

Abstract Submission Form

Title (Mr./Mrs/Dr./Prof.)

Mr.

Presenting author

Y. H. Yeh

Institute

Institute/company: Northern Region Branch, Taiwan Livestock Research Institute,,Ministry of Agriculture

Adress: No.207-5, Pitoumian, Xihu Township

ZIP/Postal code: 36843

City: Miaoli

Country: Taiwan

Insert all authors and institutions

Y. H. Yeh (1), M. K. Yang (1), Y. H. Chen (1), J. F. Huang (2), J. W. Shiau (1) & P. A. Tu (1)

(1) Northern Region Branch, Taiwan Livestock Research Institute, Ministry of Agriculture, No.207-5, Pitoumian, Xihu Township, Miaoli 36843, Taiwan

(2) Taiwan Livestock Research Institute, No.112, Farm Road, Hsinhua, Tainan 71246, Taiwan

Preferred presentation

Oral

Preferred session

Session 3a / 3b: MRSD-SC - Factors Affecting the Accuracy of the Recording Day

Email of corresponding author

yihsin@tlri.gov.tw

Title of your paper

Assessing the Impact of Automatic Milking Systems on Milk Free Fatty Acid Content in Taiwan

Insert ABSTRACT text

Using the Automatic Milking System (AMS) can increase milk yield and reduce labor, but the impact of AMS on the milking behaviour of cows in tropical regions like Taiwan, as well as its effect on the quality of farm raw milk, has not been thoroughly explored. Free Fatty Acids (FFAs) in milk are considered one of the indicators of milk quality, and an increase in FFAs can lead to off-flavors and spoilage in dairy products. This study examines the FFA content in individual cow's milk from different milking systems, and investigates the influence of lactation stages and milking frequency on FFAs in raw milk. The experiment monitored milk samples collected from the Conventional Milking Parlour (CMP) and the AMS from 2021 to 2022, totaling 2,936 and 1,726 samples respectively. The FFA content in these samples was measured using Fourier Transform Infrared Spectroscopy (FTIR). The results show that the milk from cows using the AMS had significantly higher FFAs (1.17 mmol/100g milk fat, $P < 0.01$) compared to those using CMP (0.88 mmol/100g milk fat). The FFA levels in the early stage of lactation (0.82 mmol/100g milk fat) were significantly lower ($P < 0.01$) than in the mid (1.10 mmol/100g milk fat) and late stages (1.17 mmol/100g milk fat) of lactation. When comparing different milking frequencies, cows milked 2, 3, and more than 4

times a day in the AMS had FFAs of 0.89, 1.09, and 1.15 mmol/100g milk fat respectively, with the FFAs in milk from cows milked twice a day significantly lower ($P < 0.01$) than those milked 3 times or more. This study indicates that the difference in FFAs between AMS and CMP in Taiwanese farms is particularly evident in the early stages of lactation, which helps in further investigating the physiological changes in cows during this period. The study confirms that the use of AMS in Taiwanese farms affects milk quality, including cow-related factors and other management aspects. Although the introduction of AMS may initially impact parameters related to milk quality, these effects may reduce or disappear as the lactation stage progresses, the cows adapt, and milk volume increases. Additionally, farm managers and dairy farmers need to pay special attention to the cleaning and maintenance of AMS, as well as the proper cooling of raw milk, to maintain high-quality milk.

Enter keywords

free fatty acids, milk quality, automatic milking system, conventional milking parlour