THE GLOBAL STANDARD FOR LIVESTOCK DATA

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TITLE OF THE PRESENTATION

New traits predicted from milk mid-infrared spectra to reduce incidence of subclinical ketosis

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ABSTRACT

Ketosis is the most frequent metabolic disease in dairy cows. Recently, several new mid-infrared (MIR) traits have been derived that can be predicted from routine milk samples and provide a more accurate indication of subclinical ketosis than the commonly used fat-to-protein ratio, such as KetoMIR and other MIR-predicted traits (e.g. blood ß-hydroxybutyrate, acetone, citrate). KetoMIR was developed by LKV Baden-Württemberg based on ketosis diagnoses. KetoMIR is a three-class ketosis index: 1 = low ketosis risk, 2 = moderate ketosis risk, and 3 = high ketosis risk. The increased ketosis risk based on the KetoMIR index was associated with lower average herd milk yield (-1,975 kg milk). The interval from calving to first service was prolonged by +36 days, as was the calving interval with +58 days. Mean herd somatic cell count in first and higher lactations was increased by 60,000 and 134,000 cells/ml, respectively. So far, KetoMIR results have only been used for herd management. Feeding advisors use this new MIR trait to assess and, if necessary, adjust the feeding situation on the farm in the dry cow period and early lactation. Furthermore, a MIR equation for ß-hydroxybutyrate in blood was derived, which has already been validated on 49 Austrian farms and 670 dairy cows. For this purpose, capillary blood was analyzed for ß-hydroxybutyrate concentration in all cows during milk recording in early lactation (1st and 2nd test day after calving) using a handheld device (WellionVet BELUA, MED TRUST Handels GmbH, Marz, Austria). The result from the handheld device was considered as the gold standard for detecting subclinical ketosis (ß-hydroxybutyrate concentration > 1.2 mmol/l). Blood ß-hydroxybutyrate predicted from MIR had a sensitivity of 56% and a specificity of 81% for detecting

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cows with subclinical ketosis. Currently, data from Austria are being integrated into the MIR equation for ß-hydroxybutyrate to improve the equation. First genetic analyses showed high heritabilities between 0.16 and 0.30 for MIR-predicted traits. The moderate to high genetic correlations between MIR-predicted traits and subclinical ketosis suggest that consideration of these traits in selection would help to reduce subclinical ketosis. :

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