

Study evaluates canola meal for dairy calves

by Kieran Brett

With funding from ACIDF, ALMA and others, this researcher demonstrated that digestibility and taste of canola meal can be improved, giving producers a promising protein alternative.

In Canada's \$6 billion dairy industry, producers are under pressure to optimize their feed costs while delivering high-quality nutrition to the milking herd, and to the calves that will be their herd of the future.



In another part of agriculture, western Canadian canola production continues to grow.

An increase in domestic crushing capacity in recent years is not only producing an ocean of canola oil, but a growing supply of high-protein canola meal. Meanwhile, given current exchange rates, the U.S. soybean meal typically used in rations for dairy calves is getting more expensive.

Greg Penner, (pictured left) Associate Professor and Chair in Ruminant Nutritional Physiology at

the University of Saskatchewan, saw a potential win-win for dairy producers and canola growers. If more canola meal could be included in dairy rations for pre-weaned and weaning dairy calves, dairy producers could better manage costs and canola incomes could increase. First, though, Penner needed to address a long-standing perception.

“There is previous research showing calves consume less feed when canola meal was included as part of the starter mixture,” says Penner. “We know canola meal is higher than soybean meal in two beneficial amino acids, glutamine and glutamate. If we could improve the palatability or intake of canola in the calves’ diet, we may increase the supply of those two amino acids.”

Heat-treating canola meal

Over a three-year period beginning in 2013, Penner studied the impact of canola meal in dairy rations for young calves. He received support from the Alberta Crop Industry Development Fund (ACIDF) through the \$8 million Feeding Initiative funded by Alberta Livestock and Meat

Agency (ALMA). Other funders for this work were the Saskatchewan Ministry of Agriculture (Agriculture Development Fund), SaskCanola and Western Grains Research Foundation.

Penner tackled the question in three parts. First, he examined whether heat-treating canola meal could improve its palatability while maintaining digestibility.

“One of the things heat-treating does is decrease the abundance of certain anti-nutritional factors in the meal like glucosinolates,” Penner explains. “However, one of the downsides of heating is that you can sometimes get a burnt taste which calves seem to be sensitive to. While mild heat-treatment may improve the bypass protein, we saw that heating canola meal had a negative impact.”

Is there a way to mitigate the taste issue while keeping the benefits of heating? Part two of Penner’s project examined this. A study was conducted to evaluate heat-treating when glycerol, a natural high-energy by-product of canola, is added.

“Glycerol seems to have a positive impact in terms of starter intake,” Penner says. “This is the first data in Canada showing that glycerol may have potential benefit for the replacement heifer sector. The challenge moving forward, though, is that glycerol is currently only approved for use in beef cattle.”

Head to head with soybean meal

The third part of Penner’s project compared canola meal and soybean meal as a primary protein source in a pelleted starter mixture for newborn calves. The research looked at 100% soybean meal for the ration’s protein component, 100% canola meal and a 50-50 split.

While the 100% canola meal showed less desirable performance, the 50-50 combination seemed to be comparable to the 100% soybean meal. This finding could herald the opening of an important new market for canola meal.

Putting it all together, Penner sees largely good news for both dairy producers and canola growers. Canola meal, especially when glycerol is added, stacks up well against soybean meal in starter rations for young dairy calves. Canola meal could potentially displace half the soybean meal with good results. Further research should validate the inclusion of canola meal in starter mixtures for calves.

“We have been living with the dogma that canola meal does not work in starters,” Penner says. “Our research has shown that canola meal *can* work, but you probably don’t want to use *just* canola meal.”

