

# “Residual Feed Intake” Studies Can Improve Herd Efficiency, Profits

COLUMBIA, MO.

**C**attle producers attending Beef Day at the University of Missouri South Farm learned new words that may help them improve efficiency and add profits from their herds.

Residual feed intake (RFI) is being measured in two barns at the MU Beef Research and Teaching Farm, south of Columbia, site of the annual field day to show research and extension programs.

Producers heard results and saw demonstrations of the electronically monitored feed bunks used in the studies.

Individual feed boxes, mounted on electronic scales, automatically pick up the electronic ear tag number of a calf as it eats. Time, amount and duration of eating are recorded on a computer, second by second.

In the past, feeding trials were on groups of calves with group averages of gain being measured. “We are learning things we never knew about how individual calves eat,” Kerley told visitors.

For one, there is a wide range of feed intake, even within what looks like a uniform set of calves, Kerley said.

From data collected, animal scientists calculate an RFI index. This compares an individual feed efficiency against the group average.

In an example Kerley used to explain the process, one bull calf in a group feedlot test ate five pounds less feed per day than the average for the group.

“The potential impact that individual’s RFI has on profitability is significant,” Kerley said. In the feed-out example the most efficient calf ate 605 pounds less feed than the average. At \$220 per ton for the diet, this amounts to about \$66 less feed for the efficient calf, Kerley said.

This was comparing calves in which there was little difference in average daily gain, the usual measure of feed use.

Researchers now look for bulls with the most efficient RFI indexes to use as herd sires on research farms. Geneticists are looking for DNA markers to help identify the efficient animals.

“Efficient bulls are showing they pass their RFI ratings to offspring in similar studies,” Ker-

ley said.

Gene Felton, animal scientist from West Virginia University, told how RFI measures are now a part of the bull test station at the experiment farm where he works.

Felton, a former doctoral student of Kerley, applied the RFI techniques he learned at MU to continue the beef research. He explained how calves of the RFI-tested bulls are used in pasture studies.

Offspring from positive-RFI bulls and negative-RFI bulls were compared in grazing trials, followed by feedlot finishing.

“Remember, a negative-RFI bull is more efficient than a positive-RFI bull,” Felton told producers. “The positive RFI animal eats more feed for the same amount of gain and is less efficient.

In the calf studies, the West Virginia researcher used offspring from most-efficient bulls and least-efficient bulls on test. The bulls were matched on all traits but RFI. “Except for feed efficiency their differences were close to zero,” Felton said. “They looked a lot alike.”

Their range was a positive 4.27 RFI to a minus 4.16 RFI. The feed-efficiency traits of those selected sires were passed on to the calves.

“The only difference was on feed intake,” Felton said. “Calves from the positive-RFI sires will cost you more money, as they will eat more. There was little difference in average daily gain, but big differences on amount of feed eaten. Think about that.”

The West Virginia calves were shipped to the MU beef farm to be fed out for market. In the feedlot, there appeared to be little difference in performance, except when it came to feed eaten.

“The calves from the negative-RFI bulls cost us less to feed,” Felton said. “The calves from positive sires had feed cost of \$302 compared to feed cost of \$264 from negative sires.”

The researcher noted that as feed costs have risen, efficiency becomes more valuable.

Producers at the field day heard poster presentations on fixed-time artificial insemination, genetic selection for feed efficiency, use of growth implants, and went on a pasture walk with an MU Extension forage specialist.  $\Delta$