Breeding Beef Cattle for Respiratory Disease Resistance

By Lilian Schaer for the Livestock Research Innovation Corporation

Bovine Respiratory Disease (BRD) is a common, complex and costly disease of feedlot cattle. In fact, statistics suggest that BRD is responsible for 65 – 80 per cent of sickness and 45 – 75 per cent of deaths in some feedlots.

Different management strategies have long been recommended to reduce BRD, such as vaccinating cattle against both viral and bacterial pathogens and using pre-conditioning programs to reduce the stress calves experience when they arrive at feedlots. Antibiotics are traditionally widely used to treat cattle with the disease.

Respiratory disease in beef calves can cause welfare issues, economic losses and contribute to the development of bacterial strains resistant to antibiotics.

But what if animals had a natural resistance to BRD, making them less susceptible to it in the first place?

Identifying cattle with superior immune function would permit breeding of animals with improved disease resistance – an approach that has been successful in dairy cows and is now also being applied to beef cattle.

The University of Guelph's Bonnie Mallard,

professor and inventor of the High Immune Response (HIR) Technology and the Immunity+ Technology, has developed a testing method to identify animals with natural immunity and enhanced disease resistance. Tested, proven and patented for use in dairy cattle, it is available commercially from Semex, a Canadian company specializing in bovine genetics. Now, the research is being applied to solving the BRD issue in beef cattle.

"If we can breed for enhanced immune responses, this will not only lead to cattle which are naturally more resistant to infectious diseases, but will also increase the effectiveness of BRD vaccination and pre-conditioning programs," explains Dr. Doug Hodgins of Guelph's Department of Pathobiology who is working on the project.

"Being able to reduce the use of antibiotics in cattle production is important if we want to limit the development of bacterial strains resistant to antibiotics," he adds. "That's why we need additional management tools to maximize cattle health and reduce the need for antibiotic treatment."

Research activities to date include immune function testing of beef calves at the Elora Research Station over a two-year period, both

as newborns and after they have entered the feedlot, comparing test results and identifying genomic markers for immunity.

It is estimated that the HIR technology testing method – considered by some to be a game changer for better herd health and productivity – will be available to beef farmers in a few years.

In addition to better cattle health and reduced antibiotic use, the technology may have marketing benefits too. As more and more beef with special properties, such as sustainable sourcing, GMO-free, organic and others, reaches the market place in response to consumer demands, HIR could offer farmers a new opportunity to raise and market naturally healthier animals.

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