

# Lighter Heifers Lose Nothing

Save on feed and maintain performance.

by Barb Baylor Anderson

If the drought has ravaged your feed options and your budget, researchers in Montana may have a solution. Heifers being prepared for breeding will still perform at lighter weights. A two-year study completed on the state's rangelands shows heifers can eat 20% less during the seven months between weaning and breeding with little to no impact on pregnancy rates.

"With the cost of fuel and cost of production increasing, more and more people are open to new ideas. This is one tool producers can put in their toolbox," says Richard Waterman, research animal scientist who led the study at the USDA Agriculture Research Service (ARS) Fort Keogh Livestock and Range Research Laboratory rangeland beef cattle facility. Waterman worked with colleagues Andrew Roberts, Thomas Geary, Leeson Alexander and Mark Petersen.

The research results, published in the *British Journal of Nutrition* in 2011, confirmed heifers won't suffer from reduced rations, and producers could save \$21 per animal. More recently, Waterman has stated that although many factors have to

be accounted for in respect to drought, the \$21 savings was based on very conservative feed costs. A recent partial enterprise budget analysis revealed a \$37 advantage for heifers developed with the reduced-feed protocol.

## Study specifics

The research was conducted with 32 heifers born to mothers fed harvested feed from the middle to the end of their pregnancies. Heifers were born from composite dams that are half red Angus, one-quarter Charolais and one-quarter Tarentaise. All belong to the Fort Keogh herd.

The heifers were divided into two groups and fed in confinement during the development period between weaning and breeding. Heifers were weaned at seven

months and bred at 14-16 months of age. Animals in one group ate all they wanted. Feedbunks were never empty. Animals in the other group ate 80% as much feed as heifers of a common weight.

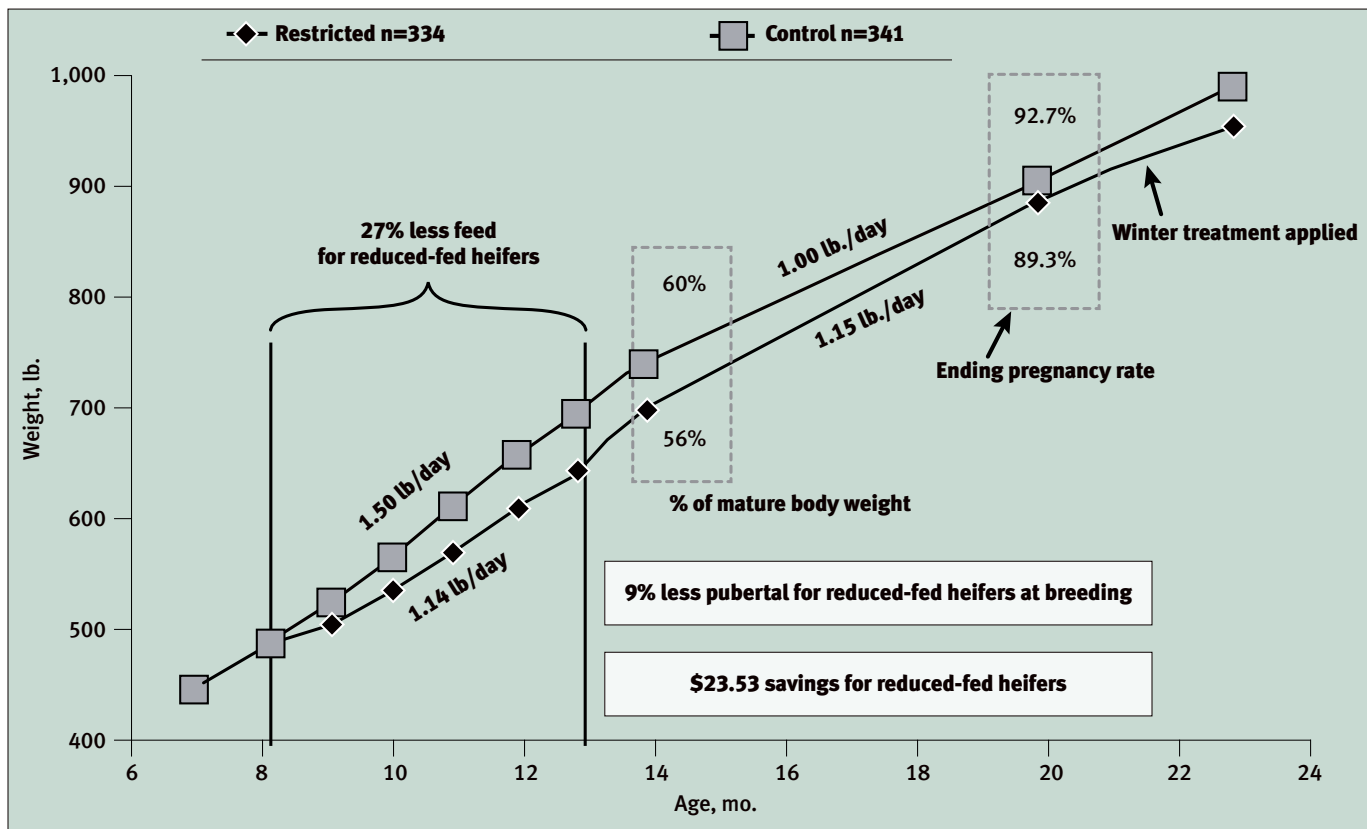
"Heifers with unlimited feed grew faster than the calves on reduced rations, but the heifers that ate less used their feed more efficiently. It took less feed for them to gain a pound," he says.

Researchers administered two tests to measure how efficiently heifers turned feed into energy — a glucose-tolerance test and an acetate-irreversible-loss

test. Acetate, which is a secondary energy source for cows, is produced by fermentation in the rumen. Waterman and colleagues evaluated how fast acetate disappeared from the heifers' bloodstreams and was used for energy.

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**Fig 1: Reduced-fed heifer development study of heifers born 2002-2007**



Tests were administered at the end of a 140-day development period and again when the heifers were pregnant with second calves. During the second test, the heifers were grazing dormant forage on rangeland.

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

Similar research evaluating low-input heifer development using different breeds and under different environmental conditions was performed at the University of Nebraska, Waterman adds. Researchers found comparable results related to production performance.

### **Long-term success**

"Our heifer study was part of a long-term beef productivity study that Fort Keogh scientists started in 2002, and it is unique and valuable to producers," says Waterman. "Averaging the last eight years together, we found that pregnancy rates have not differed between full- and reduced-fed heifers. That indicates that reduced-fed heifers are not

### **Montana rangeland is good testing ground**

The Fort Keogh Livestock and Range Research Laboratory consists of about 55,000 acres, of which about 50,000 acres are native rangeland; 2,500 acres are dryland planted pasture; 1,000 are irrigated pasture; and 700 acres are irrigated cropland. Remaining acres contain headquarters, corrals and more. The lab has about 400 miles of fence and 220 miles of roads and trails. The facility has a 40,000-bushel feedmill and two feedlots for 1,000 head of growing cattle.

Waterman says the beef cow herd has about 250 head of Line 1 Herefords, the oldest ongoing beef cattle selection experiment in the world. Another 400 head are cows used in the heifer study, and 750 head are commercial Angus-cross cows.

"Our research laboratory — the native range — allows us to conduct long-term research that provides beef producers with answers about long-range effects of their short-term management decisions," says Waterman. "The laboratory affords the opportunity to conduct high-impact research and determine its feasibility, which reduces the risks beef producers have to take."

reproductively compromised, even though these heifers receive less feed during the development period."

Former Montana State University (MSU) Extension Beef Specialist John Paterson, now executive director of producer education with the National Cattlemen's Beef Association, says while beef producers traditionally have thought that heifers need to reach 65% of full body size by the time they are bred for the first time, the study indicates that percentage may only need to be about 55%.

Waterman stresses that although reduced-fed heifers are developed under this strategy, they are still growing, pregnant animals.

"Following the development period, heifers should be maintained on good-quality forages and pastures," he says. "Heifers developed under this strategy are primed to take advantage of good-quality forages and pastures, and have improved ability to convert dietary feed into maternal body weight gain following development."

