

What to know about Lactanet's Methane Efficiency Evaluations.

In April, Lactanet released predicted genetic evaluations on Holstein animals for Methane Efficiency using mid-infrared spectra data (MIR) from milk samples. These evaluations claim to quantify an animal's genetic merit for high or low methane emissions independent of their genetic merit for milk, fat, or protein production. If done in a scientifically sound manner, this type of research and genetic analysis has value for advancing sustainability in our industry; however, rushed implementation of a genetic evaluation is not in the industry's best interest because of unknown consequences of selection based on this research. ST's top priority is to provide our customers with accurate and reliable information and maintain their trust.

After reviewing the relevant literature, consulting with Lactanet, and drawing on our own extensive experience, we strongly discourage our customers from relying on Lactanet genomic predictions for Methane emission as we have found them to offer limited practical value.

The evaluation is **not a direct measurement** of Methane Efficiency.

The targeted MIR wavelength range has been successfully utilized to quantify the concentration of milk components such as proteins, fat, and lactose. Lactanet has attempted to build on this method to indirectly predict methane emissions by utilizing the same MIR data. This method is not a direct measurement of methane but operates indirectly and relies on assumed relationships between breath methane and a mathematical correlation with certain light wave lengths related to volatile fatty acids. As such, it is subject to greater variance and uncertainty compared with quantitative direct measurements of methane.

The reliability for Methane Efficiency is **overestimated**.

Methane Efficiency published reliability values are reflections of the many MIR data measurements, while actual direct methane emission was only recorded on approximately 600 cows predominantly from two Canadian research farms. In our opinion, Lactanet reliability values for Methane Efficiency evaluations are overestimated because the published reliability doesn't take into consideration that MIR data is an indirect estimate of methane emission with low prediction accuracy. This may create unrealistic expectations of evaluation accuracy among genetic customers.

The accuracy for methane emissions from MIR data is **very low at 0.229**.

The scientific publication (1) that provided the foundation for Lactanet's work raises significant concerns regarding the accuracy of methane predictions derived from MIR data. These concerns have been echoed by other researchers (2). With limited testing on additional cow populations, the prediction accuracy of MIR data for direct methane emission was 0.229!

Nevertheless, ST will continue to invest heavily in this area and monitor all developments in this field and work collaboratively with the industry to seek solutions that can have a meaningful impact.

STgenetics® has worked to reduce methane emissions in dairy cattle through its EcoFeed® program since 2014. EcoFeed® is a feed conversion index which identifies animals with reduced feed intake and methane emissions without impacting other economically relevant traits (3, 4). With a commitment to science, STgenetics has worked to validate EcoFeed® with outside collaborators (5, 6, 7) and recently invested over \$1 million in methane measurement systems to expand upon its work in this area to continue to drive genetic progress for increased economic and environmental sustainability of the cattle industry.

References

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