

Does size and quality of by-product pellets impact beef cow performance?

by Kieran Brett

With support from ACIDF and ALMA, this researcher put conventional thinking to the test, and found that practices around pellet size and binding agents may need a re-think.

Feeding cattle involves a constant back and forth between the quality of the ration and the cost of feeding it to the herd.

For producers with a sharp pencil on cost and a strong understanding of quality, it's an area where smart trade-offs can be profitably made. That's according to Greg Penner, Associate Professor and Chair in Ruminant Nutritional Physiology at the University of Saskatchewan.

He believes that, despite the relatively low quality of by-products such as cereal hulls, off-grade canola and screenings, these materials can hold a place in a ration because they're inexpensive.

“Take something like oat hulls that's a low-cost ingredient,” says Penner. “They're not useful for monogastrics, but they can be quite useful for ruminants.”

Beef producers can purchase by-products from feed suppliers in a pelletized form. The pellets might have a binding agent included to hold the pellets together and ensure they're neither too soft (and susceptible to crumbling) nor too hard (believed to hinder digestibility).

“In Saskatchewan, a couple of companies are providing by-product pellets,” says Penner, “and the cow-calf sector has really bought into it.”

How well can pelletized by-products work in a cattle ration? Does the size of pellets make a difference? Do binding agents truly help to maintain pellet quality?

In 2012, University of Saskatchewan researcher Tom Scott began a multi-year project to study these questions. When Scott retired in 2015, Penner assumed the role of Principal Investigator. This project was supported by the Alberta Crop Industry Development Fund (ACIDF) through the \$8 million Feeding Initiative funded by Alberta Livestock and Meat Agency (ALMA).

Any-size pellet, hold the binder

As Penner explains, the project consisted of two studies. In the first, the project team observed the digestive performance of both small and large pellets, formulated with and without the use of a binding agent, in ruminally cannulated cattle. Factors such as dry matter intake, rumen fermentation and total tract digestibility were measured.

“Though binders are commonly used to improve pellet quality, we found they had no effect,” says Penner. “There were also no significant differences based on pellet size.”

This project's second study looked at supplementing low-quality feedstuffs with by-product pellets under a winter grazing scenario.

“For a cow-calf producer, straw or chaff can be readily available, for example, if you have a grain-farming neighbor,” says Penner. “This is a low-cost material, but it can be supplemented with pellets in order to meet nutritional requirements over the winter.”

During the two winters of the study – 2014-15 and 2015-16 – snowfall was lower than normal. This made it hard for Penner and colleagues at the Western Beef Development Centre to test their hypothesis that cattle would find and eat by-product pellets in spite of snow.

“We placed tarps down and put the pellets on the tarps,” he says. “Because there was so little snow, the tarps acted as a feed bunk. The utilization of the pellets was about 98%, in other words, they ate everything we gave them.”

As in the project’s first study, the winter feeding study found essentially no performance difference based on pellet size or the use of a binding agent.

From low-quality feed to world-class beef

In Penner’s view, this research project helped to validate by-product pellets as a low-cost but nutritionally worthwhile component of a cattle ration. If you’re a cow-calf producer buying these pellets, it turns out that pellet size may not be all that important. If you’re buying your pellets with binder included, Penner’s findings suggest this may not be necessary.

If the size of pellets doesn't matter, what does? Penner may now look at ways to improve by-product pellets, such as treating them chemically to boost their digestive performance. It’s all part of his belief in turning something cheap into something valuable.

“We’re looking at the utilization of feed ingredients that do not compete with human food or with monogastric feeds,” he says. “Some of these lower-cost feed ingredients allow the cattle to do what they are designed to do: to break down fiber and turn low-quality ingredients into high-quality protein in the form of meat.”

