

New Guelph beef researcher focusing on feed and nutrition

By Lilian Schaer for Livestock Research Innovation Corporation

Joining the University of Guelph faculty as an assistant professor focused on beef cattle research was a bit of a dream come true for Katie Wood.

Wood's family has a Peterborough-area cow/calf farm and she completed her undergraduate, masters' and PhD degrees at Guelph. After spending some time at University of Saskatchewan, she was delighted to come back to her old stomping grounds as a full-fledged beef researcher.

Wood joined the Department of Animal Bioscience, which also includes poultry, dairy and swine research, in April 2016 as one of several recent hires.

"We have eight new researchers in our department - it's on fire right now with new talent, which is great; it's a good place to be," she says. "I did all my degrees at Guelph and have been unbelievably lucky to be able to come back here."

Wood's research focuses on three key areas: feed efficiency, fetal programming – how what is fed to the cow during pregnancy impacts the calf – and nutrition, including feed additives and new feeding strategies.

One of her main interests is gaining a better understanding of feed efficiency and the basic biology that makes one animal more feed efficient than another.

"As cattle get quite fat, efficiency drops off quite dramatically and they're putting on more fat than muscle," she explains. "It takes more energy to put on gram of fat than muscle so we're trying to figure out where that lost energy is going beyond animal differences in body composition."

Residual Feed Intake (RFI) is a way of measuring growth in beef cattle and identifying more feed efficient animals. Although a lot is related to genetics, Wood approaches growth from the biology perspective to determine what changes in an animal's metabolism are leading to RFI differences.

"There's not one single thing that you can really identify as being the silver bullet, but there are things we can do in feeding, timing of feeding, and feed management to change the metabolism," she says. "We can take an animal that isn't as advanced in

feed efficiency and still improve it in how we feed it and when, but we don't even know yet what the key pathways in metabolism are that are really important."

Early results from a feeding trial she's just completed suggest this might be related to nutrient sensing – a decrease in insulin receptors and a big increase in the amount of insulin the more time an animal spends on feed, which means they have to eat more to continue gaining weight at the same rate.

Feeding strategies are one way this can be overcome, and Wood's trial included both a traditional feedlot diet and a pellet composed of lower cost ingredients like soy hulls, wheat shorts, Dried Distillers' Grains (DDGs) and tallow.

"We didn't see any difference in the two treatments, so this means that if corn prices sky rocket, a pellet like that that's a bit less expensive could be useful," she says.

Wood also works on fetal programming, specializing in the late gestation period six to seven weeks before calving. One of her projects, funded by Beef Farmers of Ontario (BFO) as well as the Alberta Beef Producers, Alberta Livestock and Meat Agency, and the government of Saskatchewan, involved cows fed either a normal ration with regular protein requirements or a very high protein ration at 140 per cent of protein requirement for seven weeks before calving.

Colostrum was collected off those cows and work is now underway to analyze and catalogue all the components of that early milk to determine what specifically can help the calf grow.

"Colostrum represents a key window to influence the health and development of the calf but we don't know a lot about beef colostrum, what's in it, and whether we can influence that with diet," she says, adding the project continues until December 2018.

A second project about to start in this area, also supported by BFO, will be a vaccine challenge that focuses on the immune function side of colostrum and what role pre-partum nutrition may play in changing what's in the colostrum.

Classic nutrition is the third pillar of Wood's research. She will shortly be starting some work on improving fibre digestibility using enzyme additives, which she says is baseline work in improving feeding, quality and management.

“There is still a lot of work to do in that field and I’ll be working with companies to evaluate products they’ve developed, but developing my own feed additives is another potential topic,” she says.

“Ultimately, by reducing feed costs we can see the most economic benefit to producers.”

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