

# HEREFORD INFLUENCE

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## How Efficient is that Cow ?

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Ever give much thought to how efficiently your individual cows use their feed? The Canadian Hereford Association has been giving the question a lot of thought, and sees Nappan as a good place to research the feed efficiency of not just any cow, but ones that are lactating.

Feed efficiency is a sort of nebulous term we often use in an attempt to determine how effectively animals can turn feed into milk or meat. Traditionally, the feed to gain ratio is the standard feed efficiency measurement. This approach, however, has many well-documented shortcomings, including a lack of genetic heritability and the fact that a specific animal doesn't eat much, and may not grow fast, can still appear efficient under the feed to gain ratio.

As well, it has little bearing on the "maintenance feed cost" of an animal that is, the feed used just to keep the animal alive. In a mature beef cow, the maintenance feed cost accounts for nearly 75 percent of feed consumed, with the much smaller balance going towards pregnancy, lactation, and growth.

A recent development in beef nutrition is a measure of maintenance efficiency called "net feed efficiency," or residual feed intake (RFI). This measure of efficiency is independent of body size and body type and so is an improvement over the feed to gain ratio.

Considerable research has been done on net feed efficiency, especially in Texas, Australia, and Alberta. Essentially, formulas have been

developed to determine the difference between an animal's actual feed intake and the expected feed requirements for maintenance of body weight and for any production parameters, such as weight gain, pregnancy, and milk production.

Work done at Lacombe Research Centre in Alberta has shown cows with a better RFI also have offspring that have an improved RFI. It is considered a moderately heritable trait, not unlike many other traits currently selected for in livestock production.

So this is all well and good, but why should you care? If you had a herd with genetically improved RFI, on average, feed costs would be 15 percent lower. Looked at another way, the land base used to feed 100 average cows could be used to feed 115 cows that were selected for better RFI. Not a bad improvement.

Other advantages include reduced manure to spread because the cows eat less, as well as lower methane emissions, making your cows less of an environmental issue. In fact, there is now a bull test station in Alberta measuring the individual feed intakes of the bulls to determine their RFI, as well as a commercial feedlot that incorporates this technology. The goal is to determine expected progeny differences (EPDs) for residual feed intake, and enhance beef production efficiency through the genes of the cows.

While the industry moves toward accepting RFI for improved beef production, not all questions surrounding this trait have been answered.

While it is useful to know cows with good RFI produce calves with a good RFI, the concern is that the RFI of a cow is measured while she is not lactating.

At this point, no one knows how the RFI of a cow relates to her milk production, which is rather an important factor in growing a healthy calf. This is a question we will attempt to answer here at Nappan through this fall and winter.

The Canadian Hereford Association has agreed to fund this research project, and RFI experts John Basarab, a beef research scientist, and Duane McCartney, a forage and pasture management specialist, from Lacombe have agreed to provide technical assistance. We are fortunate to have such skilled collaborators for this project.

As with any research, the devil is in the details. The challenging part of measuring RFI on a lactating beef cow is to actually get meaningful milk and feed intake data, while also raising a healthy calf. First, we will measure RFI on the cows this fall prior to calving. This will give us a pre-calving value to relate to the post-partum RFI we will be measuring.

At the same time we are measuring RFI on the cows, we will measure this same trait on their calves from the previous summer. This will provide yet another reference value for each cow to help assess how precise our measurement of RFI during lactation is. Hopefully, at the end of the winter, we will have some conclusive evidence showing how well RFI relates to cow milk yield.

At present, measuring relative feed intake is limited to facilities where you can measure the individual intake of each animal and record its weight gain on at least a two-week interval. The expense of such feeding systems rules out all but a few research and bull test facilities across the country.

However, it is not difficult to envision a time in the very near future when we may have the ability to use automatic animal weighing with a refined alkaline marker technique (or something similar) to estimate individual animal intakes. We would then have the ingredients to measure RFI on large numbers of cows in a cost-effective way. It would then be possible to identify the cows in your herd that save you more money through the winter. We will keep you posted on our progress.

*(John Duynisveld is a research biologist with the Crops and Livestock Research Centre in Nappan, N.S.) (print credit - Atlantic Beef Magazine)*