Breeding Selection Technology Allows Dairy Farmers To Raise Healthier Herds

University of Guelph

Dr. Bonnie Mallard, (left), of the Ontario Veterinary College at the University of Guelph.

The rate of disease in the global dairy population has increased each year since 1996. The selection of low heritability traits, which does not directly measure an animal's ability to resist diseases, has not provided a significant change in the health of the dairy population.

Following 20 years of research, Dr. Bonnie Mallard, of the Ontario Veterinary College at the University of Guelph, has devised a test to identify cattle as high, average or low immune responders. By improving breeding selection, the tool allows farmers to raise healthier animals that need less treatment and antibiotic use. High immune responders have about half the disease incidence of their herd mates.

Semex Alliance, a cattle genomics company, partnered with Mallard and Guelph to introduce the High Immune Responder (HIR) technology to dairy producers as Immunity+® sires. These animals have genetics that provide robust immune systems capable of dealing with a large variety of potential immune challenges, both viral and bacterial in

nature, encompassing nearly all major diseases that have an economic impact on farm.

> *According to Semex, research, involving 35 large commercial herds, and analyzed data from more than 30,000 cows and 75,000 heifers, showed reductions in every major disease and a 5 to 20 percent reduction specifically in animals bred by Immunity+ sires compared to all others. Mastitis, lameness and mortality saw especially large decreases in frequency.*

Immunity+ sired animals also respond better to commercial vaccinations and produce higher quality colostrum -- the milk produced in the first 24 hours after birth that contains immunoglobulins and, when absorbed by the calf's gut, helps protect the animal from common disease challenges -- than animals sired by any other bull, according to Semex.

The technology was first licensed from the University's Research Innovation Office to Semex in 2012, and Immunity+ was launched the following year. The project has received funding from the Canadian federal and Ontario provincial governments.

HIR technology was recognized in 2017 with a Governor General's Award for Innovation, which celebrates outstanding Canadian individuals, teams and organizations— trailblazers and creators who contribute to the country's success, shape the future and inspire the next generation.

"The healthier the cow, the healthier the environment," said Mallard, upon winning the award. "I am very pleased this immuno-genetics approach has worked so well to improve animal health, and now has proven effective in the field. HIR provides benefits to the producer, the consumer and the animal, resulting in a healthier and sustainable food chain."

Since launching Immunity+ for dairy bulls, Semex has also launched an award-winning Immunity+ genetic test for cows. Semex and the Mallard lab continue to collaborate on expanding the product to beef cattle.

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