



9. Milk Analysis Workshop 2 Creating Additional Value from Milk Analysis

Title presentation

Differences in milk composition associated with enteric methane emissions

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Abstract

Milk samples from sheep, divergently selected for methane emissions were analysed for fat, protein, lactose, somatic cell counts and detailed fatty acid composition. Sheep were from two lines of 100 adult ewes, grazed together but differing by an average of 10% in enteric methane emissions. A milk sample was taken at 2, 4 and 6 weeks post lambing for two subsequent years. Rumen fluid was also sampled for volatile fatty acid profiles and sequencing of the rumen microflora. Volatile fatty acids were also measured in blood plasma. Sheep were ranked for methane emissions and samples from the 60 highest and lowest emitting ewes at 4 and 6 weeks post lambing (n=480 samples) were analysed. There were significant differences in the rumen microbiome, the volatile fatty acids and milk fatty acid composition between the two lines. This suggests that the ruminant hosts have been selected for divergent fermentation profiles affecting milk composition. The next step is to explore whether milk composition profile in ruminants is a potential predictor of enteric methane status. Differences in milk composition fatty acid profiles were reflected in the muscle of the selection lines. These results have important implications for the selection of low methane emitting ruminants and subsequent effects on product composition.