according to scientists at a Montana State University experiment station.

Researchers at the Fort Keogh Livestock and Range Research Laboratory at Miles City conducted a two-year study that showed that heifers can safely eat 20 percent less during the seven months between weaning and breeding. They won't suffer from reduced rations, and producers save \$21 per animal. Industry-wide savings would be

significant - especially in drought areas -- if producers adopted the practice.

"With the cost of fuel and the cost of production increasing, more and more people are open to more ideas. This is one tool producers can put in their toolbox," said Richard Waterman, research animal scientist who headed the study.

Waterman and five Fort Keogh colleagues recently published their findings in the [British Journal of Nutrition](#), one of the premier journals devoted to [animal nutrition](#). The researchers conducted their study with 32 heifers born to mothers that were fed harvested [feed](#) from the middle to end of their pregnancies. Each heifer was half Red Angus, a quarter Charolais and a quarter Tarentais. All the animals belonged to the Fort Keogh beef herd.

The scientists divided the heifers into two groups and fed them in confinement during the development period between weaning and breeding, Waterman said. Young cows, commonly called heifers, are weaned at seven months and bred for the first time when they're 14 to 16 months old. Animals in one group for the study ate all they wanted. Their feed bunks were never empty. Animals in the other group ate 80 percent as much feed as heifers of a common weight.

The researchers found that heifers with unlimited feed grew faster than the calves on reduced rations, but the heifers that ate less used their feed more efficiently. It took less feed for them to gain a pound, Waterman said.

MSU Extension Beef Specialist John Paterson, a professor in MSU's Department of Animal and Range Sciences, said producers have traditionally thought that heifers needed to reach 65 percent of their full body size by the time they were bred for the first time, but the study

disputes that. It shaved the percentage to about 55 percent, meaning that heifers could be lighter at breeding.

The study showed strong evidence to support its findings about reducing feeding, Paterson said.

"If you are in Texas and you are paying \$300 a ton for hay, a 20 percent savings in forage is huge," he commented. "That's a huge savings especially in a drought environment where you are trying to save feed, or hay is really expensive."

Neither Waterman nor Paterson said they could predict if producers will decide to reduce the amount of feed delivered to heifers based on this study. Paterson said Montana beef producers treat their animals very well, so, if they have plenty of rain and hay, they may decide to continue feeding their animals all they want.

But producers who live in Texas, New Mexico and other states currently hit by drought may be relieved to learn they won't hurt their heifers by feeding them less during the development stage, Paterson said.

Researchers in the Fort Keogh study came to their findings, in part, by administering two tests that measure how efficiently a heifer turns feed into energy. One test was a glucose tolerance test, and the other was an acetate irreversible loss test. Acetate -- a secondary energy source for cows -- is produced by fermentation in the rumen. One goal of the study was to see how fast the acetate disappeared from the blood stream and was used for energy.

The scientists administered the two tests at the end of the 140-day development period and again when the heifers were pregnant with their second calves. During the second test, the heifers were no longer in confinement, but they were grazing dormant forage on rangeland. A

previous Fort Keogh study found that animals use nutrients differently depending on the time of year, Waterman said. The worst time is fall and winter, when range forage is dormant. Nutrients at that time can't enter the heifers' cells as efficiently as at other times.

Waterman said the heifer study was unique and valuable to producers for a couple of reasons. For one, it was part of a long-term beef productivity study that Fort Keogh scientists started in 2002. For another, the study included the treatment of the heifers when they were fetuses.

Members of the Fort Keogh team that conducted the heifer nutrition study, in addition to Waterman, were Andrew Roberts, Thomas Geary, Elaine Grings (now at the International Livestock Research Institute in Nigeria), Leeson Alexander and Michael MacNeil.

Fort Keogh is a USDA-Agriculture Research Service rangeland beef cattle research facility. It is run in cooperation with the Montana Agricultural Experiment Station, an agriculture research component of MSU.

Provided by Montana State University

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